On the Virtues of a Philosophically Pragmatic Reorientation in Environmental Ethics:

Adaptive Co-management as a Laboratory

by

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ABSTRACT

With global environmental systems under increasing Anthropogenic influence, conservationists and environmental managers are under immense pressure to protect and recover the world's imperiled species and ecosystems. This effort is often motivated by a sense of moral responsibility, either to nature itself, or to the end of promoting human wellbeing over the long run. In other words, it is the purview of environmental ethics, a branch of applied philosophy that emerged in the 1970s and that for decades has been devoted to understanding and defending an attitude of respect for nature, usually for its own sake. Yet from the very start, environmental ethics has promoted itself as contributing to the resolution of real-world management and policy problems. By most accounts, however, the field has historically failed to deliver on this original promise, and environmental ethicists continue to miss opportunities to make intellectual inroads with key environmental decisionmakers. Inspired by classical and contemporary American philosophers such as Charles Sanders Peirce, William James, John Dewey, and Richard Rorty, I defend in this dissertation the virtues of a more explicitly pragmatic approach to environmental ethics. Specifically, I argue that environmental pragmatism is not only commensurate with pro-environmental attitudes but that it is more likely to lead to viable and sustainable outcomes, particularly in the context of eco-social resilience-building activities (e.g., local experimentation, adaptation, cooperation). In doing so, I call for a recasting of environmental ethics, a project that entails: 1) a conceptual reorientation involving the application of pragmatism applied to environmental problems; 2) a methodological approach linking a pragmatist environmentalism to the tradition and process of adaptive co-management; and 3) an empirical study of stakeholder values and

perspectives in conservation collaboratives in Arizona. I conclude that a more pragmatic environmental ethics has the potential to bring a powerful set of ethical and methodological tools to bear in real-world management contexts and, where appropriate, can ground and justify coordinated conservation efforts. Finally, this research responds to critics who suggest that, because it strays too far from the ideological purity of traditional environmental ethics, the pragmatic decision-making process will, in the long run, weaken rather than bolster our commitment to conservation and environmental protection.

DEDICATION

To Keiko, Alexis, Danny and the rest of my family whom I love dearly.

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TABLE OF CONTENTS

Page

LIST OF TABLES

Table Page

LIST OF FIGURES

Figure Page

PREFACE

This dissertation is a proposal for a pragmatic reorientation in environmental ethics. This proposal is best understood as three component pieces distinguished by their approaches. The first part, composed of Chapters 1 and 2, is mostly *philosophical* and *historical*. The second part, Chapters 3 and 4, is *methodological* or *practical*. Chapter 5 is the third piece and is more *empirical* in nature. There may be, admittedly, a natural inclination to search for a climactic chapter in this dissertation, but I have to dissuade the reader from doing so. I follow the logic of Charles Sanders Peirce here, who gave the following recommendations on improving the force of philosophical inquiries:

> Philosophy ought to imitate the successful sciences in its methods, so far as to proceed only from tangible premisses which can be subjected to careful scrutiny, and to trust rather to the multitude and variety of its arguments than to the conclusiveness of any one. Its reasoning should not form a chain which is no stronger than its weakest link, but a cable whose fibers may be ever so slender, provided they are sufficiently numerous and intimately connected.[1]

Therefore, each of the segregated pieces of the dissertation should be viewed as multiple types of arguments sharing a common cause: why we might want pragmatism in environmental ethics. Having said that, each piece will aid in clearing conceptual baggage for the next, and therefore similar topics of discussion will emerge and re-emerge throughout the dissertation, but if the reader should want to skip part 1 and begin at part 2, there should not be a significant

[1] Charles Sanders Peirce, *The Collected Papers of Charles S. Peirce's*, eds. Charles Hartshorne and Paul Weiss (Cambridge, Mass: Harvard University Press, 1932), 5.256.

disadvantage in doing so. Following Peirce, I believe this is the best way to arrange a full-throated argument for a pragmatic reorientation in environmental ethics.

Chapter 1, as the tittle alludes, is a critical appraisal of the field of academic environmental ethics. This appraisal is conducted with the help of an increasingly popular computational text analysis tool called topic modeling. Topic modeling allows researchers to gauge levels of thematic diffusion from one corpus (group of textual documents) to another. These corpora act as proxies for the latent themes extant in the popular discourse. A quick comparison of the themes between an environmental ethics corpus and the *Congressional Record* (as a policy proxy), shows no similarities between the two discourses. Chapter 1 ends by acknowledging methodological deficiencies and offers some solutions to calibrate future studies.

Chapter 2 begins by discussing the philosophical and historical reasons why, if we buy the evidence presented in Chapter 1, we do not find any correspondence between environmental ethics and the specific policy record of the United States Congress. This would include Western philosophical ancestry in environment ethics that places undue focus on articulating a small subset of approaches, namely those based around an intrinsic theory of value. This alienates much of the emerging sustainability scholarship which focuses on competent management in service of creating fair and just future conditions for humans and nature alike. This critique is followed up by discussing an emerging pluralistic perspective in ethical thought called pragmatism. The purpose of proffering a pragmatism is not to raze or indict environmental ethics, but to cultivate a more open dialogue about whether we want to die on the hill of philosophical purity. Importantly,

the discussion around pragmatism is not just that it is a contrarian position, but also will include good reasons in its own right for making this pragmatic turn, namely, that it is entwined with the principles of a deliberative democratic process.

Chapter 3 begins the methodological or practical section of the dissertation. Here, I discuss at length an emerging style of environmental management increasingly supported by resilience scholars because its designed to engage with uncertain socio-ecological conditions to develop an adaptive capacity in local or regional communities. Adaptive co-management is an integrative approach which institutionalizes social-learning—via intervention, monitoring, and evaluation—and community solidarity through stakeholder engagement, deliberative encounters, and conflict resolution mechanisms with vertical and horizontal linkages to State agencies. Although this type of management takes many forms in practice, the principles underlying it are shared across cases. The import here is that these principles form a peculiar correspondence with the pragmatic ethos, that is, they both are empirical, experimental, and pluralistic. Chapter 4 develops a pragmatic method based on this ethos to find areas where a pragmatic environmental ethics overlaps with and departs from the maturing adaptive co-management scholarship, especially the scholarship which discusses the practical (as in, in practice) aspects of adaptive co-management.

The third part of the dissertation begins (and ends) with Chapter 5. Here, two groups engaged in environmental management are examined with the implicit purpose to discover a latent pragmatism in stakeholder attitudes. One, the Cienega Watershed Partnership in the Las Cienegas National Conservation Area in southern Arizona is a proper and enduring adaptive co-management implementation while the other, the White

Tank Mountains Conservancy in central Arizona, enjoys a more ambiguous designation. Both cases are focused on different resources but share a similar organizational structure. Interview questions were designed along the lines of a socio-ecological inventory and interviews were subsequently coded with codes (and themes) based on the pragmatic ethos. The results suggest that the explicit adaptive collaborative case comports with pragmatic themes more closely than that of the case which lacks identity. I follow these findings by making recommendations catered explicitly to the less polished case.

The dissertation closes with a summary and directions for future exploration.

PART I: Philosophical Argument

1. APPRAISING ENVIRONMENTAL ETHICS

Conservationists and environmental managers are under increasing pressure to protect and recover the world's imperiled species and ecosystems. In her 2014 Pulitzer Prize-winning book, *The Sixth Extinction*, science journalist Elizabeth Kolbert chronicles the loss of global biodiversity, a narrative that places most of the blame at our own doorstep.[2] As the world's population booms and countries continue to develop, more land is converted to agriculture, more fish are pulled from the sea, more fossil fuels are burned and more waste is produced, all as urbanization spreads across the landscape to accommodate half the world's citizens that live in them.[3] The evidence suggests that the increasing stress human activities have placed on the Earth's ecosystems and biodiversity has led to an accelerated extinction rate well beyond the non-anthropogenic background rate of species loss.[4] Moreover, the extent of human influence on Earth is not confined only to the biotic realm. Our fingerprints are increasingly visible on a range of global hydrological, atmospheric, and geochemical systems, prompting an array of geologists, ecologists, historians, and environmental writers to claim we are in a new epoch appropriately called the Anthropocene, or the "Age of Humans".[5]

While the effects of our influence are becoming more clear, some—especially more preservation-minded environmentalists—have expressed consternation over this

[2] Elizabeth Kolbert, *The Sixth Extinction: An Unnatural History*. (New York: Henry Holt and Company, 2014).
[3] United Nations, 2014. http://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html
[4] Jurriaan M. De Vos, Lucas. N. Joppa, John L. Gittleman, Patrick R. Stephens, and Stuart L. Pimm, Estimating he Normal Background Rate of Species Extinction. *Conservation Biology*, 29 (2015): 452-462.
[5] Paul J. Crutzen,"Geology of Mankind," *Nature* 415 (2002): 23; Joseph Stromberg, "What Is the Anthropocene and Are We in It?" *Smithsonian Magazine*, January 2013. https://www.smithsonianmag.com/science-nature/what-is-the-anthropocene-and-are-we-in-it-164801414.

designation, arguing that we should not be so hasty in formalizing our domineering relationship with the planet.[6] The primary concern is that we would enter new territory, a place that would require us to relinquish certain values and practices (e.g. wilderness preservation) and adopt unsavory others (e.g. assisted migration, designed ecosystems).[7] Additionally, many are beginning to believe that we must shed our antiquated commitments to nature preservation and thus can no longer take a hands-off approach to biodiversity conservation, ecosystem protection, and general environmental awareness. Others recognize that the Anthropocene necessitates a more active, and sometimes innovative, role in conservation efforts. For instance, Hulme and Murphree (1999) detail an ideological shift away from conservation directed by international conservation organizations toward community-based conservation initiatives in Africa, allowing locals to flex more control over their environments.[8] Kareiva and Marvier (2012) decidedly entice large corporations and their economic influence to participate in conservation efforts.[9] This approach, while controversial, intends to change corporate culture considering that businesses are perhaps some of the worst offenders when it comes to planetary harm. James Hansen (2012), a former NASA climate scientist who has been notably outspoken about the potential dangers of a transient climate, an activity that has drawn ire from the 'science is objective' crowd.[10] Simply put, the argument is that the

[6] Ben A. Minteer and Stephen J. Pyne, After Preservation: Saving American Nature in the Age of Humans, Chicago: The University of Chicago Press, 2015.
[7] Emma Marris, Rambunctious Garden: Saving Nature in a Post-wild World. New York: Bloomsbury, 2011.
[8] David Hulme and Marshall Murphree. "Communities, Wildlife and the 'new Conservation' in Africa." *Journal of International Development* 11, no. 2 (1999): 277–85.
[9] Peter Kareiva and Michelle Marvier, "What Is Conservation Science?" *BioScience* 62, no. 11 (2012): 962–69.
[10] James Hansen, "Game Over for the Climate." *New York Times*, May 2012, A29. http://www.nytimes.com/2012/05/10/opinion/game-over-for-the-climate.html

Anthropocene will require additional human interventions to assuage the current destabilization of global systems and place us on a path toward human sustainability. Because some intervention is necessary, the human-epoch and its related affects (e.g. global climate change) has been referred to as a super wicked problem. This challenge is characterized by the recognition that there is limited time to take meaningful action, ineffective (including non-existent) leadership, the irony that problem causers are also the problem solvers, and lastly, that despite the pace at which undesirable changes are occurring, planned responses are not timely.[11]

If these authors and activists are correct, then we must think more intently about at least two basic, key questions: 1) What outcomes are desirable? and 2) *How* can we achieve these desirable outcomes? While these academic discussions are normally directed at the global scale, the most immediate and, arguably, effective interventions will need to be spearheaded by smaller collectives and communities where ideas are contextual and resulting changes are more exact and tractable. These critical questions might then be re-cast as: 1) What does the community desire?, 2) What actions lead to desired outcomes?, and further, 3) Does a community's actions cohere with its neighbors? Even narrowing the spatial focus to the community level, the Anthropocene illuminates the necessity for a multi-faceted, multi-disciplinary approach to resolve these problems.

The first question—on what conditions are desirable—is primarily a normative problem while the second—how we get there—is both a political and practical question.

[11] Kelly Levin, Benjamin Cashore, Steven Bernstein and Graeme Auld, "Overcoming the Tragedy of Super Wicked Problems: Constraining Our Future Selves to Ameliorate Global Climate Change," *Policy Sciences* 45, no. 2, (2012): 123–152.

On the latter, we have a rich and wide-ranging environmental management tradition that has produced results through thousands of case-studies, experiments, and observations. While much more work still needs to be done (and is underway), we at least have a first salvo of environmental management research and practice to toss at undesirable anthropogenic changes. Relatedly, there is an academic discipline whose stated purpose is to help us navigate difficult moral environmental quandaries aptly referred to as 'environmental ethics.'

With its formalization in the 1970s alongside other applied ethics movements, environmental ethics sought to provide philosophical answers to contemporary environmental problems. After nearly 50 years amidst the multitude of known environmental crises and the appearance of novel ones, we therefore might have expected such a field to help make clear the normative dimensions of environmental interventions and management, to support sound policy, and to articulate our responsibilities to both the human and nonhuman worlds.[12] If ethicists have indeed succeeded in settling the debates surrounding which behaviors count as supportive of environmental values (defined in a number of ways), then we can try to uncover to the extent to which this scholarship has percolated into the public sphere. Other forms of applied ethics that emerged contemporaneously have seen a measurable level of success in this regard. For example, Bioethics has, on many accounts, been successful in influencing and helping to shape public debates in medicine and clinical care and is now established as a legitimate regulatory and informative field in the United States and around the world.[13]

[12] Ben A. Minteer, *Refounding Environmental Ethics: Pragmatism, Principle, and Practice.* (Philadelphia: Temple University Press, 2012), 2.
[13] Albert R. Jonsen, *The Birth of Bioethics*, (NY: Oxford University Press, 2003).

The first argument in this dissertation is that the ink spilt by environmental ethicists has had little demonstrable impact on environmental policy and those who formulate and implement it.[14] This observation will be supported by a computational approach known as topic modelling. Topic modelling has emerged as a useful tool for distilling themes latent in large sets of related textual documents.[15] This method is employed here to analyze the diffusion (or lack thereof) of language used by environmental ethicists into larger policy circles.

I follow this motivating, introductory chapter by diving deeper into the philosophical issues at stake, explaining what I understand to be a discipline that has unintentionally hamstrung itself in terms of utility and efficacy for non-philosophers. I close the second chapter by outlining and proposing an alternative formulation of an environmental ethic—one rooted in philosophical pragmatism—that I believe avoids the pitfalls of the dominant approach to environmental ethics and one that is more useful to conservationists and environmental practitioners. In Chapter 3, I discuss the relevance of a type of environmental management—adaptive co-management—that embraces social learning and democratic norms; characteristics that, I argue, are essential if we are to overcome the forthcoming global permutations. The task taken up in Chapter 4 is to build a theoretical bridge between the philosophy of pragmatism and the aforementioned schema of adaptive co-management. The foundation of this bridge will be built with the aid of interviews from experts in the theory and practice of adaptive co-management.

[14] Not only do I intend this dissertation to be critical of the field of environmental ethics for failing to influence outcomes, but also to those legislative and policy experts who have done little to protect the environment.

[15] Matthew Purver, Thomas L. Griffiths, Konrad P. Körding, and Joshua B. Tenenbaum, "Unsupervised topic modelling for multi-party spoken discourse," in *Proceedings of the 21st International Conference on Computational Linguistics and the 44th Annual Meeting of the Association for Computational Linguistics* (ACL-44), 2006: 17–24.

Chapter 5 details two specific case studies where community-level interventions using an adaptive co-management framework are underway. Chapter 6 follows up the case studies by highlighting both the efficacy and efficiency of the ACM/pragmatic approach while putting the impotence of mainstream environmental ethics on display. Chapter 6 also contains concluding remarks including areas that deserve further attention.

A Computational Complement

The primary and most influential works in the field of environmental ethics (EE) are textual in nature, taking the form of journal articles or books. In judging the efficacy of the EE program, we can employ tools that aid in the analysis of textual sources. An early attempt at locating points of diffusion[16] between the EE vernacular and the policy realm was organized by early environmental philosopher and legal theorist Christopher Stone.[17] Stone's (2003) scholarship highlights two bits of evidence to support the hypothesis that environmental ethics has had little influence in management and policy discussions.[18] First, he first notices that the most stringent pieces of legislation championed by environmentalists today, i.e., the Wilderness Act (1964), the National Environmental Policy Act (1970), and the Endangered Species Act (1973) were drafted, debated, and signed into law before EE emerged as a formal academic field. Still, some of the authors of these statutes *may* have appealed to or were motivated by ideas that are now a part of the academic EE discussion (such as, for example the earlier writings of

[16] Following Dearing and Cox (2018), diffusion is the social phenomenon whereby some novel language or concept (referred to as an 'innovation' in the literature) that begins in one social circle, moves to others. U.S. governmental policy and legislation surrounding the use of seatbelts is a prime example.
[17] His work, "Should Trees Have Standing? Toward Legal Rights for Natural Objects" has shown impressive stamina as an anchor to the non-human rights movements. See: Anna Grear, "Should Trees Have Standing: 40 Years on," *Journal of Human Rights and the Environment* 3, Special Issue, (2012): 1.
[18] Christopher Stone, "Do Morals Matter? The Influence of Ethics on Courts and Congress in the Shaping of U.S. Environmental Policies," *University of California-Davis Law Review* 37, no. 13 (2003), pg 13-52.

Aldo Leopold or Rachel Carson), so it is my view that uncovering this evidence, if possible, is worthwhile.[19] Starting at the 'beginning' of EE as an academic field in the late 1970s and looking forward to 2003 (when Stone's study was conducted), he digs into digital judiciary and congressional documents but finds no explicit appeals to ideas that are presumed to have influenced legislation pre-environmental ethics. Admittedly, government documents are only a portion of the potential sources in which one might look to find the influence of disciplinary EE.[20] Curiously, Stone goes on to suggest that environmental philosophers simply had not spent enough time deliberating and expounding on the foundations that would support a pro-environmental ethics and therefore the legislative bodies in the United States did not have the material necessary to synthesize into their policy discussions.

Writing in response to Stone's analysis, the environmental philosopher Bryan Norton offered a friendly rebuke, arguing that the study's outcome is disconnected from its premises (a concern I share).[21] In his critique, Norton suggests that a chasm has formed among environmental ethicists where one camp, composed primarily of non-anthropocentric philosophers such as Holmes Rolston III and J. Baird Callicott, is focused on undermining anthropocentric approaches to environmental ethics, while the

[19] We know that President Theodore Roosevelt for instance was heavily influenced by both the preservationist John Muir, who defended the beauty and sacred qualities of nature, and Gifford Pinchot, who represented the more utilitarian, "wise use" wing of the conservation movement. These two figures are often referred to as forefathers in American environmental thought and are therefore strongly associated with academic environmental ethics. Indeed, their ideological differences simulate the current impasse in environmental ethics quite closely.

[20] An analysis of the grey literature in conversation biology is more likely to use language we associate with environmental ethics than governmental documents. What we would find, I assume, would be an overwhelming moralist majority although this trend might be softening. Either way, phrases such as 'intrinsic value' are likely to be used abstractly and carry little practical weight, even in these grey documents.

[21] Bryan G. Norton, "Which Morals Matter? Freeing Moral Reasoning from Ideology," *University of California-Davis Law Review* 37, no. 13 (2003), pg 81–94.

other sees all approaches as tools for crafting working, pluralistic environmental policy.[22] This mainstream vs 'sidestream' debate, to borrow Norton's language, is a newer injection into the environmental ethics conversation. Yet in his study, Stone hunts for environmental ethics influence narrowly defined as above, that is, non-anthropocentrically. Norton proposes that if the scope of what counts as an environmental ethic were enlarged, then we might more readily identify points of diffusion in the greater policy discourse and we might use those points as anchors in the search for common ground between policy and ethics. If the scope of an environmental ethic is only as wide as to accept non-anthropocentrism, then poverty, intergenerational justice, and even climate change could fall outside of the mainstream ethics program given the centrality of human interests in the moral discourse surrounding these concerns. Like Norton and other pluralistically-oriented ethicists, I find this narrow view to be mistaken.

Despite Stone's assumptions about what ideas should be included in environmental ethics proper, conducting an empirical search for evidence of influence (i.e. language diffusion) remains an important mission given the core belief that the discourse cultivated and maintained by (environmental) ethicists ought to shape norms and behaviors. With Peter Singer, I believe that there are such people as moral experts[23] and that if they do exist, ethicists are more likely (but not necessarily) to be candidates than the layman in this arena. This is not to say any 'expert' ought to wield this responsibility in a manner unbecoming of the title, by, for instance, declaring this or that action to be inside or out some ethical boundaries as if reacting to a good or bad smell. In my mind, this places the expert at the center of debates involving value claims; a place

[22] Ibid. 92
[23] Peter Singer, "Moral Experts," *Analysis* 32, no. 4 (1972): 115–17.

that I feel is particularly appropriate for the pragmatist ethicist who might provide guidance on the resolution of conflict and, following Andrew Light,[24] fulfill a public commitment to translating moral claims. Because of this latter responsibility (one that happens to be basal to the pragmatic *ethos*), I often think of pragmatic ethicists as capable moral experts.[25] The question as to whether or not environmental ethicists have largely been ignored is an empirical claim, one that I hope to address here in part. This analysis is motivated by a desire to see environmental ethicists move policy toward pro-environmental outcomes.

The first novel contribution in this dissertation picks up where Stone left off. Using more sophisticated tools and a more expansive corpus, I ask the same question that Stone did: "Has environmental ethics had—and how might it have—an impact on public policies?"[26] Our approaches are different, however. Stone and his team conducted what amounts to a supervised word or phrase query (e.g. Googling). This means that they produced a list of key words, derived from their domain expertise in environmental ethics and policy, and sought out those particular words in judicial and legislative documents. Topic modeling, on the other hand, is an unsupervised natural language processing technique that sorts groups of meaningful words together to create themes, or topics in the nomenclature.[27] As will be detailed below, this method can aid in the uncovering of

[24] Andrew Light, "Methodological Pragmatism" in *Animal Welfare and Hunting*, edited by Erin McKenna and Andrew Light, 119–139. Bloomington, IN: University of Indiana Press, 2004.
[25] I do not believe those of other philosophical alignment are incapable of filling this role. I am merely suggesting that this responsibility seems to be particularly suited for someone with a pragmatic bent because of the specific commitments one would have if they were to be accurately called a pragmatist. These commitments will be made clear in Chapter 2.
[26] Stone, "Do Morals Matter?", 14.
[27] David M. Blei, "Probabilistic Topic Models*," Communications of the Association for Computing Machinery* 55, no. 4, (2012), 77.

latent meanings in the analyzed text. Stone's argument relied on the existence of a few select words, whereas topic modeling does not. Instead, the outputs of topic modeling can be compared to one another to understand a fuller context of the discourse and be used to estimate diffusion.[28] Despite the difference in approach, I also hypothesize that I will fail to discover diffusions of ideas from the discourse of academic environmental ethics into the *Congressional Record*.

Topic Modeling.

The level of policy I have chosen to examine, and the only one featured here in this dissertation, is the legislature of the United States Government for a few reasons: (1) in early 2017, the United States Government Publishing Office made available digital copies of the *Congressional Record* which are more easily analyzed with the help of sophisticated computational tools, (2) environmental legislation enacted by the United States Congress has arguably the widest reaching impact in terms of agencies responsible for both compliance and enforcement, and (3) the opportunity costs of deliberation within a Congressional session are high. That is, if any particular issue is discussed by the United States Congress, we can assume it maintains a high level of priority and importance. And (4), the congressional discourse is supposed to be reflective of constituent concerns and public events and therefore representative of affairs pressing on the collective consciousness.

The political ideologies of congress members are typically categorized by examining roll call votes and bill co-sponsorships. These larger political categories are

[28] David Crystal, *Dictionary of Linguistics and Phonetics* (Hoboken, NJ: John Wiley & Sons, Incorporated, 2008), 145. diffusion (n.) A term used in sociolinguistics and historical linguistics for the increased use of a language or linguistic form throughout an area over a period of time.

useful in understanding the sorts of constraints a lawmaker has (e.g. their vote for a measure may be cast primarily for political and electoral security[29]). However, one limitation with solely looking at votes and co-sponsorships are that holding to party lines has become increasingly more common, now to the point where there is little cooperation between parties.[30] Certainly, there must be personal differences between members of Congress that can be washed out when the scope of analysis is so large as to only capture whether a lawmaker is a member of the Democratic or Republican party. Correia et al. (2015) demonstrate that party-line politics are becoming increasingly common and this polarization is visible in the language of congresspeople.[31] Therefore, we share the assumption that the values and agendas of congressional members are more accurately determined by both examining the normal determinants—roll call votes and co-sponsorships—in addition to the language they use on the floor (during debates and proceedings for instance). Fortunately, these data (i.e., text) are accurately captured by professional stenographers with the United States Government Publishing Office (GPO). Each day after a legislative session, the so-called Daily Digest, which captures nearly every word uttered (or yelled) and document submitted 'for the record' in the Senate and House of Representatives, is published for public access. At the end of a congressional session (approximately 2 years), these daily versions are bound into a continuous volume,

[29] Richard T. Carson and Joe A. Oppenheimer, "A Method of Estimating the Personal Ideology of Political Representatives," *The American Political Science Review* 78, no. 1 (1984): 163–178.
[30] Clio Andris, David Lee, Marcus J. Hamilton, Mauro Martino, Christian E. Gunning, John Armistead Selden The Rise of Partisanship and Super-Cooperators in the U.S. House of Representatives http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0123507
[31] Rion B. Correia, Kwan Nok Chan, and Luis M. Rocha, "Polarization in the US Congress," *The 8th* Annual Conference of the Comparative Agendas Project (CAP), Lisbon, Portugal, June 23-24, 2015.

which we know as the *Congressional Record,* dating back to 1873. These records are primed for emerging computational tools and textual analysis.

Content analysis is a hybrid of quantitative and qualitative methodology. With the adoption of sophisticated computer algorithms that can analyze so-called 'big data', this threshold is increasingly crossed.[32] A content analysis is designed to elucidate either the *manifest* or *latent* content of a particular data set (typically text).[33] Collecting manifest data, while still somewhat interpretative, means the analyst has designed a coding scheme prior to conducting the analysis and is placing words/phrases into the appropriate bins or categories during it (e.g. the occurrence of the words hamburger, pizza, soda in some analyzed text belonging to a predetermined category called 'edibles'). Latent analysis is the more subjective approach which requires the researcher to judge the underlying meaning and purpose of the text (e.g. the occurrence of the words hamburger, pizza, soda can indicate the text may be referring to the American diet). A strictly qualitative content analysis will typically allow the codes to emerge from the text (although the text is usually chosen intentionally). Here, I carry a general idea of what a category might be into the analysis (e.g., 'intrinsic value', 'pristine', 'preservation' in EE literature), but do not specifically define them. I am also accepting the common assumption that spoken and written words are not random—they are chosen to convey a specific meaning and to occlude an infinite number of other interpretations implying that there may be a hidden

[32] Kimberly A. Neuendorf, "Content Analysis in the Interactive Media Age," in *The Content Analysis Guidebook,* (Los Angeles: SAGE Publications Ltd., 2017): 204.
[33] Ulla.H. Graneheim and B. Lundman, "Qualitative Content Analysis in Nursing Research: Concepts, Procedures and Measures to Achieve Trustworthiness," in *Nurse Education Today* 24, no. 2 (2004): 105–112.

structure to the text.[34] Because I will be analyzing the content from a data-set that is too large for a human and a highlighter, I first make use of an increasingly popular computational complement to content analysis called topic modeling.[35] The primary difference between these two approaches is that the topic modelling process occurs unsupervised (i.e., via a computer program) whereas content analysis is normally actively interpreted as the researcher sifts through data.

Topic modeling is especially suited to uncover the latent meanings of a given body of text because it assumes that the topics 'exist' in the author's mind before the document is produced.[36] That is, it is an attempt to uncover what the author(s) had been influenced by when the text was created. The output of a topic model is two-fold. First, the model produces a vector of words that can be interpreted (subjectively by the researcher) to compose a single topic.[37] The second output is the corresponding percentage occurrence of the topics in the corpus itself. By creating a probability distribution of topics present in the text, we get a better idea about what the purpose of the text is, its hidden structure.[38] However, it is worth noting that topic models are best used as a single piece in a salvo of interpretive methods. Topic models are unable to

[34] Tim Rapley, "Studying Discourse: Some Closing Comments," in *Doing Conversation, Discourse and Document Analysis*, (London: SAGE Publications Ltd, 2007): 126–132.
[35] Anke Piepenbrink and Ajai Guar, "Topic Models As A Novel Approach To Identify Themes In Content Analysis," *Academy of Management Proceedings*, (2017).
[36] Jonathan Chang, Jordan Boyd-Graber, Sean Gerrish, Chong Wang, and David M. Blei, "Reading Tea Leaves: How Humans Interpret Topic Models," *Neural Information Processing Systems*, (2009), 1-9.
[37] David M. Blei, Andrew Y. Ng and Michael I. Jordan, "Latent Dirichlet Allocation," *Journal of Machine Learning and Research*, *3*, no. 30, 2003.
[38] David M. Blei, "Probabilistic Topic Models," *Communications of the Association for Computing Machinery* 55, no. 4, (2012), 77–84.

capture collocate words and do not adequately expose nuances in language such as homophones or colloquialisms.[39]

Methods.

According to the White and Marsh (2006), uncovering hidden meanings in text can be done by following a set of steps which I now, in part, address.[40] I created two corpora derived from the *Congressional Record*. I initially downloaded 45 documents in the *Record* repository (CONC hereafter) between and including the years of 1988-1993.[41] This range was chosen intentionally given 10 years is roughly the latency we could reasonably expect the important environmental moments of the decade, including the establishment of environmental ethics as previously mentioned, to diffuse into other discourses.[42] Similar to random sampling in human subjects research, random selection of documents assuages systemic bias and allows us, ideally, to make inferences about the whole set, the whole discourse in this case. Each document, containing roughly 2 million words, was then converted to .txt files using AntFileConverter—free software offered by Lawrence Anthony out of Waseda University, Tokyo[43]—to be more digestible by computational tools. To build the Environmental Ethics corpus (EEC hereafter), I downloaded 45 original articles (i.e., no book reviews or commentaries) from the earliest environmental ethics journal, aptly named, *Environmental Ethics*, spanning 1979-1983.[44]

[39] Kenneth D. Aiello, "Systematic Analysis of the Factors Contributing to the Variation and Change of the Microbiome, "PhD diss., Arizona State University, 2018: 48.
[40] Marilyn Domas White and Emily E. Marsh, "Content Analysis: A Flexible Methodology," *Library Trends* 55, no 1, (2006): 22–45.
[41] https://www.govinfo.gov/app/collection/crecb
[42] James Dearing and Jeffrey Cox, "Diffusion of Innovations Theory, Principles, And Practice," *Health Affairs* 37, no. 2 (2018): 183-90.
[43] Anthony, L. (2017). AntFileConverter (Version 1.2.1) [Computer Software]. Tokyo, Japan: Waseda University. Available from http://www.laurenceanthony.net/software
[44] More information on this journal and its contents can be accessed at: http://www.cep.unt.edu/enethics.html

Each of the documents in this corpus averaged 10,000 words, a concern that I will touch on in the concluding section here.

After building both CONC and EEC corpora, I then randomly pulled 10 documents from each set to save countless hours of data cleaning and corresponding computing time.[45] A smaller subset of the CONC corpus (E-CONC hereafter) was then constructed by selecting 10 documents that contained both keywords "environment" and "ecology" to improve the possibility that it will share similar themes with the EEC corpora. CONC results are nevertheless presented here as a proof of concept—that the topic modeling process is sensitive to the extant text—but not to be used as evidence for diffusion of lack thereof (Appendix A). The primary comparison will be between E-CONC and EEC.

A stop-list, a list of words that directs topic modeling programs to ignore select words, was created iteratively to push out words that would appear in trial runs.[46] The models were created using the software MALLET.[47] The user dictates the parameters for the breadth of the model. In this case, MALLET was instructed to compute 20 topics per corpus and 20 words per topic, which are standard settings. These topics can then be compared to one another to investigate areas of overlap and differential understanding of shared themes. In this case, finding topics, or even a small group of words, shared

[45] A document consisted of a single journal article in the EEC corpora, while a document in the CONC corpora was a pdf supplied by the Congressional Record repository. The researcher (or someone) has to make sure that the documents are fit for analysis by adjusting pages, columns, and spelling mistakes from the OCR/file converting process.

[46] Iterative creation of a stop-list just means running the modeling software with a default stop-list containing functional and common words first. Initial runs will present words used with less frequency, but ones that do not help define a topic (such as: they, however, been, later etc.). These words are manually added to the stop-list and models are recomputed until the researcher is satisfied.

[47] Andrew Kachites. McCallum, "MALLET: A Machine Learning for Language Toolkit." http://mallet.cs.umass.edu. 2002.

between the environmental ethics documents (EEC) and the *Congressional Record* (CONC) would signal that the ethical arguments were piercing the congressional discussions. Conversely, finding no shared topics would suggest that environmental ethical literature has not yet leached into relevant policy discussions.[48]

Results.

Each column of 20 words represents the contents of a single topic that I named (in bold) based on my interpretation of the word cluster. Unsurprisingly, when E-CONC topics are compared to EEC topics there is no overlap between the two corpora. Here, only a cursory look at the topics that appear most frequently in the E-CONC model suggests the contents of the narrowed *Congressional Record* reflects a more practical and applied discourse taking place. This is evidenced by the collection of words like *Pollutants, Sanitation, Contaminants*, and *Restore* which I have interpreted to compose a topic I call Pollution (See **Table 1**). Likewise, the EEC model (see **Table 2**) presents vectors of words that are associated with the themes commonly evident in environmental ethics literature. The topic 'wild nature' for instance is composed of words like *landscape, wilderness, nature, aesthetic*, while the topic 'aldo leopold' is defined by the common occurrence of '*forestry, essay, conservation,* and of course, *leopold*.

[48] Caveats to this claim will be discussed below.

Table 1. Six (of twenty computed) topics derived from ten documents containing "biodiversity" and "ecology" from the Congressional Record (1988-1993).

pollution	**environmental education**	**managed areas**	**restoration**	**marine ecosystems**	**environmental science**
sanitation	center	park	species	marine	science
pollutant	environmental	national	landscaping	water	advisory
degradation	education	commission	resistant	waters	authorized
petition	university	system	drought	section	assessment
guard	establishment	secretary	interior	pursuant	board
estuaries	hayward	service	projects	federal	demonstration
community	award	areas	plant	quality	management
cost	foster	management	lands	end	respect
carry	establish	title	recreation	criteria	made
balanced	sound	area	gate	pollution	acquisition
contaminants	findings	property	golden	coastal	reduction
implement	ideas	american	facilities	date	appropriated
restore	networks	funds	plants	control	equipment
financial	center's	recognized	native	pollutants	budget
disposal	natural	natural	authorize	discharge	arrangement
designating	sector	sites	implement	estuary	identify
implementing	grants	authority	program	land	methodologies
approve	act	assistance	exotic	provide	adequacy
army	promote	units	introduction	enactment	products
contiguous	science	cultural	restoring	adding	uncertainties

Table 2. Six (of twenty computed) topics derived from 10 randomized documents from the journal of Environmental Ethics (1979-1983*).*

terminology	aldo leopold	wild nature	living things	community	ethical foci
environmental	leopold	nature	life	property	nature
ethics	forest	natural	human	land	indian
nature	erosion	aesthetic	animals	locke	american
view	leopold's	american	beings	economic	world
aesthetic	fundamentals	landscape	things	policy	indians
ethical	essay	beauty	sense	theory	european
environment	conservation	objects	moral	commons	natural
world	aesthetic	interest	living	locke's	view
moral	forestry	painting	nonhuman	public	martin
people	analysis	art	characteristics	resources	ethic
good	forests	century	point	ethic	attitudes
man	philosophy	passmore	person	people	behavior
person	work	time	animal	hardin	persons
make	standards	attitudes	western	price	spirit
university	service	scientific	plants	economists	ibid
philosophy	southwest	western	obligations	consumers	western
terms	responsibility	science	creatures	preferences	soul
press	district	york	thought	harm	attitude
values	missouri	wilderness	space	problem	human
theory	fire	history	position	land	respect

A comparison of both models does not support the idea that there is earnest diffusion occurring between the two corpora where the corpora are proxies for larger, respective discourses. If diffusion were to be detected, then similar topics would be present, and the word composition within those topics would share further similarities. Differences in words between similar topics is also part of a full analysis as these can give clues regarding the different foci of the topic in use (e.g. the topic 'value' as environmental vs 'value' as economic). Given the results, there are at least two possibilities. One, there is no diffusion. Two, there is diffusion that went undetected due to a flaw in the experimental design.[49] Because of this second option, I feel there are additional measures required to safeguard the claims made here.

Future Directions.

The purpose of this experiment was to examine whether the selected corpora (and specific methodology) is indeed representative of reality. That is, I wanted to ensure that the topics that emerge through topic modeling jibe with the major moments in the 1970s in the case of the *Record* and, given my domain knowledge, the relevant discussions in the case of the *Environmental Ethics*. With these two topic models, I hypothesized that I will fail to discover diffusions of language from the discourse of academic environmental ethics between the *Congressional Record*. This hypothesis was tenuously supported. While the results presented here should not be surprising, topic modeling is, admittedly, just one part of a constellation of textual analyses that would need to be deployed in order to fully grasp the level of diffusion (if any) between discourses.[50] This would include

[49] Of course, it's possible that there was both a design flaw and no diffusion to be detected.
[50] Aiello, "Systematic Analysis of the Factors Contributing to the Variation and Change of the Microbiome," 49.

keywords analysis which uncovers statistically significant words in a selected corpus, collocate analyses which provide fuller context of word usage by displaying statistically significant co-occurring words.[51] Further, there is some inconsistencies between the ECONC and EEC corpora that should be resolved in future iterations. Namely, the total number of words in the EEC corpus is a fraction of the amount in the ECONC corpus, therefore, to borrow Anthony's analogy, it could be like comparing a galaxy with a single star.[52] Lastly, the overarching argument proffered here could be bolstered by tweaking both the hypothesis and corresponding data sources utilized in the topic modeling experiment. As alluded to in the footnotes, two additional textual reservoirs—grey-literature in conservation biology and/or natural resource management and also environmental legislation which provides an interesting opportunity to trace legislative changes such as the first Endangered Species Preservation Act of 1966 and its most recent iteration, ESA 1982—are potential places in which we might find legitimate appeals to EE concepts.

Concluding Thoughts

While this experiment was limited in scope, adding more robust corpora and employing additional computational tests, shows promise for a more convincing line of argumentation. Due to methodological (and time)[53] constraints, these future directions could not be pursued at this time. There are, however, plans to pick this project up in

[51] Laurence Anthony, "Issues in the Design and Development of Software Tools for Corpus Studies: The Case for Collaboration," in *Contemporary Corpus Linguistics*, ed. Paul Baker, London: Continuum International Publishing Group, 2009: 93
[52] Ibid. 92.
[53] Known as data-munging or data cleaning, documents require spellchecking, formatting, and grammar corrections before they can be fully utilized by tools for computational text analyses.

collaboration with experts in computational text analyses leading to, we anticipate, far more robust conclusions.

For now, we have some evidence that corroborates the results of Stone's (2003) initial investigation. A study affirming Stone's conclusions more than 15 years later is not trivial, though it may seem. Environmental ethics emerged from the primordial applied ethics soup in the early 1970s and therefore, as is widely repeated by some of its founding thinkers, intent on "descend[ing] from the ivory tower and directly engage real-world issues."[54] Stone surmised that one possible way to test the efficacy of this promise to engage was to try to uncover references to environmental ethics in policy and judicial documents. Although I support Stone's effort, a noteworthy distinction between us is my sympathy for pragmatism while he would likely describe his ethical orientation as a strong non-anthropocentrism. This, to me, signals a shared impulse that it's not enough to continuously supply ethical arguments into the ether, but we must know if they are working, if there is uptake, if they are informing the thinking of policy-makers who wield incredible power. Areas of study like environmental sociology[55] and conservation psychology[56] are investigating questions of ethical import in their respective fields, but there is not yet a dedicated area of study whose focus is to gauge the effectiveness and reach of ethical arguments in the policy realm. For now, it is an esoteric task, but one that is becoming increasingly feasible with the introduction of advanced computational methods like topic modeling.

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[54] J.Baird Callicott, *Beyond the Land Ethic: More Essays in Environmental Philosophy*, (Albany, NY: State University of New York Press, 1999), 28.
[55] Bradley H Brewster and Puddephatt, Antony J., eds. *Microsociological Perspectives for Environmental Sociology* (London: Routledge, 2016).
[56] Susan Clayton and Gene Myers, *Conservation Psychology: Understanding and Promoting Human Care for Nature*, (West Sussex, UK: John Wiley & Sons Ltd, 2015).

Moreover, I do not intend for this line of argumentation to stand on its own. This is just the first half of one prong of a three-pronged argument that academic environmental ethics could benefit from overt pragmatic import. The other half in Chapter 2 directly engages with the philosophical commitments of non-anthropocentrist environmental ethics and pragmatism while adding historical context.

2. ENVIRONMENTAL ETHICS: PROMISE AND PROBLEMS

The "Earthrise" photograph, taken in 1968 from moon's orbit, is perhaps the "most influential environmental photograph ever taken."[57] Not to be outdone by their predecessors, Apollo 17 astronauts gave us the "Blue Marble": the first time the entirety of our planet was captured in a picture on the way up to the moon. Both pictures turned out to be watershed moments in global, and especially American, environmentalism. According to historian Robert Poole these space missions and the overview effects[58] they begat helped galvanize a new environmental awareness—an 'age of ecology'—in the early 1970s.[59] Along with these fresh perspectives from space, nature photography from the likes of Ansel Adams and Eliot Porter had already been dancing through the minds of Americans. Literary works exploring the human-nature relationship, books like *A Sand County Almanac* (1949) by Aldo Leopold, *Silent Spring* (1962) by Rachel Carson, and Edward Abbey's *Desert Solitaire* (1968), were likewise well-known and often invoked in everyday discourse. At the same time, other environmentalist ideas that grabbed public attention during this period often took on a survivalist and apocalyptic tone, including Paul Ehrlich's *The Population Bomb* (1968) and 1972's *Limits to Growth* report by the Club of Rome, both of which became integral to the deeper green movements as a continuum of environmental consideration and consciousness formed. All of this, of

[57] "Apollo Astronaut Shares Story of NASA's Earthrise Photo," NASA, Last Updated: Aug. 7, 2017, https://www.nasa.gov/centers/johnson/home/earthrise.html.
[58] David B. Yaden, Jonathan Iwry, Kelley J. Slack, Johannes C. Eiechstaedt, Yukun Zhao, George E. Vaillant, Andrew B. Newberg. The Overview Effect: Awe and Self-Transcendent Experience In Space Flight," *Psychology of Consciousness: Theory, Research, and Practice* 3, no. 1 (2016): 1. This is said to be an increased awareness or feeling of connectedness that was first experienced by astronauts as they saw the earth completely enveloped by space.
[59] Donald J. Wuebbles, "Celebrating the "Blue Marble," *Eos, Transactions, American Geophysical Union* 93, no. 49 (2012): 509–510.

course, under the backdrop of the growing concern about the possibility of nuclear war and continental scale devastation.[60]

Academic environmental ethics appropriately saw its formalization during this time period (i.e., the early 1970s), although initially it was merely an uncoordinated set of individual philosophers who were sympathetic to environmental causes.[61] Eventually, however, the field carved out its own space in the applied ethics movement and by the 1980s academic philosophers such as Holmes Rolston III, J. Baird Callicott, Mark Sagoff, and Bryan Norton were writing prolifically in this new field, each representing distinct schools of thought within the broader environmental ethics movement. These pioneering authors, and a growing number of others like them, sought to clarify—often in dramatically different ways—our moral relationship with nature and its constituents.[62]

The New Zealand philosopher Richard Routley, in his seminal 1973 essay "Is There a Need for a New, an Environmental, Ethic?", which is generally considered the first paper published on environmental ethics proper by a trained philosopher, inquired as to whether the traditional moral foundation of Western philosophy was actually

[60] Robert Gottlieb, *Forcing the Spring: The Transformation of the American Environmental Movement* (Washington, DC: Island Press, 2005); Roderick Frazier Nash and Char Miller. *Wilderness and the American Mind: Fifth Edition* (New Haven: Yale University Press, 2014); Benjamin Kline, *First along the River: A Brief History of the U.S. Environmental Movement* (Lanham: Rowman & Littlefield Publishers, 2011).

[61] "A Very Brief History of the origins of Environmental Ethics for the Novice" Center for Environmental Philosophy at the University of North Texas, accessed December 13, 2018, http://www.cep.unt.edu/novice.html.

[62] In one sense, this was nothing new for philosophers; inquiry into nature goes back more than 2500 years, beginning, some scholars say, with a group of transient Greeks we refer to as the Presocratics. Although the contents of their investigation had little to do with the present conceptualization of environmental ethics, the philosophical (and scientific) heritage established by these Greeks, and those that came after them, laid the intellectual foundation for the kind of moral theory many ethicists still rely on today (a particular issue I explore in the next section).

compatible with a proper ethic of the environment.[63] He concluded that, since mainstream Western moral traditions suggest the destruction of the environment is in itself free of moral consequence if it does not harm humans, it was an inadequate basis for an environmental ethic that sought to treat nature as a subject of direct moral concern. Not only would this new and more non-anthropocentric environmental ethic be critical of those who would indifferently abuse natural areas, but it would implore witnesses to reveal these behaviors as impermissible. Environmentalists and nature sympathizers, Routley suggested, were unlikely to be content (or ought to be discontented) with their beliefs without challenging others' views and attempting to influence pro-environmental change:

> But aren't environmentalists going too far in claiming that these people, …respected industrialists, fishermen and farmers are behaving, when engaging in environmentally degrading activities of the sort described, in a morally impermissible way? No, what these people do, is to a greater or lesser extent evil, and hence in serious cases morally impermissible. For example, insofar as the killing or forced displacement of primitive peoples who stand in the way of an industrial development is morally indefensible and impermissible, so also is the slaughter of the last remaining blue whales for private profit.[64]

This is meant to suggest that an environmentalist of any variety—whether advocate or philosopher (or both)—maintains, at least according to Routley, an obligation to produce

[63] Richard Routley, "Is there a need for a new, an environmental, ethic?" *Proceedings of the XVth World Congress of Philosophy 17th to 22nd September 1973, Varna, Bulgaria*, (Varna, Bulgaria: Sofia Press, 1973): 206.
[64] Ibid. 208.

and influence pro-environmental behaviors. It is a directive that lays out a potential policy imperative for the field of environmental ethics: the recognition of nature's moral standing (what many environmental philosophers frame as the acknowledgment of its intrinsic, and not just instrumental value) is supposed to compel behaviors and policies to protect species and landscapes deemed to possess this value.

This activist decree quickly became embedded in the ethical programs of environmental philosophers of every flavor. Norwegian philosopher Arne Naess's Deep Ecology, initially presented in the same year as Routley's paper appeared, is perhaps the most well-known perspective articulating a fundamental obligation toward activism as part of its "platform." Indeed, Naess, in his outlining of the non-anthropocentric foundations and entailments of the deep ecology movement, declares that the "forcefully" normative principles underlying it are only worth holding if we act upon them.[65] North American versions of deep ecology, imported by George Sessions and Bill Devall, were deeply influential to the architects of 'radical' activist (and at times, subversive) organizations like Earth First![66] and the later splinter group, the Environmental Liberation Front.[67]

The more measured, academic versions of environmental ethics, championed by early ethicists such as J. Baird Callicott, Kenneth Sayre, and Bryan Norton, equate the practice of environmental philosophy to social activism to varying degrees. Callicott notes that philosophy has a tradition of engendering social transformations—not through

[65] Arne Naess, "The Shallow and the Deep, Long-range Ecology Movement. A Summary," *Inquiry* 16, (1973): 99.
[66] John Johnson, "Stupidity and Critics of the Ecology Movement," *Earth First! Tucson* 25, no. 4, (2005): 12.
[67] Bruce Barcott, "From Tree-Hugger to Terrorist," *New York Times*, April 7, 2002, https://www.nytimes.com/2002/04/07/magazine/from-tree-hugger-to-terrorist.html.

taking up arms or other physical acts of rebellion, but by merely questioning the received narrative handed down by the powers that be (e.g., the church and the state).[68] Callicott critiques the attitudes of Ken Sayre and Bryan Norton—again, both early advocates of the activist agenda within environmental ethics—claiming their positions are anti-philosophical. Callicott discusses the emergence of environmental ethics as part of the applied movement, stating, that it was a "…deliberate reaction to what was perceived as the reigning neoscholasticism and in a deliberate attempt to help society deal with real-world problems…"[69] He therefore worries that philosophers like Norton and Sayre, who do not focus on articulating foundational ethical arguments like he might prefer, undermine this applied mandate and therefore will not help engender moral transformations towards pro-environmental attitudes. I take his meaning here to be that their environmental arguments do not have the same guttural punch as an argument Dave Foreman (co-founder of Earth First! and frequent castigator of all anthropocentric ideals) might support. Offering a description about the state-of-affairs, Sayre states, "If norms encouraging conservation and proscribing pollution were actually in force in industrial society, it would not be the result of ethical theory; and the fact that currently they are not in force is not alleviated by any amount of adroit ethical reasoning."[70] I find this assertion perfectly reasonable and supported by the empirical investigation in the introductory chapter. We can admit this reality and simultaneously bemoan its solidity. While Callicott reminisces about a time when the Socrates or Kant or Locke could upend their

[68] J. Baird Callicott, *Beyond the Land Ethic: More Essays in Environmental Philosophy* (Albany, N.Y.: State University of New York Press, 1999), 27.
[69] J.Baird Callicott, *Beyond the Land Ethic : More Essays in Environmental Philosophy*, (Albany, NY: State University of New York Press, 1999), 28.
[70] Kenneth Sayre, "An Alternative View of Environmental Ethics," *Environmental Ethics* 13, no. 3 (1991): 195.

contemporary intellectual systems, the contingency of ideas—the speed, the depth, the reach—is unlike their respective times. In addition, the ecological threats were not as immediate. Doubtless, the likes of Norton are happy to take refuge in such an anti-philosophical camp if it means that the task of influencing environmental legislation and policy is approached from a non-fatalistic perspective (dare I say, with pragmatic optimism), the opposite of which Callicott holds closely.[71]

Although they are philosophically divided over many of the theoretical commitments of environmental ethics, both J. Baird Callicott (a non-anthropocentrist) and Bryan Norton (a "weak anthropocentrist" or an environmental pragmatist) both believe that the ways in which their work is borne out into action and policies that support those actions are of primary importance.[72] Callicott suggests that assenting to the intrinsic value of nature has led to major policy successes such as the adoption of the United Nations Earth Charter in 2000 while Norton might argue that the Charter simply includes good environmental policy that would exist without the belief in nature's immutable value. Debate about the practical effects of an institutional and formalized environmental ethics continues to drive discussion in the field (e.g. Norton, 2015; Minteer, 2012; Callicott, 2013; Maboloc, 2016).[73]

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[71] J. Baird Callicott, *Beyond the Land Ethic: More Essays in Environmental Philosophy*, "SUNY Series in Philosophy and Biology", (Albany, N.Y.: State University of New York Press, 1999), 48.
[72] J. Baird Callicott,"The Pragmatic Power and Promise of Theoretical Environmental Ethics: Forging a New Discourse," *Environmental Values* 11, no. 1 (2002): 3–25; Norton, Bryan G., *Toward Unity Among Environmentalists*, (Oxford: Oxford University Press, 1991).
[73] Bryan Norton, *Sustainable Values, Sustainable Change,* (Chicago: University of Chicago Press, 2015); Ben A. Minteer, *Refounding Environmental Ethics: Pragmatism, Principle, and Practice.* (Philadelphia: Temple University Press, 2012); J. Baird Callicott, *Thinking Like a Planet: The Land Ethic and the Earth Ethic*, (Oxford: Oxford University Press, 2013); Christopher Ryan Maboloc, "On the Ethical and Democratic Deficits of Environmental Pragmatism", *Journal of Human Values* 22, no. 2, (2016): 107–114.

In light of this activist precept, I used the introductory chapter to explicitly inquire as to whether or not the products of environmental ethicists—which we might think of as a philosophical arm of the environmental movement[74]—had permeated outside philosophical circles, namely, into environmental management and policy forums. The evidence presented there allowed me to assert that the ethicists' discourse had, at the very least, not diffused into the United States legislature, where some of the most consequential and wide sweeping environmental policy is discussed, created, and implemented. I interpret this result to mean that the voices of the ethicist community have largely been ignored by at least some of those they wish to influence.

Why has this happened? In the next section I offer one possible explanation for this exclusion; a philosophical reason having to do with the inability of environmental ethicists to maintain applicability in the real world due to their unwavering, non-anthropocentric commitments.

Foundationalism in Environmental Ethics

Although there are likely several explanations for why environmental ethics has so-far failed to enter some of the most important environmental policy circles, especially those that relate to the coordination and management of diverse locales, I want to suggest here that the main problem lies with the ideological commitments held by the majority of theorists in this field. According to some friendly critics, "environmental ethics has developed under a narrow predisposition that only a small set of approaches in the field is

[74] Here, I just mean that ethics is the potentially practical branch of environmental philosophical inquiry.

worthwhile…."[75] From these unshakable commitments—usually a position of non-anthropocentrism only emphasizing nature's intrinsic value—management decisions are supposed to be deduced.[76] For instance, the prominent environmental ethicist Holmes Rolston III once stated (in a discussion of the plight of biodiversity in, and impoverished communities surrounding, Nepal's Chitwan National Park): "If I did not believe…that tigers have intrinsic value, if I did not believe that species lines are morally considerable, if I thought the values of tigers were only those that this or that culture chooses to assign to them, or not, I would not be making such efforts to protect them."[77]

This declaration came in response to a series of challenges made by early environmental pragmatists in the late 1990s, most notably Ben Minteer and Bryan Norton. These pragmatists were keen to point out what they believed to be the primary problem with the foundationalism that had arrested most environmental ethicists at the time, certainly those like Rolston in the non-anthropocentric mainstream. In his critique, Minteer, invoking a Deweyan perspective of a "public philosophy," worried that because most environmental ethicists had pre-occupied themselves with anchoring their ethics within principles ostensibly viewed to be metaphysically and epistemologically unshakable, the rich diversity of human values—which does not neatly fit within these principled constructs—is largely ignored.[78] For his part, Rolston replied to Minteer's

[75] Andrew Light and Eric Katz, "Environmental Ethics and Environmental Pragmatism as Contested Terrain," in *Environmental Pragmatism*, eds. Andrew Light and Eric Katz (New York: Routledge, 1996), 3.
[76] A closer look at this decision structure is undertaken in Chapter 3.
[77] Holmes Rolston III, "Saving Nature, Feeding People, and the Foundations of Ethics," *Environmental Values* 7, no. 3 (1998): 350. http://www.jstor.org/stable/30301647.

[78] Ben A. Minteer, "No Experience Necessary? Foundationalism and the Retreat from Culture in Environmental Ethics," *Environmental Values* 7, no. 3 (1998): 333–48.

argument by flatly admitting to his tolerance for foundationalism.[79] In particular, Rolston attempted to lay out how his philosophy actually squared with a culturally sensitive environmental ethic. As he wrote, "Should our environmental ethics be more 'culturally-occupied' (aka culturally constructed)? Ought it to be built up when various parties, choosing their values in nature, meet together democratically and put their puzzle pieces together?"[80] Rolston further suggested that to 'correctly' value a thing, we must acquire some knowledge about that thing.[81]

No pragmatist would seriously decry an attempt to understand the contents of nature and its processes through the lens of scientific investigation, so to Rolston, this must mean that the real search for the true state-of-affairs, a quest that, according to him, can be free from the false constructs of "interactive experience", is to rely on our privileged access to the 'Real' state-of-affairs. Whatever is gleaned in this pursuit is the sort of knowledge that counts and that ought to be guiding us in our valuations. Complicating this endeavor is the feeling that these values are objective so, in this pursuit, we are also looking for accuracy, for the correspondence of our knowledge with metaphysical reality. I am personally puzzled how this can be done absent experience although, admittedly, experience can sometimes lead to false conclusions. In expanding his point, Rolston suggests that his conviction to nature conservation is completely reliant on his apparent access to 'privileged' information about 'nature for real.'[82] Agreeably, Minteer explains in a follow-up paper that pragmatists can, without contradiction, be

[79] Holmes Rolston III, "Saving Nature, Feeding People, and the Foundations of Ethics," *Environmental Values* 7, no. 3 (1998): 354. http://www.jstor.org.ezproxy1.lib.asu.edu/stable/30301647.
[80] Ibid., 354.
[81] Ibid., 354.
[82] Holmes Rolston III, "Nature for Real: Is Nature a Social Construct?" in *The Philosophy of the Environment*, ed. T.D.J. Chappell (Edinburgh: University of Edinburgh Press, 1997), 38–64.

open to the kind of pursuit advocated by Rolston, although the articulation of environmental obligations is less universalist, more a question of context, and a process ultimately dependent on human valuers rather than the discovery of purported "objective" values in the environment. Indeed, there is a widespread intuition among pragmatists that there is more than crass instrumentalism available when attempting to justify the defense of nature and its resources, perhaps even something approaching intrinsic value, though a version that lacks the "trumping" power Rolston and others wish it to have in public debate.[83]

Having said this, the problem, in my reading, still remains for Rolston: how can it be possible that this axiological investigation is transcendent of human experience? In opening his initial rebuttal to Minteer, he speaks passionately about the great conservation and humanitarian work he and others have done in the Chitwan National Park—experiences that were no doubt formative (or at least reinforcing) to his belief in such noble causes. I find it hard to believe that Rolston would have instead ignored tigers and people had he a little doubt about the existence of nature's intrinsic value. Indeed, engaging and reflecting on these experiences, as will be detailed in the proceeding section, is a pragmatic dictum. The view held by Minteer and Norton (and myself, for that matter) is that we *can* and *do* conceive of natural features and goods because the type of knowledge that is accessible by all people—not just the ones that have the luxury to ponder philosophically dense and contentious metaphysics—is borne out of our experiences with our environments.[84]

[83] Ben A. Minteer, "Intrinsic Value for Pragmatists?" *Environmental Ethics* 23, no. 1 (2001): 57; Bryan Norton, *Toward Unity Among Environmentalists*, (New York: Oxford University Press, 1991), 9.
[84] The next section will discuss the pragmatic philosophy and commitments in more detail.

Norton and Minteer's pragmatic critique of non-anthropocentric environmental ethics also attracted the attention of J. Baird Callicott, another founder of the field and with Rolston one of the more ardent ecocentric philosophers in the tradition. Callicott sought to correct what he argued were misleading representations of his work by Minteer and Norton, suggesting that his fortified version of Aldo Leopold's land ethic is not anchored as axiomatically as might be believed on Minteer's reading.[85] In his defense, Callicott resorts to whataboutism, claiming that Norton ignores the dogmatism apparent in the rest of our American democracy—from Christian fundamentalists to neoclassical economists—suggesting that he himself is but a low-hanging fruit and of little consequence to the everyday lives of concerned citizens. Callicott reiterates that his philosophy is reportedly contingent on emergent observations from large domains of natural and social sciences which support a Leopoldean land ethic. Because our capacity for the type of moral extension advocated by Leopold (from humans to animals to land) is built-in, according to Callicott (via an evolutionary-Humean account of the development of our moral sentiments), we have an obligation to uphold such an ethic. This ethical system purports to maintain a sensitivity to evolutionary and ecological theory. Indeed, Callicott has revised his conceptual arguments based on new information brought to light in the field on ecology.[86] However, these claims (e.g. group selection has conferred "affective moral [responsiveness]"[87]) that seemingly support the whole

[85] J. Baird Callicott, "Science, Value, and Ethics," in *Democracy and the Claims of Nature: Critical Perspectives for a New Century*, eds. Ben A. Minteer and Bob Pepperman Taylor (Lanham, Maryland: Rowman & Littlefield Publishers, 2002), 109.
[86] J. Baird Callicott, "Do Deconstructive Ecology and Sociobiology Undermine Leopold's Land Ethic?" *Environmental Ethics* 18, no. 4 (1996): 353–372.
[87] J. Baird Callicott, "The Conceptual Foundations of the Land Ethic," in *Companion to a Sand County Almanac: Interpretive and Critical Essays,* ed J. Baird Callicott (Madison: University of Wisconsin Press, 1987), 195.

program, are treated as basic; that is, they are psychologically appealing premises that prop up proceeding claims that comprise his worldview. The difference between this 'weaker' version of foundationalism and the stronger, epistemological version eschewed by pragmatists is that the weaker only has psychologically justified premises which maintain fallibility. Norton claims that Callicott has not made his position distinct between the two types of foundationalism (strong, epistemological and weak, psychological) he identifies.[88] Pragmatism likely falls within this weakened version as described by Norton.

The intensity and fervor with which those like Rolston and (to a lesser degree, Callicott) hold their views when juxtaposed with the economic/utilitarian alternative to environmental ethics is understandable. But this attitude, I believe, is set up by a false dichotomy. The view that there are only two ways—non-anthropocentric/intrinsic versus anthropocentric/instrumental—and you have to choose one, is, in my mind, unfounded. The remainder of this section will continue to briefly track the development of environmental ethics, highlighting how it failed to separate itself from Western philosophical formulae. This hitchhiking ultimately led to a focus on articulating foundations at the expense offering practical guidance regarding environmental action and decision making.

To get the clearest idea about the development of modern, mainstream environmental ethics, it may be prudent to consider the contents of Western philosophy that was antecedent to it. Greek philosophy, which primarily inquired about how we

[88] Bryan G. Norton, "Democracy and Environmentalism: Foundations and Justifications in Environmental Policy," in *Democracy and the Claims of Nature: Critical Perspectives for a New Century*, eds. Ben A. Minteer and Bob Pepperman Taylor (Lanham, Maryland: Rowman & Littlefield Publishers, 2002), 20.

ought to behave toward one another and how to please the gods, serves as the basis for what we call Western philosophy.[89] Many came before Aristotle, but his prolificity and brilliance anchor him as the father of ancient or old philosophy such that St. Thomas Aquinas, distinguished in his own right, famously referred to Aristotle as "The Philosopher." Relevant to this discussion, Aristotle suggested that the 'principles of things' was "first philosophy." We understand the axioms from his extensive work, such as the law of noncontradiction, to be a blend of the domains of what are now referred to as logic, metaphysics, ethics, and epistemology. He expertly used these now distinct areas of investigation to elucidate this first philosophy. Although Aristotle's mentor Plato also discussed a first philosophy, two concepts that would preoccupy philosophical minds for centuries emerged more prominently in Aristotle's work.[90] These two ideas, closely related by their absolutism, are logical universals (i.e. a proposition that is either true or false in all possible, real or imagined, scenarios)[91] and the concept of epistemological foundationalism, that is, a theory of knowledge suggesting there are beliefs that do not (or cannot) require experiential verification. Despite this potentially puzzling feature, these foundations are viewed as necessary so that we might have justification for beliefs.

Foundationalism, according to Aristotle was the solution to an epistemological dilemma called 'infinite regress' or 'limitless dependence.' This dilemma just states that if we have good reasons for believing a claim that follows some premise, we are assuming that the premise must be the result of other good reasons where it itself is a

[89] Roderick Nash, "The Greening of Philosophy," in *The Rights of Nature*, ed. Paul S. Boyer (Madison, WI: University of Wisconsin Press, 1989), 122.
[90] Aristotle, *Posterior Analytics* I.3:5–23.
[91] While Aristotle is credited with the creation of this logical concept, the many writings that featured the idea of universals (and particulars for that matter, e.g. *some* as opposed to *all*) are ubiquitous and the chronology is somewhat debated. The *Organon* is a post-humous aligning of the Aristotle's logical work.

conclusion. Simply put, there must be some justification in believing any initial premise (e.g. if *p* and *q* because of *r*, then what good reasons for *r*?). Taken to its logical conclusion, we might spend our whole lives seeking justification for believing a single claim, looking for evidence at each step piecemeal. It is possible that some form of foundationalism and its connected philosophies has since remained historically popular throughout the Western world due to the uptick in monotheistic religious belief beginning two millennia ago. Divine command and religious canon provide a foundational ontology and corollary epistemology: we are justified in believing the claims that properly utilize, say, the Judeo-Christian Bible as source material because it allegedly comprises direct messages from the Creator. The most prominent foundationalist was probably René Descartes (1596-1650), himself a devotee to the Christian tradition, who wrote what is arguably the most well-known phrase (or some derivative) in philosophy: ego cogito, ergo sum. This is a Latin translation of "je pense, donc je suis" which appeared in Descartes (1637) *Discourse on the Method*. The loose, English version is the celebrated: "I am, I exist" or "I think, therefore I am."[92] The context of the phrase is to demonstrate that even in the face of hyperbolic doubt (i.e. all of Descartes' sensory organs were malfunctioning or providing false information due to physical or supernatural reasons), the fact that he can ponder the possibility of being misled must mean there is something capable of pondering—his mind. Descartes utilizes this foundation throughout his work, particularly in the *Meditations*, to begin justifying other, derivative knowledge, namely

[92] Fumitaka Suzuki "The Cogito Proposition of Descartes and Characteristics of His Ego Theory," *Bulletin of Aichi University of Education* 61, (2012): 73—80.

the existence of God.[93] Descartes remained an influential figure in all domains of philosophy as he appeared to be a replacement to the Aristolean creed, also serving as the catalyst for what is known as modern philosophy. This time period has been prolific, producing familiar thinkers such as David Hume, John Locke, Thomas Hobbes, Immanuel Kant, Karl Marx, many of which seems to take a foundationalist epistemology as granted.

This is, I suggest, where the preoccupation with a foundationalist theory of value preferred by many ethicists (including most environmental ethicists) might have begun. Indeed, in one of the early and most well-known arguments in environmental ethics advancing a biocentric theory of value, Kenneth Goodpaster (1978) examines the question, "In universalizing our putative moral maxims, what is the scope of the variable over which universalization is to range?"[94] Although Goodpaster sought to clarify the "framework for moral consideration"[95] such that the ethical extension Aldo Leopold advocates in *A Sand County Almanac*[96] is made logically possible, Goodpaster falls into the familiar foundationalist trap, ultimately outlining "a 'life principle' of moral considerability. He, like other environmental philosophers, laments the inability of conventional Western ethical theory to account for the environment in a direct moral

[93] It turns out that "I think, therefore I am," is the result of what's now known as the Cartesian circle. Essentially, Descartes reached into later chapters of his work to assist in dashing away the thought experiment of hyperbolic doubt (that his senses were being fabricated by a deceptive demon or some such). In this later work, Descartes argues that (a) god is perfect and (b) perfect beings do not deceive nor do they create deceptive beings. From (a) and (b) Descartes suggests that God would provide some guarantee that there is a graspable truth, but in order for him to grasp that truth, he needs the existence of God to assure no deception is occurring in the first place.
[94] Kenneth Goodpaster, "On Being Morally Considerable", in *The Journal of Philosophy* 75, no. 6 (1978): 309.
[95] Ibid., 320.
[96] Aldo Leopold, *A Sand County Almanac and Sketches Here and There* (New York: Oxford University Press, 1949), 201. Leopold sought to the inclusion of natural entities into our circles of consideration. He referred to this as an ethical extension in the same way we extended our circles from individuals to society.

sense, but Goodpaster stops short of offering an alternative to narrow, principle-driven, line-in-the-sand positions. He does close the essay by admitting that more thought needs to be given to the "balance of competing claims"[97]—a crucial task indeed to the supposedly applied field of environmental ethics; but one whose resolution does not seem available given such a dogmatic adherence to a single, universal moral principle purported to govern human-nature relations.

In *Nature in Common*, Ben Minteer (2009) gives a brief historical account to explain the emergence and sustained preference of non-anthropocentric arguments by the first salvo of (mostly American) environmental philosophers. He discusses the primary non-anthropocentric rejection of more anthropocentric approaches by Routley and Goodpaster, a move these philosophers defend by claiming that mainstream ethical theory appears to justify some form of human chauvinism.[98] It does seem that environmental ethicists readily adopted a non-anthropocentric principle (i.e. nature has intrinsic, immutable value) largely without challenging the inherited formula that underlies these undesirable Western ethical theories, although they expressly rejected these theories as insufficient for the development of a robust environmental ethic. That is, for an ethical theory to have any potency, the belief is that it must rest on some uncompromising foundation and only be composed of a kind of common denominator.[99] Up until the late 19th century, few alternatives to this thinking were given consideration. Likewise, nonanthropocentrists swapped one foundationalist stance, i.e.,

[97] Goodpaster, "On Being Morally Considerable," 323.
[98] Ben A. Minteer, "Unity Among Environmentalists? Debating the Values-Policy Link in Environmental Ethics," in *Nature in Common*, ed. Ben A. Minteer (Philadelphia: Temple, 2009), 3.
[99] Anthony Weston, "Beyond Intrinsic Value," in *Environmental Pragmatism,* eds. Andrew Light and Eric Katz (New York: Routledge, 1996), 289.

traditional/anthropocentric ethical projects that had proved destructive for the environment, for foundationalist biocentric or ecocentric arguments asserting the intrinsic value of nature. I believe this move resulted in a philosophical stalemate, while also taking attention away from the applied promise of environmental ethics. Instead, it forced a "first-principles" argument over whose foundation is the most unshakable, a debate that may be philosophically interesting but that does not get us very far in understanding the interplay and utility of alternative environmental ethics in decision making and practice. Enlightenment thinking may have pigeon-holed us into believing we already had all the tools and maxims necessary (i.e. reason) to sort out philosophical problems, but this unchanging nature is precisely why I think we may have run aground in the environmental enterprise. Unfortunately, to the field's principle-driven theorists, suggesting an approach that rejects the central role of foundational principles in environmental ethics amounts to heresy and has been widely controversial.[100] In the following section, however, I seek to explore and defend an alternative, an approach that has become known as "environmental pragmatism." As we will see, this mode of environmental ethics focuses less on authoritative statements of principle and more on processes of inquiry and decision making[101] and its applicability in an environmental context.

A Pragmatic Alternative

[100] Ben A. Minteer, *Refounding Environmental Ethics: Pragmatism, Principle, and Practice* (Philadelphia: Temple University Press, 2012), 10.

[101] I acknowledge the distinction between an ethic *of* the environment versus an ethic *for* the environment first brought to light by Tom Regan. Ultimately, the distinction is, in my view, useful only in disciplinary circles. That is, some level of philosophical sophistication is necessary to understand the difference here and I do not believe that the public—the target audience—meets said criteria. My view on this can happily change.

While the received narrative of environmental ethics suggests a very black-and-white set of choices—one in which various non-anthropocentric arguments dominate as the only viable alternative to what it said to be an arrogant anthropocentric outlook—here I will argue that pragmatism is better suited as a forward-thinking environmental ethics precisely because it can capture the real plurality of values (including human-regarding ones). Instead of beginning with incontrovertible rights-and-wrongs and fixed moral universals, most progenitors of pragmatism instead suggests that we ought to recognize and promote ethical pluralism, contextualism (i.e., the importance of distinct historic, cultural, and social-ecological settings in shaping what we know and value), and a general process of experimental inquiry into our moral, social, and political lives. Early American pragmatists such as Charles Pierce, John Dewey, and William James, however, were not explicitly concerned with environmental conditions and what today we could call "environmental ethics" in their work. In the rest of this section, I will therefore consider the origins of pragmatism to highlight and magnify certain elements and articulate how the pragmatic worldview has been appropriately seated within an environmental philosophy.[102]

According to philosopher A.C. Grayling (2005), American philosophical pragmatism began as a riposte to the prevailing philosophies in the late 19th and early 20th centuries. These philosophies, as detailed in the previous section, were marked by a certain metaphysical and epistemological absolutism, and therefore plagued by abstract and rigid understandings of truth, facts, and values according to the pragmatists. An intellectual bravery spurred the early pragmatic thinkers to establish their own 'school' of

[102] In Chapter 4, I dive specifically into the so-called Pragmatic Method. The contents in Chapter 3 are pre-requisite for that conversation.

thought, to push back against the dominant philosophical theories. The two primary sources of this bravery were probably the post-Civil War frontier spirit which saw these philosophically-inclined Americans consuming less of the Continental and British philosophies. And secondly, Darwin's theory of evolution, because it pressed forward the idea that adaptation is the result of a naturally selective process inspired early pragmatists to fashion a parallel problem solving and truth-seeking process, what we can think of as akin to the natural selection of ideas.[103]

Charles Sanders Peirce (1839–1914) is widely credited for kicking-off the pragmatic movement. One of the few defining features of the early pragmatic school was their experience-based approach to the 'verification' of claims, and this position was one that Peirce belabored.[104] In his earliest works, Peirce began connecting the norms of knowledge generation recognized in the scientific method with his own pragmatic worldview. He suggested that philosophers tended to raise frivolous reasons for doubting claims (and, in turn, propose outlandish thought-experiments such as the previously discussed Cartesian demonic inception) and that this did not capture the lived experience of the collective human mind. Instead then, what we ought to do is comfortably utilize a scientific method, treating new information as hypotheses, in everyday knowledge acquisition. We then come closer to an understanding of any given claim or proposition through its empirical and practical effects. If, for instance, we have just learned that knives are sharp, then we might hypothesize that they are capable of cutting, engage in

[103] Anthony Clifford Grayling, "Pragmatism," November 17, 2005, in In Our Time, produced by BBC Radio 4, podcast, MP3 audio, https://www.bbc.co.uk/programmes/p003k9f5.
[104] Christopher Hookway, "Pragmatism," in *The Cambridge History of Philosophy 1870–1945*, ed. Thomas Baldwin, (Cambridge: Cambridge University Press, 2003), 74–90.

the act of cutting with a knife, and therefore expect them to be used for such future tasks. As contemporary philosopher Robert Talisse describes, this anticipatory focus usurps the sometimes non-sensical explanations we might hear from philosophers.[105] The analysis that 'the knife instantiates the Platonic form of the sharp' is too abstract to be useful in everyday life and therefore is not part of the pragmatic agenda. Instead, Peirce thought we should be using words to convey their practical effects: the knife is sharp therefore it cuts. Capturing and deploying a 'method of science', Peirce says, will lead to a convergence between our opinions and the facts.[106] He further attaches a moral claim to this cognitive pursuit; clarifying that what remains of the utmost importance is a dedication to seeking out the truth. We ought not be dissuaded from this truth-seeking practice due to a consternation that we were wrong, or more eloquently said by Peirce, that our ideas were "rotten." Importantly—and to reiterate—Peirce did conceive of there being an objective truth 'out-there' but the way to move closer to (but perhaps never reach) this truth was through a scientific method.

Peirce's focus on the experiential and the verifiable was welcomed by his fellow pragmatists, but also critiqued for filtering out claims of aesthetics and values. William James (1842-1910) and John Dewey (1859-1952) believed that the contents of knowledge include claims about faith and values. James was keen to pick up on this point as the offspring of an especially religious father, Henry James Sr, and in some accounts, by various near-death experiences.[107] The narrow sense of pragmatism (or as James

[105] Robert B. Talisse, "Robert B. Talisse on Pragmatism," February 7, 2010, in Philosophy Bites, produced by Nigel Warburton, podcast, MP3 audio, 2:25, http://philosophybites.libsyn.com/robert_b_talisse_on_pragmatism.
[106] Charles Sanders Peirce, "The Fixation of Belief," *Popular Science Monthly* 12, (1877), 12.
[107] John Patrick Diggins, "The Pragmatic Affirmation: William James and the Will to Believe," in *The Promise of Pragmatism* (Chicago: University of Chicago Press, 1994), 118.

would have preferred to call it, humanism[108]) that Peirce offered would not allow one to test faith claims as hypotheses in some sort of scientific experiment. James, along with many other of his popular scientific contemporaries (such as Thomas Huxley), sought to insulate religious belief from the deluge of scientific theories that emerged in the late 19th century into the 20th and of which could be conceived as offering an alternative, secular explanation of reality. With James, the power of pragmatism came from the belief that "truth [is what] happens to an idea."[109] He continues:

> …the ordinary agreement-formula—just such consequences being what we have in mind whenever we say that our ideas 'agree' with reality. They lead us, namely, through the acts and other ideas which they instigate, into or up to, or towards, other parts of experience with which we feel all the while—such feeling being among our potentialities—that the original ideas remain in agreement.[110]

Like Peirce, James wanted to put beliefs up to the tribunal of experience, but he also thought beliefs need not originate with experience. To explain this caveat, it is first important to understand that James thought we should not endlessly search for a truth that mirrors some ultimate reality, departing somewhat from Peirce. He suggested that we cannot know when our knowledge accurately hangs with this ultimate reality and therefore, we ought not care if it does. The test is simply whether our beliefs are

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[108], Louis Menand, *The Metaphysical Club* (New York: Farrar, Straus and Giroux, 2001), 350;
This was the term FCS Schiller, James' close English friend used when he and James would correspond about pragmatism.
[109] William James, "Pragmatism," in *Pragmatism: A Reader*, ed. Louis Menand (New York: Vintage Books, 1997), 97.
[110] Ibid., 97.

instrumental in the *long-run* navigation of our lives or not.[111] Further, there are situations, that could warrant the acceptance (or consideration at least) of non-evidentiary claims, especially applied to the belief in religious deities. James's pragmatism is consistent with the idea that belief in a higher power can confer benefits (salvation, entrance into heaven, etc.) and if it pays to hold these benefits, then that belief is personally true. Presumably, no evidence will be supplied (until, possibly, after death) to support a religious doctrine, but what outcome might be expected—heaven versus hell, for example—should play a role in the sanctioning of a claim or belief.[112] James thought that this decision was simply unavoidable and that each of us would run up against this issue at some point in our lives. The problem is, as has been stated, that there is scant physical, testable evidence for the existence of God. Regardless, James thinks, we must choose to believe or not.[113] Moreover, whichever religious paradigm you find yourself in, the rest of your beliefs (and therefore actions) would be fundamentally different than if you were to choose the other side. Because we are forced to decide, without the aid of empirical evidence, and that this decision is "momentous", we turn toward the dividends the belief in God is said to pay out. These perceived dividends are all one needs to justify the belief in God.

The important point, though, was that James widened, philosophically speaking, and popularized Peirce's pragmatism. While ingesting Peirce's initial iteration of the pragmatic worldview in a small discussion circle they referred to as the Metaphysical Club, nearly simultaneously James was finding and notating appeals to what he viewed as

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[111] James, "Pragmatism," 93; Christopher Hookway, "Pragmatism," in *The Cambridge History of Philosophy 1870–1945*, ed. Thomas Baldwin, (Cambridge: Cambridge University Press, 2003), 83.
[112] Willliam James, "The Will to Believe," in *Pragmatism: A Reader*, ed. Louis Menand (New York: Vintage Books, 1997), 91.
[113] Julian Baggini, "Pragmatism," November 17, 2005, in In Our Time, produced by BBC Radio 4, podcast, MP3 audio, https://www.bbc.co.uk/programmes/p003k9f5.

'practicalism' in John Locke's *An Essay Concerning Human Understanding*.[114] Louis Menand—who provides the definitive history of the Club and its interlocuters—suggests that James may have arrived at the pragmatist station without Peirce's influence given James's dedication to the doctrine of free-will inspired by a French philosopher Charles Renouvier some years earlier.[115] The connection here is similar to that of James's argument for the belief in God. James argued that while no evidence may arise to confirm or disconfirm a metaphysical determinism,[116] we might as well reject this, and take the position that free-will is the true state-of-affairs by first believing that it is true. The feeling of overseeing one's own destiny is worth the possibility of being wrong about determinism. In fact, there is no punishment. Between this premise and the might-as-well-ness of religious belief, James was often criticized for a seeming wantonness of conviction.[117] Indeed, Peirce himself was amongst James's critics and this disagreement over the permissiveness allowed in James's version of pragmatism forced Peirce to invent a new 'school' to distinguish his views from James's, which he called pragmaticism.

While William James was indeed the most vocal orator and popularizer of pragmatism—which he publicly attributed to Peirce in an attempt to pull him (Peirce) from self-inflicted poverty—John Dewey utilized the populist appeal of pragmatism to blur the lines of philosophy and carry it further into the American zeitgeist. Dewey, originally a disciple of Hegelian thinking, distinguished himself early as an educational reformer, although the areas he went on to reform transcended education. Dewey's

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[114] Ralph Barton Perry, *The Thought and Character of William James* (Nashville, TN: Vanderbilt University Press, 1996), 299.
[115] Louis Menand, *The Metaphysical Club* (New York: Farrar, Straus and Giroux, 2001), 355.
[116] As in one-ness, wherein we accept the whole conception of the universe or reject it. James's discussion on free-will supported his view that the universe is instead pluralistic.
[117] Ralph Barton Perry, *The Thought and Character of William James* (Nashville, TN: Vanderbilt University Press, 1996), 215.

contributions are numerous, but his argument encased in *The School and Society* is perhaps the most enduring as it relates to pragmatism (a later work, *Education and Democracy,* would compete for that title as well). In it, Dewey's pragmatism blooms and he suggests that learning-by-doing is one of the most effective pedagogical approaches that more institutions ought to be undertaking.[118] This folds into his view that the norms of science experimentation are simply refined and systematized versions of the way humans think generally.[119] Importantly for Dewey, he understands activities of learning, inquiry, and experimentation as social enterprises. Dewey's pragmatism ultimately had more in common with James than it did with Peirce, but this point about social groups and community shares its intellectual origins with Peirce's view that truth is that which stands up to scrutiny by peers. Dewey's conception of truth followed from this involvement within social groups, an idea he referred to as warranted assertibility.[120] Dewey understood that even the systematized version of inquiry (read: scientific testing) does not necessarily lead to capital-T truth, as Peirce explained. Instead, results we get from rigorous experimentation and from general problem-solving behaviors merely lead to claims that we would have reasons to put forth in a public setting. That which we are warranted in asserting is best seen as a statement of probability. Contra to his analytic philosophical critics such as Bertrand Russell, Dewey clarifies that for us to consider these assertions knowledge, is appropriate.[121] The first admission in the process of inquiry is to acknowledge that evidence, reasons, procedures, and the like are not

[118] John Dewey, *School and Society* (Chicago: University of Chicago Press, 1899).
[119] Talisse, "Robert B. Talisse on Pragmatism," 10:41.
[120] John Dewey, *Logic: The Theory of Inquiry* (New York: Henry Holt and Company, 1938), 4.
[121] John Dewey, "Propositions, Warranted Assertibility, and Truth," *The Journal of Philosophy* 38, no. 7 (1941), 179.

infallible and therefore the conclusions we might reach through this process are not either. Indeed, what might be entered as evidence for or against some proposition could change at any given moment.[122] In the present though, for something to be asserted with warrant just means that those who hear a claim are likely to nod their heads, that there is a consensus surrounding the good reasons to accept the truth of the idea.

It should be no surprise that Dewey's conception of truth (settled on through the process of "competent inquiry"[123]) relied on the engagement with a community of interlocutors. Much of the advocacy he went on to practice involved imagining a society that emulated his scientized understanding of truth (i.e. that the products of inquiry are self-corrective because they are exposed to groups of deliberators). In the nomenclature of political systems, this is essentially a participatory democracy.

The late Richard Rorty, probably the most well-known neo-pragmatist (and responsible to no small degree for the revival of pragmatism in philosophical and cultural circles in the last third of the 20th century), took up issue with Dewey's alleged worship of the scientific method and the institution of science in general, though he did champion a loose Deweyan theory of truth.[124] One of the main contentions is that Rorty perceives an elitism conferred by a scientific standard of knowledge, one that might privilege information that has its origins in the institutions (i.e. loose organizations governed by similar rules and codes of conduct) of science.[125] Like his pragmatic predecessors, Rorty was discontented by the dominant philosophical trend during his formative years. Rorty,

[122] Dewey, Logic: The Theory of Inquiry, 9.
[123] Ibid., 8.
[124] Richard Rorty, *Philosophy and Social Hope* (New York: Penguin Books, 1999), 32.
[125] Ben A. Minteer, "Deweyan Democracy and Environmental Ethics" in *Democracy and the Claims of Nature: Critical Perspectives for a New Century*, eds. Ben A. Minteer and Bob Pepperman Taylor (Lanham, Maryland: Rowman & Littlefield Publishers, 2002), 39.

in his eloquence, discussed the utility of his neo-pragmatism as "merely…an effort to clear away some alder and sumac, which sprang up during a 30-year spell of wet philosophical weather - the period that we now look back on as 'positivistic analytic philosophy'.[126] And so he felt even more strongly about retrieving the concepts of knowledge and truth from the grips of Science and placing it into the hands of the commoner, true to his Trotskian (or at least socialist) upbringing.[127] While Rorty thinks of this as a point of departure between himself and classical pragmatists (esp. Dewey), Ben Minteer points out that he probably was much more similar to Dewey than he chose to believe, especially given Rorty's very Deweyan reliance on experimental inquiry.[128] Richard Bernstein, whom I reference in the next major section, also takes issue with Rorty's characterization of Dewey's politics. Indeed, if it hasn't been made clear at this point, Rorty was as known for his pragmatism as he was for his apparently controversial positions—an opinion of himself that Rorty was disappointed with.[129]

One of the lasting impressions Rorty left, especially as it pertains to the pragmatic mode of environmental ethics, is a distinction between private and public philosophy. In *Contingency, Irony, and Solidarity*, Rorty discusses the state-of-affairs that would obtain if we give up on making our private and public beliefs commensurate with one another.[130] What this does, Rorty claims, is it confers the existence of what he calls, the 'liberal ironist'; a human that desires the end of (human) suffering, but simultaneously does not see the purpose in entertaining the sort of moral thought experiments like the

[126] Richard Rorty, *Philosophy and Social Hope* (New York: Penguin Books, 1999), 96.
[127] Richard Rorty, *Contingency, Irony, and Solidarity* (Cambridge: Cambridge University Press, 1989), 7.
[128] Minteer, "Deweyan Democracy and Environmental Ethics" in Democracy and the Claims of Nature: Critical Perspectives for a New Century, 37.
[129] Rorty, Contingency, Irony, and Solidarity, 5.
[130] Ibid., XV.

Trolley Problem,[131] because they are infinitely unlikely to occur as constructed. Indeed, Rorty thinks that this search for either metaphysical or theological formulae redirects our attention away from engaging in the actual abatement of suffering as we are compelled to first seek out an answer we may never find before acting. We find ourselves hung-up here because of philosophy's inherent resistance to holding more than one theoretical justification for being both as an individual and as a citizen. Rorty discusses the discord between Nietzchean autonomy and Deweyan communitarianism—where each blames the other for leading to irrationality and moral failure. If only, he laments, we could rid ourselves of this orderly predisposition (one that a majority of 'nonintellectuals' are committed to, he admits), we would find ourselves in a utopic society populated by ironists that creates solidarity between citizens and squelches cruelty.[132]

Although there are numerous pragmatists that might have been summoned here to support the explication of an environmental pragmatism (e.g. Jurgen Habermas, George Mead, W. V. O. Quine, and others), their exclusion is due to the breadth and depth of the pragmatic tradition. The topic of concern in the proceeding section—the commitments staked out by pragmatists—were primarily developed by the three classical pragmatists profiled in this section (i.e. Peirce, James and Dewey). Rorty's inclusion here as the sole neo-pragmatist is primarily due to his Deweyan torch-bearing and his public- and

[131] Judith Jarvis Thomson, "The Trolley Problem," *The Yale Law Journal* 94, no. 6 (1985), 1395. "Suppose you are the driver of a trolley. The trolley rounds a bend, and there come into view ahead five track workmen, who have been repairing the track. The track goes through a bit of a valley at that point, and the sides are steep, so you must stop the trolley if you are to avoid running the five men down. You step on the brakes, but alas they don't work. Now you suddenly see a spur of track leading off to the right. You can turn the trolley onto it, and thus save the five men on the straight track ahead. Unfortunately, Mrs. Foot [Philippa Foot, original proposer of the trolley problem] has arranged that there is one track workman on that spur of track. He can no more get off the track in time than the five can, so you will kill him if you turn the trolley onto him. Is it morally permissible for you to turn the trolley?"
[132] Rorty, Contingency, Irony, and Solidarity, XVI.

political-facing philosophy which has been, in my view, a weakness in environmental ethical discourse. Thus, Rorty serves as a source of inspiration toward the improvement of our relationships with one another in an environmental context. Although he has been roundly criticized, even by fellow pragmatists like Richard Bernstein,[133] I see Rorty as a kind of keystone species for the proliferation of a pragmatic ethics, especially applied to the environment.

The Pragmatic Commitments.

Reflecting on the 100 years of pragmatic writing that preceded him, the contemporary neo-pragmatist Richard Bernstein (mentioned above) described his own version of the pragmatic ethos as possessing a handful of defining features: 1) anti-foundationalism, 2) fallibilism, 3) obligation to membership in a critical community, 4) reflexivity to contingency, and 5) pluralistic.[134] A short summary of these elements is helpful in understanding the distinctiveness of philosophical pragmatism -- and its suitability for the more experimental, democratic, and naturalistic mode of environmental ethics I defend in this dissertation.

The *first* commitment, anti-foundationalism, is an epistemological position referring to the importance of experience. Pragmatists argue that we do not gain knowledge (including facts and values) absent experience. Experience is essential to our intellectual development. Therefore, contra to the foundations upon which supposed innate, intuitive knowledge rests, pragmatism suggests that these foundations either do

[133] Richard Rorty, *Rorty & Pragmatism: The Philosopher Responds to His Critics*, ed. Herman J. Saatkamp, Jr., (Nashville, TN: Vanderbilt University Press, 1995).
[134] Richard J. Bernstein, "Pragmatism, Pluralism and the Healing of Wounds," *Proceedings and Addresses of the American Philosophical Association* 63, no. 3 (1989), 5.

not exist or are, at the very least, are not accessible by us. This view allows the pragmatist to avoid entering the metaphysical debate altogether.

Secondly, due to the way we must go about retrieving knowledge (i.e. empirically), we have no guarantee that it is correct, that is, all knowledge is fallible. We must rely on our sense organs and the signals they send to our brains to gain and maintain knowledge, but we each have innumerable examples when our experiences and more poignantly, our memories of events, have been faulty. Simply put, we could be wrong.

If the information we retrieve through experience is potentially false, how do we go about minimizing and correcting our mistakes? The *third* component of the pragmatic ethos suggests that we can easily test our knowledge against the collective experience. This requires one to become a part of a critical, democratic community whose members reflect upon propositions, either accepting or criticizing them in good faith. Over time, knowledge is vetted by the critical community, comparable to the way the modern scientific method (i.e. hypothesis testing and peer review) is deployed. This of course, does not mean consensus comes without risk. Just as we have individually made perceptive mistakes, it is possible for a group to do the same (e.g. uninformed readers of very subtle, satirical publication *The Onion* for instance).

Fourthly, pragmatists are sensitive to the inescapable uncertainty in "…the universe, our inquiries, our lives"[135] and simply accept that decisions often need to be made without perfect information. Most metaphysical arguments seek to remove chance, contingency, and risk to justify universal maxims (e.g. the debate over free-will versus determinism: either that all actions are the antecedent of some other action thus none of

[135] Richard J. Bernstein, "Pragmatism, Pluralism and the Healing of Wounds," *Proceedings and Addresses of the American Philosophical Association* 63, no. 3 (1989), 9.

our choices are really ours, or there is true autonomy and our thoughts/actions are ours). Although metaphysical arguments are not empirical, we can suppose that the same way a hypothesis would be rejected if there were some countervailing evidence, universality fails if one chance event is not accounted for in a metaphysical argument. Because this area of philosophy has been largely ignored by pragmatists due to this lack of experiential validation, the rejection of metaphysics is both a reason for doing so and a result. The focus then is on the actual contents of experience and not on what some philosophy says we should be experiencing.[136]

Pragmatism, while bearing some intellectual relation to it, also departs from the tradition of analytic philosophy (the two developed alongside one another in the late 19th century although analytic wisdom supplanted pragmatism in influence as the 20th century wore on). Critically speaking, analytic argumentation engenders confrontation and attack through pointed debate. The objective of a debate is to win, either through making genuinely superior arguments or making your opponent appear inferior. There is an inherent obsessiveness in the analytic program that stresses accurate and precisely defined terms and structural logic. The claim here is not that accuracy or logic is somehow undesirable, but it does have some time insensitive qualities. Debate indeed does have its place in society, such as in front of a judge, but the possibility for social learning is muted compared to a dialogue. Pragmatists prefer to recognize and resolve disagreements in a so-called "dialogical encounter" where differing points of view are considered in the best possible light and are not so hastily dismissed or assailed. As evidenced within the Plato's account of the *Socratic Dialogues* (probably the most well-

[136] Kelly Parker, "Pragmatism and Environmental Thought," *Environmental Pragmatism*, eds. Andrew Light and Eric Katz (New York: Routledge, 1996), 25.

known ‘academic’ example of this methodology) this does not always lead to consensus. Allow me to make at least one more appeal to authority: Nelson Mandela credited the successful dissolution of South Africa’s apartheid to the use of the dialogic method that allowed for “justice and social cohesion.”[137] Regardless, skepticism about the efficacy of dialogue as a teaching and learning instrument is indeed welcome. Responding to critiques in depth is beyond the scope of this paper however.[138] Analytic skills are not discarded in a dialogical encounter. Pragmatists just posit that the lack of sensitivity and dominating attitude that is engendered from argumentation is unlikely to help reach an amicable result.

This is the basis for the *fifth* axiom, pluralism.[139] The recognition of many perspectives, experiences, and modes of thinking do not cloud the decision sphere. Rather, differences and uniqueness are encouraged as it may lead to intellectual innovation. New ideas are more likely to arise out of dissimilar groups than within homogenous ones. This is especially relevant in environmental management where tunnel vision and attitudes about “the right way” are prevalent.

To summarize: Because we have no access to intuitive knowledge, we must gain it through experience. Due to chance and contingency, our knowledge via experience could be partial or wrong (fallible), therefore we must share our experiences and

[137] Peter Neville Rule, *Dialogue and Boundary Learning* (Rotterdam, Netherlands: Sense Publishers, 2015), 12.
[138] I’ve found Linden (2004), who provides a thorough history of the use dialogical encounters starting with Socrates in the first chapter a valuable resource in addition to Vella and Ashworth (2007) who gives numerous practical examples of dialogical learning in classrooms in the eleventh. I have taken some of this work seriously as I have attempted to employ the pseudo-dialogical method (probably ineffectively) in a seminar on conservation, ecology, and ethics which I taught in the Spring of 2018 at Arizona State University.
[139] Richard J. Bernstein, “Pragmatism, Pluralism and the Healing of Wounds,” *Proceedings and Addresses of the American Philosophical Association* 63, no. 3 (1989): 5–18.

knowledge with one another to reduce the chance of being mistaken. This sharing community functions best if members can engage in productive dialogue. The community must, further, be open-minded to multiple points of view in order for this dialogue to occur.

Pragmatism as an Environmental Ethics?

The pragmatic focus on experience as the birthplace of (any and all) knowledge means that experience is also the origin of value. Kelly Parker (1996) succinctly offers the pragmatist line on values: "The question of ethics—'What is good?'—ultimately brings us back to questions about what is experienced as good in the interaction of the organism with its environment."[140] This expression is a recapitulation of what the early pragmatists thought about the emergence of truth and value. Here Parker highlights the implicit transactional and relational nature of our existence—a major concern of Dewey's—and how we can start to think about connecting old-school pragmatism to contemporary environmental problems. Dewey considers a so-called 'consummate experience' as one in which an individual is actively engaged with and absorbed by their environment and is perceptive of this relationship.[141] This is the pinnacle of aesthetic experience as a person in this mode is deriving value from the both the action (as an interactive being) and a follow-up, reflective phase that can ascribe said action as having some value. For example, hearing a joke told by a comedian can beget laughter (the action); contemplating why it was funny and spurring one to re-tell the joke puts a cap on the experience, making it consummatory.

[140] Kelly Parker, "Pragmatism and Environmental Thought," *Environmental Pragmatism*, eds. Andrew Light and Eric Katz (New York: Routledge, 1996), 25.
[141] D. C Mathur, "A Note on the Concept of "Consummatory Experience" in Dewey's Aesthetics," *The Journal of Philosophy* 63, no. 9 (1966): 225–231.

The environment, and others within it, grants these experiences. Whatever the 'good' is, will largely depend on what space the person asking the question occupies. If we are serious about living meaningful lives, then we ought to also take seriously the context in which those lives occur—that is, the environment. This requires investigation, it requires empirical work so that we may create an understanding of what people *are* valuing and how they continue to seek said value out. It should be clear though, that because pragmatists think it is a mistake to separate humans from nature, there is therefore a bi-directionality in impact; that is, insofar as the environment has influence on any individual, that individual influences their environment. This attitude holds for the multitude of environments in which humans derive value. In philosophical terms, this means that pragmatists reject a spectator theory of knowledge—that what we know is simply piped in from *somewhere*—and accept that knowledge (again, this includes the generation of values) is created through continuous interactions with others and our environments.

As much as I believe environmental pragmatism seeks to move away from what we typically consider academic philosophy, intellectual divisions are still created as if it were fastened securely within it. The so-called "substantive" environmental pragmatists such as Bryan Norton and Ben Minteer prefer that we do not forget about the likes of William James, John Dewey, Charles S. Peirce and the rest of the principal figures. I tend to agree more with the "methodological" pragmatist Andrew Light, who worries that using these names (and their philosophical commitments) to replace the more familiar, contemporary voices in environmental ethics does not dissuade philosophers from

discussing metaphysical properties, far removed from every day environmental issues.[142] Rather, it may continue to muddy the waters and hamstring the promises of environmental pragmatism. It is also possible that we avoid an overreliance on appealing to 'authorities' to frame the kinds of questions we want to address. The world in which pragmatism was created is now vastly different, so we should avoid, inasmuch as possible, a sole interest in importing hundred-year-old arguments. Light argues, however, that this need not always be the case. Certainly, we should not abandon all attempts to press and argue over the most ethical positions and to describe our duties with the natural world in philosophical terms. There is indeed value to be derived from the examination of the hard work others have done (hopefully this has come across in the intellectual review above). However, if all philosophers have to offer are esoteric ramblings, then we remain self-serving and irrelevant to the larger environmental management community which neutralizes the benefits of a pragmatic environmental ethics in my view. In fact, this position was held by Dewey himself, who suggested that "philosophy recovers itself when it ceases to be a device for dealing with the problems of philosophers and becomes a method, cultivated by philosophers, for dealing with the problems of men [and women].[143] Light notes, and the empirical work I presented in the introduction of this dissertation affirms, that the majority of those relevant policy makers (and thus their policies) are overwhelmingly directed toward humans, signaling a niche that environmental philosophy has yet to fill. We should, in addition to fulfill these 'traditional' philosophical duties, serve as moral interpreters. He calls upon philosophers

[142] Andrew Light, "Methodological Pragmatism" in *Animal Welfare and Hunting*, eds. Erin McKenna and Andrew Light (Bloomington, IN: University of Indiana Press, 2004), 121.
[143] John Dewey, "The Need for a Recovery of Philosophy," 1917.

to fulfill this "public" task, namely, to translate moral, philosophical views into more digestible arguments that are more likely to be picked up on to create and justify policy, even if the views do not resonate with their own perspective.[144]

I feel that this is an important step to distance environmental ethics from its so-far deserved stereotype as just another brand of ivory-tower philosophy in search of metaphysical foundations. Not that the pragmatist commits himself to any sort of theoretical justification for this move, but insofar as it is required, it is found within Rorty's private vs. public distinction (discussed above). Andrew Light follows Rorty's distinction and argues that a compatibilism between divergent camps might be achieved if we separate our disagreements into these two conversational spheres.[145] The pragmatist can offer contingency—descriptions about potential states-of-affairs that motivate discussion and action towards those desirable states.[146] For environmental issues, this side-steps metaphysical disagreements over whether or not conservation efforts like de-extinction returns the *full* value (or any) of a species and focuses on the practical consequences (e.g. the potential effects of species revival).

A series of legitimate critiques directed toward pragmatism must be addressed through the course of this research. For instance, there is some worry that the reliance on the democratic process distracts from the real problem of procedural justice, e.g. non-present voices, including non-humans, or future voices. The pragmatist who optimistically believes that deliberation should involve *all* actors who might be affected by decisions is certainly naïve. In practice, this move is difficult to pull off. Some parties,

[144] Light, Methodological Pragmatism, 124.
[145] Andrew Light, "Compatibilism in Political Ecology," *Environmental Pragmatism*, eds. Andrew Light and Eric Katz (New York: Routledge, 1996), 161.
[146] Light, Compatibilism in Political Ecology, 176.

despite their stake in particular situations, will decide not to exercise their ability to participate for any number of reasons ranging from ambivalence to a sympathy for intense individualism. Further, the willingness and ability of interlocuters to actually reach fair and just resolutions is a fairly optimistic perspective—an increasingly untenable position given the current political divisions in the United States. Because pragmatism is said to prop up the democratic value of compromise, one can imagine a debate settling on the least common denominator, which does not typically result in good (i.e., protective) results outcomes for the environment. And lastly, pragmatism assumes that decision making contexts work alongside concerns of procedural justice, but yet, no empirical evidence has been laid forth to protect these claims. Each of these detractions, and others, are broached in the fourth chapter in the context of environmental management. No promises can be made that these concerns can be assuaged in light of the commentary there, only the acknowledgement that this is far from a perfect enterprise and much more work is in order.

Conclusion

So far, the evidence presented suggests that the narrow language of environmental ethics, as described by its own progenitors, has not been able to pierce the policy discussions held at the highest level in the United States. The natural language processing approach, topic modeling, uncovered no evidence to suggest that both larger themes nor any specific language used to construct moral arguments for the protection of the natural world in the most formative time (the late 1970s) diffused into the *Congressional Record* roughly a decade later. Admittedly, this is a somewhat disappointing, but unsurprising conclusion given, as I've argued here, the foundationalist formula that was retained by

the early environmental ethicists as the field branched off the trunk of Western philosophy. In my view, the disappointment is warranted. The purpose of doing environmental ethics is to bring awareness to the moral issues that underlie environmental problems, therefore ethicists should be interested in the efficacy of their approaches, the loudness of their voices, the bite of their arguments. They ought to be interested in creating inroads with conservationists, land managers, natural resource technicians, and perhaps most importantly, policy makers. On some of these fronts, there is perhaps success to be lauded.[147] Between Stone (2003) and the topic modeling experiment performed in the previous chapter, it appears that the effort to influence policy has not been as successful. Considering that the body of work is now approaching 50 years old and is core to legitimate research programs in universities in the United States and across the world, this is disconcerting result, one that prompts the line of questioning presented in this chapter. That is, there are perhaps philosophical reasons (i.e. that the overwhelming focus on foundational, metaphysical arguments is confusing and strange to outsiders) that this uptake in policy has been slow or non-existent. A remaining and important piece to discuss is the questionable import that environmental ethics might have for practitioners and will be broached in the proceeding chapters. But briefly here, the concern is in regard to how environmental ethics can guide decision making in various ecological contexts, in areas that exist on the spectrum between completely wild to thoroughly urban.

I therefore suggest, as a hypothesis, that pragmatism applied to the environment, which is largely influenced by 19th century philosophers living in the United States, more

[147] Dave Foreman, "The New Conservation Movement," *Wild Earth* 1, no. 2 (1991): 8.

likely tracks the lived experience of members in the environmental management community because focuses on value pluralism, recognition of context, attention to contingency, and deliberation as a means to problem-solve as its ethos. I do not advocate that the current environmental ethics program be replaced by this pragmatism. My wish is to merely help to construct an ethical program for the environment which is responsive to increasingly socially diverse locales and unpredictable climatological conditions. We have a human sustainability problem and I believe an evolution toward planetary stewardship is one of the key pieces necessary to move forward more humbly as a species. In some places that means we might most effectively offer an argument for protection by an appeal to a non-foundationalist version of the intrinsic value of nature; in others, we might have to live with the fact that an ecosystem services argument will be the most potent. The upshot of rejecting foundationalism is that you might realize that various ethical arguments for environmental protection do not need to stand in juxtaposition with one another. Rather, they can be viewed, by analogy, as screws with which you need to match the proper drive.

To find on-the-ground support for this alternative to environmental ethics narrowly conceived—pragmatism—an in-depth look at the innerworkings of management and practice in two on-going environmental interventions will be undertaken in Chapter 4. My plan for arriving at this evidence is to utilize a tradition within the management community called adaptive co-management. I will discuss the suitability of this management tradition in Chapter 3 but will first provide a lay of the land of the adaptive co-management tradition in Chapter 2.

The real cases deploying this management framework will serve as the laboratory to test these pragmatic claims. This, however, is not simply a question of does adaptive co-management work, but *how* does it work, are the results better than alternative schemes, what limitations faced by practitioners can be addressed by the 100 years of pragmatic thought?

PART II: Methodological Argument

3. CONTEXTUALIZING ADAPTIVE COLLABORATIVE MANAGEMENT

In response to our increasing commitment to manage the environment, unintended consequences and ecological stochasticity remains the cause for some trepidation. The difficulty of successfully implementing an environmental intervention in a complex ecosystem is compounded by surprise and uncertainty inherent in these systems. This fact is not a new revelation, but has indeed been one of the reasons some environmentalists prefer a hands-off management—or unmanaged—approach (although many will argue that this perspective has become untenable as humans increasingly shape their environments to meet the needs of a growing global population). In response, the framework of adaptive management evolved as a riposte to the anxiety of surprise, uncertainty, and inefficiency of management decisions. Together, with the democratic, collaborative governance tradition that has its own origin story, adaptive management has formed the aptly named adaptive co-management framework.

One of the more recent, widely circulated publications, simply named *Adaptive Co-Management,* arose out of a series of meetings discussing the evolution and convergence of the adaptive management and co-management theories.[148] The result was a bridging of narratives that took the participatory focus of collaborative management and married it with the methodical, learning-by-doing style of adaptive management. With this synthesized management approach, relevant stakeholders devise plans, typically with many alternatives, reflecting upon successes, failures, while taking advantage of group expertise to (re)inform their policy and practice. To better uncover some of the issues with adaptive co-management and also explicate its strengths, breaking the framework

[148] Derek Armitage, Fikret Berkes, and Nancy Doubleday, eds., *Adaptive Co-Management: Collaboration, Learning, and Multi-level Governance* (Vancouver: UBC Press, 2007).

down into its component pieces is a necessary first step. The proceeding two sections will do just that and will be followed with a more in-depth discussion specifically about adaptive co-management.

Adaptive Management

Much of what we now understand to comprise modern-day ecology, biodiversity conservation, and the new science of sustainability can be attributed to various watershed moments in the late 18th and early 19th centuries. For instance, as Georges Cuvier campaigned for the idea that species can actually disappear, the concept of extinction (and of limits) was being demonstrated in real time all across the globe. If any historical case of species disappearance in America stands out, it is probably the passenger pigeon. Famously, John James Audubon (of the National Audubon Society fame) described his 55-mile day trip across the American mid-west in 1813 not as secluded and dull as we might expect. Instead, he claimed his caravan across the plains was overwhelming and crowded. Audubon estimated that he was joined by over a billion passenger pigeons overhead; with flocks so dense that they had blotted out the mid-autumn sun.[149] Unfortunately, the last surviving passenger pigeon died in 1914, just 100 years after Audubon's journey due to the mistaken view that we could not hunt enough of them.

The example of the passenger pigeon demonstrates how at times we have tended to manage resources myopically, specifically without consideration that natural resources, often viewed simply as a storehouse of goods, could be finite. Systems of resource (loosely defined to include biodiversity) management have been designed and implemented by various governmental and institutional bodies enforce a rule of

[149] Jerry Sullivan, "The Passenger Pigeon: Once There Were Billions," *Hunting for Frogs on Elston, and Other Tales from Field and Street,* (Chicago: University of Chicago Press, 2004).

sustainable harvest and use so that we might not repeat these past mistakes. Over time, as research in and monitoring of our natural resources increased in competency, many different frameworks have evolved to help address our limitations in planning and understanding. One such framework is adaptive management, which emerged out of a set of theories related to workplace efficiency in the beginning of the 20th century.

History.

Frederick Winslow Taylor developed his theories of workplace management with consideration of President Theodore Roosevelt's near simultaneous call for the conservation of America's natural resources. Taylor opens his seminal work—*The Principles of Scientific Management*—lamenting the waste of the country's resources, but also arguing that our inefficiencies in harvesting, manufacturing, and distribution are of equal concern if we are really worried about resource waste. This form of loss, Taylor argued had not yet garnered "public agitation" as much as the cries to simply prohibit resource extraction. In this context, Taylor proposed that to absolve our "suffering through inefficiency", we must take a scientific approach to workplace management that relies on laws, rules, and principles.[150] And Taylor took this suffering literally and suggested that relieving the burden on the working class and crushing poverty was directly linked with the reduction of natural and human capital wastes.[151] Using the hypothetical example of a bricklayer on the job, Taylor claimed that improved efficiency (and therefore, greater production and less waste) might not come through assumptions

[150] Frederick Winslow Taylor, "The Principles of Scientific Management," in *Scientific Management*, (New York: Harper and Brothers, 1947), 2. 1–144
[151] J.C. Spender, "Villian, Victim, or Visionary?: The Insights and Flaws in F. W. Taylor's Ideas", in *Scientific Management: Frederick Winslow Taylor's Gift to the World?*, eds. J.C. Spender and Hugo J. Kijne, (Bostong: Kluwer Academic Publishers, 1996): 13. 1–32

about the best procedures handed down through generations of bricklayers (or other workers), but through an intentional combination of testing and experience. Although Taylor failed to acknowledge that it is possible that intergenerational knowledge (like the kind that could be handed down from master to apprentice) could rest on a strong experimental foundation, he emphasized the need for continued reflection and improvements to carve the most efficient path forward.[152]

In the early to mid-1900s, natural resource managers began viewing themselves as part of the larger professional, scientific community. This charge was led mostly by famed conservationist Gifford Pinchot who established the Society of American Foresters and recruited and trained career foresters through an endowment to Yale University (where renowned conservationist Aldo Leopold attended). Pinchot was a proponent and popularizer of Taylorism (known more broadly as the efficiency movement) and, indeed, his utilitarian conservation ethic was almost solely informed by Taylor's scientific efficiency mantra. While serving under President Theodore Roosevelt as his Chief of the United States Forest Service, Pinchot helped to link resource conservation to the wider efficiency movement as it began permeating throughout the United States. Pinchot's embrace of Taylorism (and market driven resource extraction) ran up against many of the traditional nature preservationists, most notably, Sierra Club co-founder John Muir who held a more aesthetic and spiritual outlook toward nature and were deeply suspicious of the "wise use" philosophy of resource management. Although the likes of Muir did not agree with Pinchot's methods, they were a vast improvement of the boom-and-bust style

[152] Taylor, "The Principles of Scientific Management," 82.

of nature management that proceeded the 20th century and Taylorism.[153] According to Carl Walters, one of the early, leading minds on adaptive management, it was common for managers to believe that resources were so abundant that the stock might as well be infinite and therefore little to no long-term planning was necessary and scarcely took place. Problems could simply be solved by waiting until the next season's crops or cultivating in a different plot. It became clearer that this myopic, reactive management would not suffice if the burgeoning population were to have their demands satisfied. Guided and urged on by an increasing public awareness, a transition began as Taylorism and the search for efficiency took root in the newly-formed professional circles of resource managers. The case could be made that sustainability was an undercurrent in the early theory building adaptive management writings.[154] Since these original writings however, contemporary commentators have linked adaptive environmental management with the more normative, human-centered version of the concept that now enjoys wide layman's use.[155]

This morally charged version departs somewhat from the original understanding and purpose of management: "alteration undertaken in order to make the environment what was conceived as a better place to live in—more productive food, shelter, water, mineral resource, or other useful products."[156] C.S. Holling is keen to note the inertia that this style of management has built and acknowledges that, at the same time, the world is

[153] Carl Walters, *Adaptive Management of Renewable Resources*, (NY: MacMillan Publishing Company, 1986): 1.
[154] Ibid. 20.
[155] Bryan Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, (Chicago: University of Chicago Press: 2005).
[156] C.S. Holling, ed., *Adaptive Environmental Assessment and Management* (England: John Wiley and Sons, 1978), ix.

shrinking—cities are growing, more and more land is converted from natural landscapes to cultivated ones and signs of human activity are ever-present—and so we must abandon the view that space and resources are unlimited. Unlike when previous generations were told "Young Man, Go West,"[157] there is no more "West." Instead, of seeking out a new "unexploited resource, an unsettled piece of land, a new river to dam," there is now a kind of impasse that was not experienced in the same way by "our fathers."[158] His opening statement in the seminal work *Adaptive Environmental Assessment and Management*, grapples with this state-of-affairs and then lays out the case for why an adaptive management approach is necessary considering this information. He continues, criticizing previously popular management schemes which tended to focus on the economic and social goals first while secondarily considering environmental constraints. These schemes also attempted to enforce social, economic, and environmental stability; however, we now know that these systems exist in a kind of flux, more dynamic and complex than was previously understood. They were primitive in their environmental accounting, unable to accurately capture the inherent stochasticity present in natural systems and therefore led to unpredicted degradation. Curiously, little reflection on these continuous collapses took place. A few hundred years ago, resources seemed plentiful and the sources of them expansive. As Holling suggests, we have entered a crisis period where reflection on past mistakes is necessary if we are to adopt sustainable attitudes.[159] A new conversation brewed about how we ought to be interacting with one another and

[157] C.S. Holling, ed., *Adaptive Environmental Assessment and Management* (England: John Wiley and Sons, 1978), 5.
[158] Ibid. 5.
[159] Ibid. 1.

our environments to ensure there will be something 'natural' left for future generations—if we want that at all.

Unfortunately, taking care of these resources is messy and indeed, one of those wicked endeavors. The many alternatives that exist (e.g. trial-and-error, expert driven, cost-benefit analysis, conflict resolution), have been relied on to move toward a fairer/more just allocation of resources, although this is not always the case in practice.[160] Theorists, practitioners, and attentive citizens, probably sooner, but most loudly in the middle of the 20th century, began to express their dissatisfaction with these existing management schemes. This disappointment would extend to Taylor's scientific management although many of the failures of Pinchot's former department—the United States Forest Service, which vociferously employed a scientized management system—could be explained by regulatory capture. Either way, the need for a more reliable form of management was answered by C.S. Holling and Carl Walters in the late 1960s. Kai Lee, the third member of what I refer to as the adaptive management tripartite, would follow a couple of decades later. Some of their writings will be discussed in the following section.

Theory.

Unintended consequences and uncertainty have received considerable attention in contemporary management circles.[161] It is mainly with this issue that adaptive managers continue to grapple as the world undergoes unprecedented changes and increased environmental variability. Importantly, adaptive managers profess to understand the

[160] Paul Nadasdy, "Reevaluating the Co-Management Success Story," *Arctic* 56, no. 4 (2003): 367–80.
[161] Per Olsson., Carl Folke, and Thomas Hahn, "Social-ecological Transformation for Ecosystem Management: The Development of Adaptive Co-management of a Wetland Landscape in Southern Sweden," *Ecology and Society* 9, no. 4 (2004): .

interconnectedness between human and natural systems, so we could be warranted in adding that social, economic, and political turmoil and unpredictability are, likewise, issues that environmental managers need to consider in designing their management schemes. This is usually operationalized in terms of 'resilience', a characteristic of a system that describes its ability to withstand perturbations and maintain essential functions, even if there is some reorganization. Resilience is the new mantra in the Anthropocene. That is, there is some consensus around the idea that all our management actions ought to be deployed in service to desirable social-ecological resilience.[162]

One of the first earnest attempts to codify the adaptive management framework into a repeatable formula was undertaken in a book edited by C.S. Holling (1978) called *Adaptive Environmental Assessment and Management*. The collection was the result of a series of meetings where experts (whose experience included pest control in North America, to European agricultural development, to South American disease control, and much more in between) pooled their knowledge to create a set of recommendations for the implementation of what became formally known as adaptive management. Holling describes the impetus for this undertaking as stemming from the disconnect between policy and reality. He argues that this gap causes some consternation amongst policy makers and managers, hamstringing decisions and causing them to ignore the potential of surprise, even when it might be anticipated.[163] This habitual misstep is an opportunity for the implementation of adaptive management which embraces the inevitability of perturbations and shocks.

[162] Brian Walker, C. S. Holling, Stephen R. Carpenter, and Ann Kinzig, "Adaptability and Transformability in Social-Ecological Systems," *Ecology and Society* 9, no.5 (2004).
[163] Holling, Adaptive Environmental Assessment and Management, 7.

Holling and his colleagues were among the first researchers to define resilience as a property of an ecological system, which, if taken into proper accounting in management schemes, would show that there is a "…need to keep options open, the need to view events in a regional rather than a local context, and the need to emphasize heterogeneity."[164] The idea here is that ecological resilience is best engendered by a series of adaptive actions from informed actors. These informed actors will know that surprising and unexpected events occur in nature (e.g. forest fires) and are indeed, often intrinsic to a system's continued persistence. So, just to be able to imagine certain possibilities gives us, perhaps, the acumen to employ management activities in a way that 'absorbs' these events. In general, the pathway to resilience can be juxtaposed with a more stable-seeking regime. Stability then, just means that management activities are designed to limit natural fluctuations and engender predictability.[165] To put a practical face on the difference between resilience and stability one might look at policies necessary for the management of fisheries in the Bering Sea versus whatever policies and practices might exist for the Rainbow Trout Farm in Sedona, Arizona. Attempting to establish the same kind of command-and-control standards in a fish farm in a larger, more dynamic environment that is sensitive to external inputs will simply be a waste of time and resources. In order to not squander the limited opportunities that remain, it would be wise to establish sustainably extractive regimes. Holling, in the end, advocates

[164] C.S. Holling, "Resilience and Stability of Ecological Systems", *Annual Review of Ecology and Systematics*, no. 4 (1973): 21.

[165] The juxtaposition would apply at smaller scales, whereas the 'higher' the scale, the more resilience seems to comport with stability. For instance, forest fires are part of a landscape's fire regimes which can refresh the ecological processes such as opening seed banks, aiding in nutrient cycling by clearing underbrush. Activities like these occur at smaller scales. Fires at the landscape level are demonstrable of both stability and resilience, while viewing the same processes in patches could yield opposite determinations.

for a management framework that emphasizes resilience over stability.[166] These resilience-building management schemes, according to Holling, need to possess the following attributes:

(a) Environmental dimensions deserve equal consideration next to economic and social dimensions in the policy design stage.

(b) The design should include interdisciplinary voices and rest on consensus.

(c) The benefits of increasing social, economic, and environmental knowledge in areas where gaps exist should be incorporated into the design.

(d) Managers, like laboratory scientists, can learn from change, therefore management activities that seek to fill in knowledge gaps should be treated as hypotheses.

(e) Setting up monitoring procedures to capture expected changes is integral to testing these hypotheses.

(f) Deciding how to deal with the unexpected is equally an important part of the design process. That is, there will be a decision between policies and activities that seek to reduce the significance of unexpected events and ones that simply react to them, which may be less expensive.

(g) Actors will need to be comfortable with and, in some cases, move to create institutional change. In many developed countries, engendering stability (not resilience) by reducing annoyances is, de facto, the management goal. This

[166] Holling, "Resilience and Stability of Ecological Systems," 21.

> might mean an unwillingness to implement adaptive policies which are designed to capitalize on disturbance, risk, and opportunity.[167]

This narrative intentionally implicates both the professional resource manager and the everyday citizen who may not be aware that their actions have rippling ecological consequences. To be able to earnestly describe our global community as sustainable, we need to bring about a sea change thereby leaving future generations as well off as we are, and not worse which is where we appear to be trending. The resilience framework therefore places the onus on us to behave in ways that add to or maintain/improve the resilience of (desirable) systems. Of course, the opposite is possible (maybe even more likely) where we are unhappy with the functioning of a system (e.g., degraded farmland), so appropriate and intentional actions would have to take place to reverse the course here. We could still describe such a degraded system as resilient—*how* resilient is just proportional to the effort it takes for the system to change its character. In service to this idea, Holling, repeats such a sentiment and continues, suggesting that the heretofore use of the word 'assessment' be cast aside for the more active and appropriate term for what is actually necessary: management.[168]

Adaptive management, echoing much of Holling's and Walters's descriptions, is more than just blind attempts at getting something right. Another notable proponent of adaptive management, Kai Lee, extends these arguments with the useful metaphor of a *Compass and Gyroscope*, also the name of his most enduring work. The compass, according to Lee is the process of adaptive management, which is "...for us to use in

[167] Holling, Adaptive Environmental Assessment and Management, 37.
[168] Holling, Adaptive Environmental Assessment and Management, 37.

searching for a sustainable future."[169] The gyroscope—bounded conflict—is the perhaps Lee's most well-known contribution to the theory of adaptive management and where, like Taylor was about the workplace, he is explicit about the social and political aspects of environmental management, mainly that they ought not be ignored. Lee explains this half of the metaphor as follows:

> Conflict can either enhance or prevent learning. Because learning requires that observations be made over times of biological significance and spatial scales that transcend property lines and political boundaries, conflict can thwart the learning necessary to reach sustainability. Yet conflict is also indispensable to defining, over time, a socially sustainable order, because it impels institutions toward such a search in the first place.[170]

As Lee describes the necessity of conflict, he must also mean that there is a genuine openness of political proclivities, much like the generally free societies of currently developed nations. Clearly, there are some issues that extend past environmental management in countries where tyrannical authorities prevent the sharing of a productive dialogue. This is a concern that I will revisit plainly in Chapter 4 as a pluralistic, democratic society rests as the foundation of my core arguments.

Lee defines adaptive management as the "treatment of economic uses of the environment as experiments, so that we may learn efficiently from experience."[171] Recognizing the limitations of human cognition, very much in the pragmatic spirit, Lee invokes the idea of *bounded rationality* which just states that there exists some limit to

[169] Kai N. Lee, Compass and Gyroscope: Integrating Science and Politics for the Environment, (Washington D.C.: Island Press, 1993), 9.
[170] Ibid., 88.
[171] Ibid., 8.

our mental resources and that running up against this limit, does not entail irrational behavior based on faulty decision making. The correspondence between adaptive management and bounded rationality (and, as I will argue in the 4th Chapter, a pragmatic epistemology) is quite striking. Lee states that decisions would, of course, be best if made on the full-sweep of information that is relevant to a given choice, but not only do we lack the mental capacity to wrangle with all the different alternatives, we cannot always have access to all them.[172] Therefore, we make selections based on what is satisfactory at the time, a good enough choice on a restricted set of good enough options. In this context, management decisions are best described as tenuous given the possibility that new, conflicting information arises in the wake of such a choice or if actor's preferences change. The results of any policy in an adaptive management scenario are thus susceptible to scrutiny based on the consequences it incurs. Alternatives in our restricted set can then be culled as new ones are added based on earnest monitoring and reflection. And the cycle continues forth as a mental hierarchy of good ideas is continually constructed and refined.

Importantly, Lee does not merely proselytize for adaptive management. While I (and Lee) believe that it comports accurately with the way purposeful learning occurs in everyday life, there are institutional costs to consider. Firstly, some problem that requires an immediate resolution could find the tedious application of adaptive management problematic. A 'catch-22' for sure, time pressure is one kind of aggravating variable that makes a decision-maker want for the clearest understanding of the present situation—but

[172] Ibid., 52.

that takes time. As the decision zenith[173] approaches, the stakes increase as do the costs of getting the decision wrong.[174] Certainly though, if the adaptive manager was thrust into such a time-sensitive situation, the outcome is as likely to be desirable as if it were undertaken by a command-and-controller or natural resources manager, for instance. Indeed, it might even occur to the adaptive manager that there are others who might be more suited for the management of an environmental problem. A raging wildfire, for example, is unlikely to be successfully adaptively managed, so the adaptive manager might consider moving aside for someone with more experience. This common critique (i.e. that adaptive management is unfit for scenarios which require immediate results) assumes that an adaptive manager will only promote a final decision after multiple, smaller iterations have occurred to inform it. To be clear, the iterative process is essential to the establishment and achievement of long-term sustainability goals. However, no adaptive manager would threaten the whole system in service of any blind adherence to incrementalism but would indeed attempt to salvage the system so that long-run management is consequently viable.[175] Indeed, the precautionary principle as outlined in the 1992 Rio Declaration suggests that practitioners should not point to incomplete

[173] This zenith is just a heuristic I developed to help further my own understanding of a generic time-linear decision-making process. The beginning of this process is problem/management detection followed by the data gathering and scenario planning phase in the adaptive management sense. A last-minute management decision is unlikely to produce the desired results due to the ever-present buffer of social-ecological stochasticity, so there might be a point at which any management action that follows from a decision is ineffective. This unknowable and elusive point is what I refer to as the zenith. In short, it is the last point in time that an intervention would be effective.

[174] In this thought-experiment, there is only time for one management directive. The 'correct' or 'effective' choice can only be judged by the outcome, but presumably this opens the door for a more genuine adaptive management scenario to take place. Any 'wrong' decision here, and the resource/species/service is lost, therefore no management scenario would be appropriate afterwards.

[175] If we grant that adaptive management *per se* cannot be adaptive management until at least one experiment (policy/decision) has gone through implementation and subsequent monitoring, then I can accept the critique as partially accurate. I would be interested in gathering data toward the claim that a certain type of management (or manager) finds more success than others in these time-sensitive situations.

information as a reason for inaction where cost-effective measures exist.[176] It's perhaps possible that a period of inaction could include punctuated learning so that a more reliable course of action could be determined.

Relatedly, the organizational burden for the proper implementation of adaptive management is real[177] and indeed, is positively correlated with the spatial scale at which management activities are occurring.[178] The more technical versions of adaptive management that are supported by most U.S. federal agencies (see: Stankey, 2005; Williams, 2009) are seemingly equal parts environmental and administrative leadership. These sorts of programs demand expert attention to set up and maintain the decision-making, monitoring, and information disseminating apparatus. This all means that weaknesses at any of these points can threaten the efficacy of the whole project. For instance, early descriptions of some of these pitfalls came from examples where important tasks were not always assigned to the relevant stakeholders. Indeed, in one of the earliest examples of earnest adaptive management found in Holling's (1978) seminal work,[179] monitoring and interpretation were performed by a single person representing a group that would economically benefit from the presence of particular results.[180] At least in this case, the monitoring and evaluation phase was underway, when in many others, managers become fatigued from constant "sampling design, data collection and

[176] United Nations Conference on the Human Environment, "Rio Declaration on Environment and Development." http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm
[177] Byron K. Williams and Eleanor D. Brown. "Adaptive Management: From More Talk to Real Action," *Environmental Management* 53, no. 2 (2013): 459.
[178], George H. Stankey, Roger N. Clark, and Bernard T Bormann., eds. *Learning to Manage a Complex Ecosystem: Adaptive Management and the Northwest Forest Plan*. Res. Pap. PNW-RP-567. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 139.
[179] Holling, Adaptive Environmental Assessment and Management, 143–182.
[180] Rebecca J. McLain and Robert G. Lee, "Adaptive Management: Promises and Pitfalls," *Environmental Management* 20, (2006), 440.

summarization, database management, and data assessment" and thus, "many managers are unable or unwilling to continue these activities for extended periods of time."[181] The burden on adaptive managers only increases when accounting for the ever-present financial constraints.

Seemingly, any adaptive management scheme that can be considered a success appears to do so against the odds. Lee follows up these concerns with some reasons why this system of management should be preferred over others.[182] Firstly, he argues that adaptive management is useful when intervening in the processes of large-scale ecosystems. It is likely, although not always the case, that the larger and more complex the system is, the more uncertainty initially exists within it. One manager (or group of managers) would be hard pressed to 'know' the innumerable causal relationships that are present in any given system. The process of adaptive management can gradually make these relationships clearer by using policies as experiments. Conversely, Lee suggests that types of interactions we can emulate in laboratories are not generalizable to open ecosystems that are susceptible to perturbations. Lastly, chances are that in most resource spaces there is already some management infrastructure or policy designed at the ecosystem level. We simply gather more information more quickly with large scale interventions (and monitoring). To expose my biases, these considerations can be distilled into the following conditional:

1. Adaptive management is the best strategy to employ in uncertain conditions where there are likely to be surprises.

[181] Williams, "Adaptive Management: From More Talk to Real Action," 469.
[182] Lee, *Compass and Gyroscope*, 68.

2. Managing living natural resources is typically an uncertain practice likely to produce surprises.
3. Therefore, adaptive management is the best strategy for managing natural resources.

Ideally, levels of expertise and source of knowledge means less than stakeholders reaching and acting upon agreeable terms. Adopting a democratic focus supports, in principle, the integration of Traditional Ecological Knowledge (TEK),[183] adding new perspective and (uniquely but not exclusively, qualitative) observations into the system.[184] This need not refer solely to indigenous knowledge, but instead captures the practice and the experience of everyday life of involved stewards for instance. Coincidentally, Berkes et al. (2000) recognize parallels between the development of TEK and adaptive learning. That is, the information contained within any given TEK tradition can often be attributed to lessons learned from trial-and-error environmental management over generations.[185]

If we agree that the persistence of humanity is desirable, then we ought to be looking for ways to engender sustainable behavior. Adaptive management channels this possibility. The real potency of the argument for adaptive management, at least in my

[183] Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook* 3, Montréal, (2010). According to the Convention on Biological Diversity, Traditional Ecological Knowledge is knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds.
[184] Fikret Berkes, Johan Colding, and Carl Folke, "Rediscovery of Traditional Ecological Knowledge as Adaptive Management," *Ecological Applications* 10, no. 5 (2000).
[185] Ibid., 1252.

view, comes from the fact that it makes good sense even in the best of environmental conditions.

Collaborative Management

Collaborative, cooperative, or community resource management (shortened: co-management) is intended to be an inclusive management strategy with potential for "bottom-up" outcomes. Many (e.g. Pinkerton, 1989; Curtin, 2007; Wyborn and Bixler, 2013; Redpath et al., 2013) recognize that this feature is essential to getting resource or conservation projects to work long-term. Co-management has a diverse set of understandings, but one generally accepted conceptualization proffered by Carlsson and Berkes (2005) is that it is the process of social actors representing different strata of organization negotiating, deliberating, and deciding upon fair divisions of labor, resources, risks, and rewards.[186] The authors admit the various and diverse impressions of co-management, but confidently acknowledge its benefits: Gathering information and implementing changes is more effective in reaching desired outcomes. Decisions regarding resource allocation and when/where to harvest and other logistical decisions are made by those who will carry out the actions, thus there is a keener eye (even implicitly) toward procedural justice. Longer-term planning including protecting land from degradation and over-exploitation (i.e. a common's tragedy) and enforcing regulations is also made easier by including actors whose fates are tied with the resource in the decision-making process.[187] Indeed, the simple act of bringing players together to

[186] Lars Carlsson and Fikret Berkes, "Co-management: Concepts and Methodological Implications," *Journal of Environmental Management* 75 (2005): 66–67.
[187] Evelyn Pinkerton, Co-operative Management of Local Fisheries: New Directions for Improved Management and Community Development, ed. Evelyn Pinkerton (Vancouver: University of British Columbia Press, 1989).

sit at the decision table is likely to reduce the conflicts experienced 'in the field' due to creation of more democratic and de-centralized agreements.

Inquirers including centuries past philosophers, more contemporary evolutionary biologists and sociologists each devote a small portion of disciplinary interest to the question: *how* and *why* do we act collectively? This fundamental question of human behavior is significant to predicting and directing the trajectory of our planet's limited resources, including biodiversity. Although implicating climate change and its comorbid social and ecological effects has developed into an intellectual trope, it keeps problems of collective action relevant for forward-looking academics, activists, and environmental management professionals.

Here, I will briefly outline the collective action problem (CAP) as defined within the most well-known literature before discussing an approach that might most explicitly address them—co-management. This will involve referring to lessons learned from common-pool resources and institutions literature, from some empirical/experimental economics literature and a greater blend of literature in the behavioral sciences indicating that a truly interdisciplinary treatment is necessary for the resolution of CAPs and the adoption of a co-management framework (of which there are many).

History.

Some of the most notable, classical philosophical works involved deep discussions on the nature of collective action between people. References to cooperation and to cohesion amongst citizens can be found in Plato's *Republic*, most notably in Book's II and V, although references appear throughout this work and in *Laws*. One such example occurs in the dialogue between Plato's Adeimantus and Socrates in Book II,

where Plato's Socrates states, "…because we have many needs, and because one of us calls on another out of one need, and on a third out of a different need, we gather into a single settlement as partners and helpers." He continues: "…if they share things with one another—if they give something to one another, or take something from one another—don't they do so because each believes that this is better for himself?" Adeimantus replies in the affirmative.[188] Plato clearly thought that the contents of a peaceful and prosperous city involved the buy-in from its citizens. This view was parroted by Thomas Aquinas in *Kinship* (and many other renaissance era writers) and picked up again centuries later by renowned modern, political philosophers including Thomas Hobbes, John Locke, and David Hume, among others. In *Leviathan*, Hobbes speaks clearly about the necessity of cooperation amongst men (and women) lest we remain in a state of perpetual unrest, what he referred to as the 'state of nature.' John Locke appealed to a similar, raucous scenario referring to his own pre-civilized world as the 'state of war' in his fabled work *Two Treatises of Government*. Contained within the classic, *A Treatise of Human Nature*, David Hume's interpretation of cooperation between people relies on self-interest. Nonetheless, Hume understands cooperation as a forward-looking contract between a person and her community. Once these contracts have been set, such as when you promise a favor to someone, not only might you be shamed or even ostracized, you'd also be acting immoral if sufficient reason did not exist for you to keep that promise. This 'fidelity', according to Hume is a virtue that develops among interacting peoples and supports their continued, trustful interactions.

[188] Plato, "Republic" in *Classics of Moral and Political Theory*, ed. Michael L. Morgan, 75–251 (Indianapolis, IN: Hackett Publishing, 2005): 100.

As it should be clear, despite their different interpretations on what might motivate us to cooperate, even collaborate with one another (as in, work together to reach some common end), these philosophers thought it was foundational for creating and maintaining a functioning society. Now that we have these 'functioning' societies, new externalities have arisen that require even more coordination and social ingenuity.

Using different language, these early philosophers were indeed foreshadowing this problem that has now garnered much of our attention in sociology, economics, and biology. David Hume, for instance, spoke to the difficulty of coordination amongst sufficiently large groups, including how likely free-riding may be:

> Two neighbours may agree to drain a meadow, which they possess in common; because 'tis easy for them to know each others mind; and each must perceive, that the immediate consequence of his failing in his part, is the abandoning the whole project. But 'tis very difficult, and indeed impossible, that a thousand persons shou'd agree in any such action; it being difficult for them to concert so complicated a design, and still more difficult for them to execute it; while each seeks a pretext to free himself of the trouble and expence, and wou'd lay the whole burden on others.[189]

Perhaps the most famous work on collective action, *The Logic of Collective Action* written by economist Mancur Olson in 1965, turns its attention toward to the common view that like individuals tend to form groups and these groups tend to direct their energy towards shared goals. With a simple analogy of companies in competitive markets, Olson

[189] David Hume, *A Treatise of Human Nature*, Book III, Part 2, Section 7, Paragraph 8. Retrieved from: https://people.rit.edu/wlrgsh/HumeTreatise.pdf

allows us to rethink the relationship of individuals to their respective groups: all companies have a shared interest in high prices for their goods, but they also want to sell more than their competitors, assuming their goods are substitutes.[190] The result of this tension is that for any company attempting to maximize their profits (e.g., by increasing output to meet marginal costs), the market price for the good can be expected to fall following the logic of supply and demand. For any company that is interested in a higher price, it will take a shared effort by all its competitors to reduce output to achieve this increase, thereby inducing scarcity. However, it is simultaneously in any given company's interest to pass costs on to other competitors by having them reduce output, while not abating itself.[191] But this cannot be achieved without some sort of mutually assured destruction scenario. No company with any common sense would intentionally reduce output to allow competitors to produce more and therefore allow their competition to sell more at this inflated price. Through this simple market analogy, we can intuit that any given individual in a group has an interest in reaping benefits from the group's activities, but is also interested in doing nothing to receive them. The upshot is that to sustain long-term use of resources, users need not think like a corporation and treat other users as competitors, instead, they ought to think of other users as collaborators. This explanation by Olson also mirrors the tragedy of the commons narrative, first recognized by Lloyd (1833),[192] expanded upon in earnest by Gordon (1954),[193] but popularized by

[190] This just means that a consumer could choose either products from say company A or company B to satisfy some desire.
[191] Mancur Olson, *The Logic of Collective Action*, (New York: Schocken Book, 1965): 10.
[192] Lloyd, William Forster, *Two Lectures on the Checks to the Population*, (Oxford, UK: Oxford University, 1833).
[193] Howard Scott Gordon, "The Economic Theory of a Common-Property Resource: The Fishery", *The Journal of Political Economy* 62, no. 2 (1954): 124–142.

Hardin (1968).[194] Avoiding the now famous 'tragedy' is really a collective action problem.

As we've seen, in the Anthropocene we have encountered and will continue to encounter novel sustainability challenges that will likely test the limits of our collaborative capacities given the wide-spread impacts that are likely to occur. Organizing a culture of collective action absent sustainability challenges is, by itself, a monumental task. But perhaps, as will be detailed below, the urgency surrounding these challenges will instigate a shift in the collective consciousness.[195] Co-management, according to management practitioners, is a logical approach to overcome resource issues through building and leveraging partnerships.[196] The benefits and uses of a co-management framework will be covered in the following section.

Theory.

A perceived threat is one of the key features that may jumpstart a collaborative enterprise. This is one of the conclusions detailed by social psychologist Michael Tomasello. He further articulates three conditions that facilitate collaborative activities (1) coordination and communication, (2) tolerance and trust, and (3) the presence or creation of norms and institutions.[197] The existence of these characteristics together allows us to "engage in collaborative activities with a joint goal and distinct and

[194] Garret Hardin, "The Tragedy of the Commons", *Science* 162 (1968): 1243–1248.
[195] For instance, House Resolution 109 of the 116th Congress, colloquially known as the Green New Deal quickly garnered a plurality of public support, even from politically opposed constituents. See: Abel Gustafson, Seth Rosenthal, Anthony Leiserowitz, Edward Maibach, John Kotcher, Matthew Ballew, and Matthew Goldberg, *The Green New Deal has Strong Bipartisan Support*, Yale University and George Mason University. New Haven, CT: Yale Program on Climate Change Communication (2019).
[196] Lars Carlsson and Fikret Berkes, "Co-management: Concepts and Methodological Implications," *Journal of Environmental Management* 75 (2005): 65.
[197] In this context, Tomasello details how human cooperation is distinct from the cooperation seen in great-apes. These three features are not observed in the same manner in ape communities as they are in human groups.

generalized roles, with participants mutually aware that they were dependent on one another for success."[198] Tomasello is keen to note that cooperation does not have an intrinsically normative direction. That is, cooperation is also used to further less than savory ends and certainly this issue has received plenty of attention as we have seen a rise in political tribalism.[199] Due to the way we evolutionarily developed the capacities listed above (i.e. in localized groups) and due to our communities becoming increasingly transnational and sometimes geographically disconnected, Tomasello recommends that we attempt to redefine our groups to be more inclusive, to avoid hostility where possible and to not allow there to be an 'enemy'. But others (e.g., Pelling and Dill, 2010; Brundiers, 2016; Mochizuki and Chang, 2017) think that this is an opportunity to turn the group-think toward a positive outcome. In some respects, many sustainability minded activists and environmentalists have for many years been attempting to demonstrate that a warmer climate is, indeed, antagonistic to our shared existence. The hope shared among these activists and nature sympathizers is simply that adaptations and behavioral corrections occur before any tragic events (e.g. natural disasters) unfold on unsuspecting and ill-prepared peoples. Even if we are not able to move quickly enough, emerging research suggests that there are opportunities that are borne from disasters.[200] Importantly then, we ought to ask what management tools we have at our disposal currently that may abate—to the extent possible—the effects of climate transience and the effects that may precipitate. Taking the cue from psychologists like Tomasello and the robust research tradition in natural resources management, clearly, cooperation will be necessary.

[198] Michael Tomasello, *Why We Cooperate*, (Boston: MIT Press, 2009): 99.
[199] Correia et. al, Polarization in the US Congress, 2.
[200] Junko Mochizuki and Stephanie E. Chang, "Disasters as Opportunity for Change: Tsunami Recovery and Energy Transition in Japan," *International Journal of Disaster Risk Reduction* 21, (2017): 331–339.

Conceptual and analytic frameworks have recently taken center stage in an attempt to understand how we can best cooperate (i.e. define and reach objectives) to get ahead of local resource collapse.

Ostrom, Gardner, and Walker (1994) provide a deep dive into the management of common pool resources. To reiterate, a common pool resource is such that one's use of it deprives other's use, but those others have unlimited access to the resource; that is, the resource is rivalrous but not excludable. The typical charge, as alluded to above, is that this type of resource will be quickly depleted as users compete with one another to acquire as much as possible.[201] Despite the overall social benefit from cooperative use, and in the cases of renewable public goods, abatement, much of the early theory suggested that self-interest would always win out.[202] If a user decides to secede from cooperative action, we would expect all other users to dissolve their agreements in turn and wantonly extract resources as a race to the bottom proceeds. Any optimist who abates in an attempt to sustain the resource would be worse off as resources all around them are taken up, just like the firm reducing output while its competitors sell more product at higher prices for their goods as in Olson's (1965) example. Ostrom and her collaborators admit that tragedies do indeed occur, but so does sustained cooperative behavior, where conscious extraction, for instance, is instead the norm.[203] As Ostrom (1998) recognizes,

[201] Elinor Ostrom et al., *Rules, Games, and Common-Pool Resources,* (Ann Arbor, MI: University of Michigan Press, 1994): 5.
[202] Sergey Gavrilets, "Collective Action Problem in Heterogeneous Groups", *Philosophical Transactions of the Royal Society B* 370, (2015): 1–17.
[203] Elinor Ostrom, "A Behavioral Approach to the Rational Choice Theory of Collective Action", *American Political Science Review* 92, no. 1 (1998): 6.

we have so far prevailed because our predecessors learned "how to undertake collective action to solve social dilemmas."[204]

At least two levels of collective action problems are identified in the literature, often called first and second order problems.[205] The first is the common sense understanding of a collective action problem: the over-exploitation of common pool resources (CPRs), the over-supply of negative externalities, free-riders in pure public good scenarios, etc. The second is more nuanced and nested. These are referred to as problems of coordination and enforcement that threaten the credibility of resolutions to first order problem.[206] Social coordination itself can be understood as a public good in most cases because it is neither exclusive nor rivalrous in terms of participation and its proper working facilitates the rules set to resolve the common-sense, first order collective action problems that, again, are beneficial to the greater population. Largely, two strategies have been entertained to overcome the pitfalls associated with collective action problems in common pool resource scenarios.

One such strategy entertained by early academics involved in deciphering collective action problems was the establishment of property rights. Before rights can be gainfully determined, Schlager and Ostrom (1992) argue that ambiguities lurking in the descriptions of the types of rights people had on their land need to be addressed. They do this by developing a conceptual schema intending to make clear the incentives an individual might have dependent on their level of authority over land (and the resources within it). The authors describe four types of positions: Owner, Proprietor, Claimant, and

[204] Ibid., 1.
[205] William Ferguson, Collective Action & Exchange: A Game-Theoretic Approach to Contemporary Political Economy, (Stanford, CA: Stanford University Press, 2013): 352.
[206] Ostrom, "A Behavioral Approach to the Rational Choice Theory of Collective Action," 5.

Authorized User. The owner (which could be more than one person) has all kinds of rights, including access and withdrawal, management, the ability to exclude others (exclusion), and the ability to sell access (alienation). A claimant maintains all rights except alienation while a proprietor also loses the right to exclusion. Authorized users are just that, they have access and can use resources.[207]

The tendency for us to rely on the establishment of property rights to resolve CPR problems is recognized in both the conceptual literature and in practice (see: Orensanz and Seijo, 2013; also briefly discussed below). Interestingly, the penchant for spatial rights-based institutions to emerge in common pool resources dilemmas has also been demonstrated in experimental settings.[208] Janssen and Ostrom (2008), with the aid of a computer program, simulated a common pool resources dilemma and asked groups of students to navigate it, motivated by real cash rewards for average group harvest. The students were separated into groups and asked to capture tokens that would periodically respawn. Students were 'competing' with 4 other anonymous students in one bounded resource environment which they all interacted with from their own computer terminals. The authors state that the entire system was depleted quickly in the first simulation, but with subsequent rounds (and discussion between rounds, removing the veil of anonymity), the players began to develop rules of use, increasing their take with each round of experience. Relative to the first round of resource harvest, subsequent rounds showed a drastic and significant increase in resources collected by the groups, which was reinforced in a third and final round of harvesting (again, after a discussion). Interested in

[207] Edella Schlager, and Elinor Ostrom, "Property-Rights Regimes and Natural Resources: A Conceptual Analysis", *Land Economics* 68, no. 3 (1992), 252.
[208] Marco A. Janssen and Elinor Ostrom, "TURFS in the lab: Institutional Innovation in Real-Time Dynamic Spatial Commons", *Rationality and Society* 20, no. 4 (1998): 371–397.

the strategies that players used to increase their harvests, the authors created a spatial concentration index that identifies which player dominated which area of the resource environment. Because there were 5 players in each environment, the lowest concentration (i.e. the players harvested randomly throughout the whole environment) is a .2 in a given sector, with the maximum being a 1, signifying that only 1 player dominated that region. The groups with the highest harvests also had the highest spatial index, suggesting that their spatially constructed institutions, akin to spatial property rights, actually led to some impressive results.

Certainly, the establishment and maintenance of property rights is seen as a kind of moral good in the United States and thus is often seen as the default solution to resource disputes, but does the management of CPR always require such a scheme? Over the years, a rights approach has indeed proved influential. However, an re-examination of the early rights concepts has been recently offered, suggesting that the management and relational landscape has changed in the 20 years since Schlager and Ostrom's initial work.[209] This update re-configures the conceptual schema of these rights and adds four new ones and while the details are not important, the impetus for this revision is: local resource management has become increasingly complex and the full sweep of actors no longer fit neatly into the categories determined by Schlager and Ostrom's original work.

Agrawal and Gibson (1999) demystify the one of the common assumptions persistent throughout natural resources management which seeks to engage local communities in their endeavors, namely that they are socially and economically

[209] Thomas Sikor, Jun He, and Guillaume Lestrelin, "Property Rights Regimes and Natural Resources: A Conceptual Analysis Revisited," *World Development* 93, (2017), 337–349.

homogenous.[210] Further, there is little reason to assume that every community (or member) is pro-environmental.[211] These assumptions can be exacerbated when there are loose identities of community and communities that are too large. Olson (1965) noted that "the larger the group, the less it will further its common interests,"[212] a sentiment later echoed in Ostrom's (1990) well-known design principles.[213] Incidentally, small communities of users can benefit from the self-interest of even a single user. In small groups, as Olson explains, the amount of collective benefits that are likely to be provided equal the highest demanding user.[214] When insulated and closely connected communities are able to make management decisions to reap the benefits of collaboration and bear the costs of failure, creativity and originality is potentially the result. A widely cited example of this is Cordell (1972) who describes the unusual property arrangements made by local fishers in Valença, Brazil in their coastal estuary. Choice spots were well known as the fishermen understood the influence of the tides and congregating behaviors of the fish. Claims for these locales were made simply by declaring one's intention to fish it in the coming days, known as publicano o lanço. Not only would a fisher have to state their intentions to fish, but they must show it by tying off their canoe in the desired fishing location one day prior to their harvest.[215] A culture of retaliation against rule breakers

[210] Arun Agrawal, and Clark C Gibson, "Enchantment and Disenchantment: The Role of Community in Natural Resource Conservation," *World Development* 27, no. 4 (1999): 634.
[211] Sandagsuren Undargaa, *Pastoralism and Common Pool Resources: Rangeland Co-Management, Property Rights and Access in Mongolia*, (London: Routledge, 2016): 29.
[212] Olson, The Logic of Collective Action, 36.
[213] Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, (Cambridge, UK: Cambridge University Press, 1990).
[214] Olson, *The Logic of Collective Action*, 34–36.
[215] John Camblin Cordell, "The Developmental Ecology of an Estuarine Canoe Fishing System in Northeast Brazil" (PhD diss., Stanford University, 1972), 98.

developed and mostly resolved externalities dealing with fishing in choice spots and entangling each other's gear.

Related to anxiety over how rights ought to be distributed, Wilson (2002) worries about another source of uncertainty. He emphasizes the need for better science due to the tendency that our uncertainty leads to political grid-lock and engenders distrust of other actors.[216] Lack of trust, according to Wilson, has led to the downplay of user's real economic hardships and dismissal of their collective, first-hand experiences, pitting the desires of scientists to manage with biological standards against users determined to maintain a livelihood.[217] To account for these intricacies, Wilson (2002) advocates viewing resource pools as complex adaptive systems and to view scientific uncertainties as opportunities to learn.[218] Wilson's complex adaptive system approach suggests that the "'how' and 'when' and 'where' rather than 'how much' matters as much or even more in management decisions.[219] Complementary to the complex adaptive systems approach is the idea that most common pool resources naturally fluctuate within some limits and to understand the ecological processes that contribute to the resource staying within these limits will ultimately lead to the most scientifically sound management prescription. Wilson suggests that this 'parametric' management disentangles the competing commitments of scientists and resource users.[220] In order for prescriptions to matter, they must be supported by the users and the perspective advocated by Wilson alleges to take

[216] James Wilson, "Scientific Uncertainty, Complex Systems, and the Design of Common-Pool Institutions" in *The Drama of the Commons*, ed. Elinor Ostrom et al. (Washington DC: National Academy Press, 2002): 333.
[217] Wilson, "Scientific Uncertainty, Complex Systems, and the Design of Common-Pool Institutions," 330.
[218] Wilson, "Scientific Uncertainty, Complex Systems, and the Design of Common-Pool Institutions," 333.
[219] James A. Wilson, Acheson, James M., Metcalfe, Mark and Kleban, Peter, "Chaos, Complexity, and Community Management of Fishers", *Marine Policy* 18, no. 4 (1994): 297.
[220] Wilson e al., "Chaos, Complexity, and Community Management of Fishers", 301.

seriously and integrate the user's experience with the 'biological continuity' of the resource under management.[221]

The Valençian institutional structure worked well enough for their purposes (until the fishery was taken over by the government), but as Schlager (1994) notes, in most cases, fishermen do not account for the rivalrous effects of their fishing activities such that even when there are rules, they are not effective.[222] Schlager (1994) extended this idea by presenting a survey of 33 fisheries groups, finding that even the most organized groups did not address this rivalrous effect, which she refers to as an appropriation externality.[223] It has been speculated that because some fishers do not know if rising marginal costs are due to 'natural' variation in fishery populations or are due to their harvesting activity, they may find little incentive to abate. Of 115 Bangladeshi fishers surveyed, only 16% suggested that a decline in catch was due to having "too many fishers," instead citing both natural flows and the unintended catch of young fish as primary causes.[224] Schlager (1994) further asserts that fishermen would need much more information for abatement to become a convincing strategy. Population dynamics of stock, understanding how many fish constitute a stock, monitoring and counting all catch from particular stocks remain barriers to less sophisticated fisheries, even if they are considered to be 'organized' in some fashion.[225] Harkening back to Wilson (1994; 2002), it appears that some legitimate biological knowledge is necessary for sustainable

[221] Wilson e al., "Chaos, Complexity, and Community Management of Fishers", 302.
[222] Edella Schlager, "Fishers' Response to Common Pool Resource Dilemmas", in *Rules, Games, and Common-Pool Resources,* (Ann Arbor, MI: University of Michigan Press, 1994): 251.
[223] Ibid., 265.
[224] Kazi Ali Toufique." Institutions and externalities in the inland fisheries of Bangladesh", *Land Economics* 74, no. 3 (1998): 413.
[225] Schlager, "Fishers' Response to Common Pool Resource Dilemmas," 252.

management, and even in protecting cultural traditions, its integration might only help the long-term maintenance of resources.

A co-management framework addresses some of these pitfalls associated with the rights-based structure, although it was not specifically designed as a response to some of these issues. Co-management, to reiterate, is the intentional division of responsibility and authority over a resource (or the space which contains the resource) between users and a government. It was imagined as an alternative to top-down management (of which, the assignment of rights by a state or national body could be included) intended to promote the lived-experiences of local peoples by treating them as equal arbiters in management, enforcement, and monitoring decisions. Orensanz and Seijo (2013) suggest that measured government interventions and therefore enabling more autonomous user control is a condition for success in some systems.[226] Co-management is therefore seen as providing a sense of 'legitimacy' to the local people who otherwise might have no formal recognition of their land tenure outside of their community circles (although assignment of rights does this too). In this way, co-management can be viewed simultaneously as a process and as a tool for achieving specific outcomes. In such a context, the opinions of experts are spelled by local knowledge and experience, but importantly, outsiders bring the possibility of different biological insights, tools for improved monitoring and enforcement, and other resources if the community so desires/requires them; a norm missing from the tradition of rights assignment.

This system, like the rights-based one, comes with caveats. Nearly 20 years of intentional research on resource co-management has uncovered cases where co-

[226] Jose Maria Orensanz, and Juan Carlos Seijo, "Rights-based Management in Latin American Fisheries", *FAO Fisheries and Aquaculture Technical Paper* 582, (2013): 39.

management schemes have exacerbated an already existing power imbalance between governments and local peoples or have been used to create one.[227] Relatedly, funding in some State run projects is contingent on engagement with local users in which case co-management can be used as a façade to obtain money, neglecting the empowerment and inclusion ideals core to the co-management tradition. Another set of issues that pervades co-management arrangements from the State-side is a far too simplistic understanding of the communities, the natural system under management, what role they, as the State, ought to play, and finally they may not recognize that co-management is best treated as a relational and interactive process, rather than simply as a vehicle with which to reach some destination.[228] Relatedly, users (or non-State actors) may be unaware of the various arms of any State government and that multiple arrangements are possible. This is sometimes referred to as an 'ecology of games' where some State-side actors are involved in multiple agreements with multiple other parties, hypothetically leveraging their positions during negotiations and deliberations in one agreement to affect another. Lastly, the State and the users share an obstacle to overcome: trust. Carlsson and Berkes (2005) briefly discuss the importance of recognizing the legitimacy of other collaborators stating that assurances to continued collaboration and mutual support develop a culture of successful co-management. Indeed, the trust in State institutions as it relates to our environment (at least in the United States) is at an all-time low at the time of this writing, making low trust perhaps a non-starter to co-management schemes and therefore the most important factor. According to the Pew Research Center, a mere 18% of Americans

[227] Fikret Berkes, "Evolution of co-management: Role of knowledge generation, bridging organizations and social learning", *Journal of Environmental Management* 90, (2009): 1693.
[228] Prateep K. Nayak and Fikret Berkes, "Politics of Co-Optation: Community Forest Management Versus Joint Forest Management in Orissa, India", *Environmental Management* 41, (2008): 708.

expressed considerable trust in the federal government. Relatedly, 76% of Americans believe the government should be playing a "major role" in the management of our environment while only 44% believe it is actually "doing a good job".[229]

As global challenges result in localized effects (e.g. climate change), the co-management framework reminds us of its inherent benefits and why many Canadian and American (United States) fisheries turned toward it in the early-to-mid 1970s.[230] Although these North American cases are by no means the first instances of organized collaboration, they seemed to have instigated a research tradition focused on typifying successful management of natural resources for replication in other areas. To speak more deliberatively about the benefits of resource co-management, they might best be captured in the following case studies. While co-management is best undertaken in a localized context, perhaps the additive effect of many co-management efforts in particularly sensitive areas can forestall some of the more drastic changes climate researchers are predicting will befall the planet. Even if this does not occur, one would be hard-pressed to convince me that a collective effort to engender ecosystem (and planetary) stewardship is a waste-of-time.

Adaptive Co-Management

The adaptive management and co-management narratives continued to cross paths in practice, especially in the late 1990s and early 2000s. As sustainability scholarship continued to mature and international committees organized around the perceived social-

[229] Pew Research Center, December, 2017, "Government Gets Lower Ratings for Handling Health Care, Environment, Disaster Response." Accessed at: http://assets.pewresearch.org/wp-content/uploads/sites/5/2017/12/14104805/12-14-17-Government-release.pdf
[230] Jentoft Svein. & Bonnnie McCay, "User Participation in Fisheries Management. Lessons Drawn from International Experiences," *Marine Policy* 19 (1995): 227–246.

ecological predicaments, gaps in the theoretical literature were noticed and this linkage began to attract considerable attention, most notably by a group of researchers that founded the Resilience Alliance.[231] One of the first, impactful mentions of adaptive co-management as a distinct management framework[232] in the literature were made by many of these initial Resilience Alliance authors in a report given to the World Summit on Sustainable Development on behalf of the Environmental Advisory Council to the Swedish Government in 2002 (which was later published in an academic journal).[233] This, among many other (inter)national councils (e.g. Initiative on Science and Technology for Sustainability, the Third World Academy of Science, the US National Research Council, the Millennium Ecosystem Assessment) in this same time period began to bring attention to the absence of a robust structure with which the growing number of management case studies could be analyzed.[234] The earnest development of a theoretical tradition might have started with the "Moving Beyond the Critiques of Co-Management: Theory and Practice of Adaptive co-management" symposium, hosted by Wilfrid Laurier University in Ontario, Canada which took place in the early part of 2005.[235] Here, a series of papers were presented that would later become one of the foundational volumes in adaptive co-management—*Adaptive co-management:*

[231] https://www.resalliance.org/

[232] Assuredly, appeals to a cooperative decision making in an adaptive management scenario were not uncommon, but, in my reading, the intentional convergence of the co-management occurred either here, or possibly in the Center for International Forestry Research's (CIFOR) 1997 Annual Report available at: http://www.cifor.org/publications/pdf_files/AReports/AReport97.pdf. Plummer et al. (2012) note that this CIFOR description captured the social aspect of adaptive management rather than articulate a true amalgam of theory.

[233] International Council for Science. "Resilience and Sustainable Development", *ICSU Series on Science for Sustainable Development* 3, 2002.

[234] Brian Walker, C. S. Holling, Stephen R. Carpenter, and Ann Kinzig. "Resilience, Adaptability and Transformability in Social–Ecological Systems," *Ecology and Society* 9, no. 2 (2002): 5.

[235] Armitage et al., "Adaptive Co-Management: Collaboration, Learning, and Multi-level Governance," xii.

Collaboration, Learning, and Multi-Level Governance—a signal that there was momentum behind this blending of narratives.

The convergence of the adaptive management and co-management paradigms is as Armitage et al. (2007) suggest, "an important innovation in natural resource governance," one which seeks to reduce weaknesses of both perspectives while also embracing the strengths of each.[236] Indeed, the indelible adaptive tasks of diagnosis, monitoring, and learning is made all the more robust if done under the watch of the plurality of real stakeholders.[237] Consequently, management decisions garner a sense of legitimacy if the principles of collaborative management are sincerely adopted. That is, if stakeholders are not just token in the decision-making process, but are legitimate contributors, then there will simultaneously be little tolerance for mismanagement or misrepresentation and a conservancy of the "social memory". This latter idea describes a kind of reservoir of local ecological knowledge that is passed through generations which has been largely ignored in non-collaborative arrangements, to the detriment of managers, the resource under purview, and local users whose livelihoods are often tied to place.[238]

Just as adaptive co-management inherits strengths from its component traditions, challenges to successful implementation are also hitchhikers. The next section, while brief, details some of the expectations that are borne from the adaptive co-management

[236] Armitage et al., "Introduction: Moving Beyond Co-Management," 4.
[237] Elinor Ostrom, Marco A. Janssen, and John M. Anderies, "Going Beyond Panaceas", *Proceedings of the National Academy of Sciences* 104, no. 39, (2007): 15176–15178.
[238] Toby Pillatt, "Resilience Theory and Social Memory. Avoiding Abstraction," *Archaeological Dialogues* 19, no. 1 (2012): 62–74. At first glance, this seems like a foundationalist fantasia—a receptacle of privileged knowledge—but the process with which this knowledge has been created, maintained, and disseminated is primarily through experience. Recall, an epistemological foundationalism suggests the presence of privileged knowledge absent experience.

process. The section following will discuss some (but not all) of the challenges practitioners are likely to encounter.

The Blend.

According to Plummer and Armitage (2006), adaptive co-management schemes seek to enhance livelihoods through tangibles such as increased resources, but also intangibles such as collaborative agreements and legislation (where most of the just mentioned challenge areas do most of its damage if ignored). The existence of both types of outcomes—tangible and intangible—promote social learning and in turn promotes social capital and adaptive capacity.[239] Ruitenbeek and Cartier (2001), another one of the first attempts at illuminating a coherent adaptive co-management theory, suggests that adaptive co-management is likely to have self-emergent properties such that policies designed around it should either promote its emergence or remove barriers to emergence.[240] The dictation of an adaptive co-management regime, they argue, is likely to undermine the process which is supposed to promote and develop through participation, not coerce or demand it. Consequently, they wonder whether it is possible for imposed systems of adaptive co-management to lead to success. To foreshadow this point with a case study I cover in Chapter 4, the answer is yes.[241] Nevertheless, it should

[239] Derek Armitage, Melissa Marschke, and Ryan Plummer. "Adaptive Co-management and the Paradox of Learning." Global Environmental Change 18, no. 1 (2008): 89.
[240] Jack H. Ruitenbeek and Cynthia Cartier, "The Invisible Wand: Adaptive Co-management as an Emergent Strategy in Complex Bio-economic Systems," *Center for International Forestry Research* 34, (2001).
[241] While I would argue the system is imposed, interviewees suggested that there were some enabling conditions for the adaptive co-management process to take hold when 'imposed.' More on this in Chapter 4.

be clear that there exists many ways to introduce, formulate, administrate, and facilitate adaptive co-management schemes.

Although the field is still relatively young, the plurality of understandings presented a difficulty when trying to compare cases and distill out some factors that have led to success, as Plummer et al. (2012) attempted to do. In their systematic analysis of 108 articles related to adaptive co-management, the authors sought to wrangle-in the diverse and assorted concepts present in the literature at the time of their study. In **Table 3.** are twelve themes which received the most attention in their corpus, (measured by frequency of occurrence within the articles) therefore are interpreted to be critical components (either as process factors or outcomes) in the management experience.[242]

Table 3. Most frequently reported components or variables of interest emerging within adaptive co-management (adapted from Plummer et al. 2012).

Description
Bridging Organizations
Conflict
Enabling Conditions
Incentives
Knowledge
Leadership
Learning
Networks
Organizational Interactions
Shared Power
Shared Responsibility
Trust

As is characteristic of any developing field, there appeared to be a lack of precision and consensus in the early stages. According to the authors, the adaptive co- factors which were reported as having contributed to success and those that contributed

[242] Ryan Plummer, Beatrice Crona, Derek R. Armitage, Per Olsson, Maria Tengö, and Olga Yudina, "Adaptive Comanagement: A Systematic Review and Analysis." *Ecology and Society* 17, no. 3 (2012): 8.

Table 4. Occurrences of factors reported to enhance (left) or under (right) adaptive co-management implementation (adapted from Plummer et al. 2012).

Present factors contributing to ***successes*** of adaptive co-management	Number of Items	Number of Passages	Present factors contributing to ***failures*** of adaptive co-management	Number of Items	Number of Passages
	17	**31**		**16**	**24**
Social networks	13	18	Conflict of interests of those involved	7	8
Learning	8	16	Power asymmetries among those involved	4	8
Participation of all relevant stakeholders in management	5	6	Insufficient resources (financial, human, technical, etc.)	4	5
Generation, use, and sharing of information and knowledge	3	4	Restrictive policies or institutions	3	3
Development of necessary attitudes and skills	2	2	Absence of multi-stakeholder commitment	2	3
Government control over illegal resource use	1	1	Deficiencies/inconsistencies in communication, information, knowledge	3	3
Management flexibility	1	1	Unclear privileges, guidelines, and responsibilities	2	2
Funding	1	1	Short-term outlook	2	2
			Inability to learn, adapt, problem solve, or self-organize	2	2
			Lack of leadership	1	1
			Lack of understanding of adaptive co-management process	1	1
			Ecological disturbances	1	1
			Absence of social networks	1	1
			Inability to make decisions, problems with decision-making process	1	1
			Poorly developed civil society	1	1
			Lack of homogeneity among resource systems and users	1	1

toward failures through qualitative coding techniques (i.e. through careful reading, marking passages in text that jibed with a predetermined theme). A summary of these findings is present in **Table 4.** Critically however, over half of the studies that wrangled

either with variables leading to success or failure did not clearly define the objective or purpose of adaptive co-management implementation. Consequently, the authors wondered how valuable these reports of success and failure are if the evaluative criteria were not defined nor consistent across cases.[243] The anxiety over the lack of a shared definition is warranted. We can expect this to clear up over time as the field matures and makes intellectual corrections to resolve issues that are identified in these review studies. Even still, a deep conceptual challenge needs to be addressed: there is an indelible elusiveness with determining 'success' as an outside observer. Indeed, each instantiation of adaptive co-management will follow a unique trajectory as the management foci are, at the very least, contingent on the resource conditions and the stakeholders willing to participate. The subjective nature of 'success' is exacerbated by temporal and scalar limits, and an implicit gradation in the idea of success. It suffers from the same conceptual ambiguity as 'health' or 'safety' or 'quality.' In other words, best answers to these probably involve its juxtaposition or comparison to another thing

Table 5. Frequency of types of reported successes through/with the adaptive co-management process (reproduced from Plummer et al. 2012).

Description	Number of Items	Number of Passages
Actual	**9**	**17**
Participation and involvement of relevant stakeholders	6	10
Conflict resolution	3	7
Improved resource health	4	4
Collaboration	3	3
Education	2	2
Improved community well-being	2	2
Transformation of institutions	1	1
Improved communication	1	1

[243] Ryan Plummer, Beatrice Crona, Derek R. Armitage, Per Olsson, Maria Tengö, and Olga Yudina, "Adaptive Comanagement: A Systematic Review and Analysis." *Ecology and Society* 17, no. 3 (2012): 11.

(e.g. more successful than….). The effort by Plummer et al. (2012) to gauge a collective understanding of adaptive co-management highlighted this very problem. **Table 5** here contains the distilled, reported 'successes' experienced by participants in an adaptive co-management scheme. Assuredly, the case studies that reported a resolution in conflict, for instance, experienced differing levels (e.g. strong vs weak) of agitation at different durations (e.g. long-term vs short-term) and over objectives of differing importance (e.g. main objectives vs auxiliary goals). To each researcher embedded in the management scenario, these contingent factors must play into the calculation through which success is deemed or rejected. Perhaps no conflict (or none that was notably perceptible to embedded researchers) existed in many of the case studies therefore the resolution of it cannot be reported as a 'success' variable.

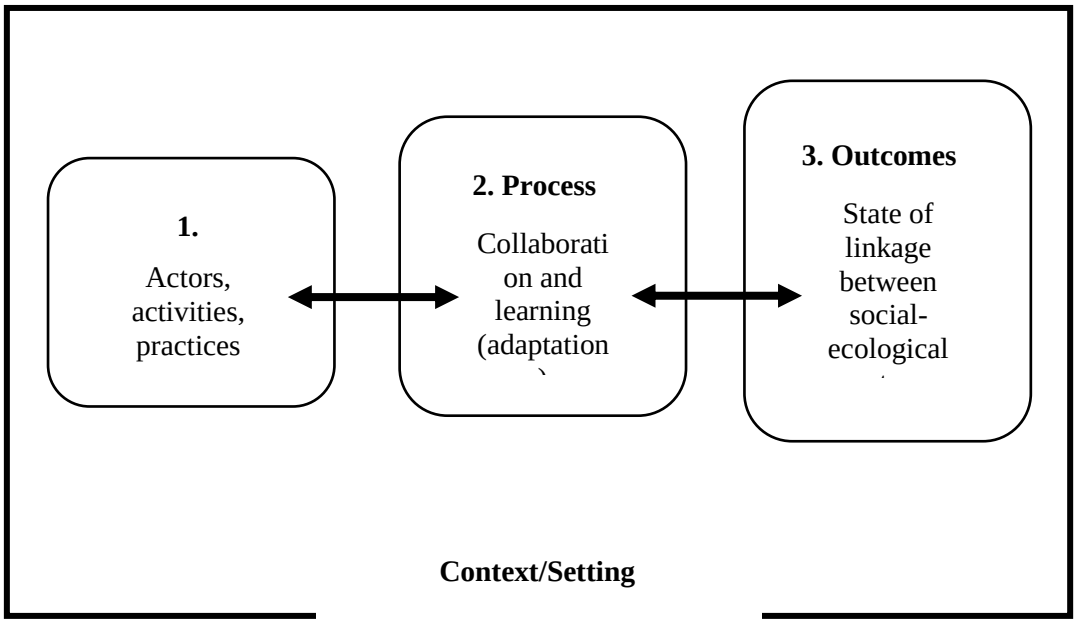
The contextual nature of environmental management adds to the difficulty in making recommendations for which scheme ought to be adopted in any given case. A possible way around this dilemma, unsurprisingly, begins with Ostrom's (2007) initial development of a diagnostic framework for social-ecological systems.[244] Taking inspiration from Ostrom's foray into health metaphors, Plummer et al. (2014)[245] and Plummer et al. (2017)[246] begin developing a diagnostic framework for adaptive co-management which grapples with the prevalent imprecision and inconsistency in concepts and method. As will be reviewed more in depth in the third Chapter, the

[244] Ostrom, Elinor. "A Diagnostic Approach for Going beyond Panaceas." *Proceedings of the National Academy of Sciences* 104, no. 39 (2007): 15181–87.
[245] Plummer, Ryan, Lisen Shultz, Derek Armitage, Örjan Bodin, Beatrice Crona, and Julia Baird. "Developing a Diagnostic Approach for Adaptive Co-Management and Considering Its Implementation in Biosphere Reserves." *The Beijer Institute of Ecological Economics, Beijer Discussion Paper*, no. 245 (2014): 0–19.
[246] Plummer, Ryan, Julia Baird, Derek Armitage, Örjan Bodin, and Lisen Schultz. "Diagnosing Adaptive Comanagement across Multiple Cases." *Ecology and Society* 22, no. 3 (2017).

diagnostic metaphor represents a reversal in the initial approach to environmental management. Ostrom et al. (2007), Perrings (2007), Berkes (2007), and Brock and Carpenter (2007) discuss the pitfalls of so-called resource management panaceas, or policy cure-alls, that are said to be applicable in every environmental context. These mythical solutions have their origin with Hardin's (1968) "Tragedy of the Commons" where he described a group of self-interested grazers desecrating shared grasslands to fatten their own cows who can only be dissuaded from engaging in this race to the bottom by government intervention. As our knowledge about the complexity of social-ecological systems has matured, researchers now understand the limitations in deploying similar interventions in disparate, uneven contexts. Thus, a diagnostic approach as configured in **Figure 1.** for adaptive co-management, is gaining traction as a preferred approach to social-ecological governance.[247] Just as a physician will inquire about one's medical and family history, allergies, and current symptoms before offering a diagnosis and corresponding treatment plan, the adaptive co-management diagnostic method begins with a surveying of the setting (e.g. institutional context, biophysical conditions, and social-ecological connections). Couched within the setting of the management challenge,

[247] Plummer et al., "Diagnosing Adaptive Comanagement across Multiple Cases", 3.

Figure 1. Diagnostic steps for adaptive co-management, adapted from Plummer et al. (2017).



researchers, acting as diagnosticians, are encouraged to first analyze what pre-conditions exist and those that are missing (e.g. communal properties, tolerance for collaboration). These pre-conditions are enabling factors that seem to support the whole adaptive co-management enterprise.[248] Secondly, the processes of collaboration and learning (adaptation) requires analysis. This involves looking closely at not only the characteristics but also the structure of each component. For example, the existence of respect, trust, legitimacy, and pluralism, among others, through the collaborative process is expected to lead to greater satisfaction about decisions.[249] Moreover, the structure of the networks that form have some influence on the emergence and maintenance of these

[248] This step involves taking an inventory of the factors referred to as 'emergent properties' by Ruitenbeek and Cartier (2001), discussed briefly at the start of this section.
[249] Reed, Mark S., "Stakeholder participation for environmental management: A literature review," *Biological Conservation* 141, no. 10 (2008): 2417-2431.

collaborative qualities.[250] A study conducted by Baird et al. (2016) suggests that while he development and strengthening of social ties, as observed through a social network analysis, are necessary pre-conditions and process qualities, they are not solely sufficient to place adaptive co-management on a successful path. The other half of the process picture are the learning activities at the individual and group levels. These learning items can be probed by survey instruments and through researcher observations.

As Plummer et al (2012) and Plummer et al. (2014) lamented, connecting the outcomes of adaptive co-management had previously been a cumbersome task due to the lack of conceptual consensus in adaptive co-management literature. To address this concern specifically, as the last component of their diagnostic framework, the outcomes are accounted for on two fronts: results, which are the products of the adaptive collaborative arrangement; and effects, which are the consequences of these products. For instance, if a 'result' of adaptive co-management was the supposition and implementation of new county-level policy related to water conservation in a grassland, the 'effect' would therefore be something like ecological sustainability or changes in attitudes about conservation insofar as they can be measured. In this case, measuring water use before the policy and after could be utilized as a reliable proxy.

[250] Baird, Julia, Ryan Plummer, and Örjan Bodin. "Collaborative Governance for Climate Change Adaptation in Canada: Experimenting with Adaptive Co-Management." *Regional Environmental Change* 16, no. 3 (2016): 747–58.

Table 6. Nomenclature of variables, reproduced from Plummer et al. (2017).

Variables		
First-tier	Second-tier	Third-tier
Setting	Institutional context	n/a
	Biophysical conditions (including ecosystem attributes)	n/a
	Social-ecological linkages	n/a
Antecedents	Actors	Type diversity Level diversity
	Activities and practices	Implementation Decision-making Monitoring Spaces for interaction
Process	Learning	*Individual as unit of analysis*: Cognitive Normative Relational learning *Social group or organization as unit of analysis*: Single loop Double loop Triple loop learning
	Collaboration	*Collaborative qualities*: Legitimacy Open communication, negotiation, and mutual respect Transactive decision-making Pluralism and linkages *Network structures*: Social cohesion Heterogeneity Centralization
Outcomes	Results	First order tangible First order intangible Second order
	Effects	Ecological sustainability Human livelihoods

The characteristics of each diagnostic step sought by practitioners (grounded in literature) are offered in **Table 6**. The nested categories, inspired by Ostrom (2009),[251] improve opportunities for comparison across cases and offers a common language that can be utilized by researchers (and managers) in adaptive co-management schemes. The

[251] Ostrom, Elinor, "A General Framework for Analyzing Sustainability of Social-Ecological Systems., *Science* 325, no. 5939 (2009): 419–22.

first level (tier 1) are the three most general adaptive co-management components, namely, pre-conditions/antecedents, process, outcomes. Dissecting these three components into finer grains not only mirrors the real nature of these nested systems, but it aids in the organization of research objectives and subsequent methodologies. For instance, a researcher interested in collaborative governance might focus on the specific engendering factors (e.g. how legitimacy is generated, the level of attention to inclusivity and recognizing pluralism, etc.) and can therefore comprehensibly contribute toward the adaptive co-management literature.

Challenges.

Although adaptive co-management has been supported as a powerful resilience-building tool, the principle challenge remains to justify its use.[252] The diagnostic approach to case-studies, in theory, allows researchers to offer additional evidence towards this goal. Despite its promise in this diagnostic mode, the implementation of adaptive co-management is fraught with difficulties in coordination and justification, challenges that arise from the messy problems adaptive co-management intends to address. Based on my reading of the adaptive co-management literature, (e.g. Nepal, 2002; Nadadsy, 2007, Berkes, 2000; Olsson et al., 2004; Doubleday, 2007), I have identified three significant challenges that practitioners within a given adaptive co-management arrangement continue to face, namely, wrangling with the plurality of values, managing conflict and engendering democracy, and dealing with uncertainty.[253] These related attributes are seemingly unavoidable and their unsuccessful management

[252] Plummer et al., "Developing a Diagnostic Approach for Adaptive Co-Management and Considering Its Implementation In Biosphere Reserves", 15.
[253] These items are loose collections of underlined variables in the third tier of **Table 6**.

can alter the course of the adaptive co-management project. I consider these factors as meta-game components along the lines of Plummer et al. (2017), i.e., they are process objectives hidden within the typical social-ecological outcomes that adaptive co-management pays most attention to.

Challenge 1: Wrangling with the Plurality of Values.

Value pluralism describes the differential prioritization of values by groups of people. Here, I generally take Isaiah Berlin's interpretation of value pluralism which suggests that it is an "…account of the actual structure of the normative universe. It advances a truth-claim about that structure, not a description of the perplexity we feel in the face of divergent accounts of what is valuable."[254] Disparate values exists, tied to culture, religion, region, time period, language, economics, and so forth. This is really a self-evident position to maintain given the recurrence of incommensurate value judgements, what can be referred to as 'competitive pluralism'.[255] Adaptive co-management purports to be an inclusive procedure, drawing in land owners, local stakeholders, and a diversity of resource agencies, non-governmental or otherwise.[256] As a result of this decree, numerous personal perspectives and career related obligations and expertise interface with one another, hopefully toward a common goal. Common goals likely come from the most strongly held values in a group (hence the formation of a group). Not necessarily does this interface involve conflict and disagreement, but as a feature of a pluralistic society, it is nearly guaranteed. Ultimately, the swath of values that

[254] Sivarajah, Mark, "Value-pluralism and Human Rights", in *Frontiers of Diversity: Explorations in Contemporary Pluralism,* eds. Avery Plaw, (Amsterdam: Editions Rodopi, 2005), 74.
[255] Joseph Raz, *The Morality of Freedom,* (Oxford: Oxford University Press, UK, 1986), 407.
[256] Ryan Plummer and Julia Baird, "Adaptive Co-Management for Climate Change Adaptation: Considerations for the Barents Region," *Sustainability* 5, no. 2 (2013), 632.

are held in any collaborative endeavor will have to be prioritized and the collective ordering suggests which management strategy is proposed at any specific time. That is, each professed goal or desired outcome represents the rejection, at least momentarily, of many alternatives.

The plurality of values that are relevant within a collaboration also exposes the moral scopes of each member. That is to say that members likely have wider and narrower ranges of things that they believe can be valued. In a conservation context for instance, this may beget differential emphasis on particular species. Typically, what we see is a disproportionate regard for charismatic animals over smaller, scaled, and spiky ones. The White Tanks Conservancy collaborative (a case that will be discussed in greater detail in Chapter 5) are planning to install wildlife corridors based on how they will most serve nine particular species, some mammals, most not. The value line has already been drawn at these nine species,[257] but this also implies that there are some species which could lose out. Asking what makes them worthy of consideration, and ultimately prioritizing their projection less than others, is a revealing task. This counterfactual and others like it help elucidate the value-based decisions often underlying management decisions.

Challenge 2: Resolving Conflicts and Engendering a Democratic Process.

Conflict is, as was just discussed, a feature of a pluralistic society. Conflict is also essential to co-management[258] and, by extension it is also an important component in adaptive co-management schemes. The political art of conflict management must also be

[257] I recognize the possibility that this is a biological decision (i.e. these are all the animals we expect to be harmed by enclosing them), not necessarily a value-laden one.
[258] Kai Lee, Compass and Gyroscope: Integrating Science and Politics for the Environment, (Washington D.C.: Island Press, 1993), 114.

instantiated by researchers seeking to operate sound adaptive co-management projects. Adaptive co-management as a methodology works to its fullest extent only if managers and stakeholders intently learn from their experiences.[259] Those experiences and learning moments do not occur absent conflict between engaged parties. But by first turning focus toward agreement, the necessity of conflict becomes more obvious. Once stakeholders come to the table, figuratively speaking, they are, at least at a very basic level, open to the idea of cooperation. In the context of an ongoing adaptive co-management scheme, little convincing about the benefits of cooperation versus either anarchy or imposition of one group's ideals over all others should be necessary. They may have different reasons, but each party who acts in good faith recognizes why one ought to cooperate by virtue of their participation and involvement. Of course, there are actors that do engage in the collaborative process with ulterior motives like co-option.[260]

Even though it is somewhat coercive, the simple threat of top-down governance has actually been shown to improve cooperation in co-management scenarios.[261] This negative reaction towards top-down imposition suggests that stakeholders prefer some level of autonomy and an adaptive co-management scheme supports such a virtue. The initial commitment to cooperation can be used as leverage by investigators (say, within a boundary organization) when necessary. Ideally however, the group enters into a social contract of sorts, agreeing that they recognize the present plurality of viewpoints, experiences, and expertise. This begins to engender a community that accepts a

[259] Ryan Plummer and John FitzGibbon, "Connecting Adaptive Co-Management, Social Learning, and Social Capital through Theory and Practice," in *Adaptive Co-Management: Collaboration, Learning, and Multi-level Governance*, eds. Derek Armitage, Nancy Fikret Berkes, and Nancy Doubleday (Vancouver: UBC Press, 2007), 39.
[260] Prateep K. Nayak and Fikret Berkes, "Politics of Co-Optation: Community Forest Management Versus Joint Forest Management in Orissa, India", 708.
[261] Norton, *Sustainability*, 245.

deliberative environment laid upon democratic ideals which can then participate in a discussion about their differences and also possibilities for convergence.

Engaging in co-management efforts at its core, is, as Enengel et al (2011) suggests, really a decision about whether the benefits to participation are expected to outweigh both the risks and importantly, the transaction costs.[262] This calculus, of course, requires that any potential participant first believes in the promises and advantages of collaboration. Co-management is a special type of collaboration however, so further embedded in this belief must be some consideration about the efficacy of local government and institutions. Next to keeping participants at the table, getting them there in the first place might actually be the most difficult task. In other cases, where livelihoods are inextricably linked with the harvesting of local resources, few other options may exist.

In the case of the North Atlantic golden tilefish fishery in the northeastern United States, cooperation between fishers and government officials seemed like the only option to save both the depleting stocks and the livelihoods of fishermen.[263] Partly in response to an 'overfished' designation made by the Mid-Atlantic Fishery Management Council,[264] a Fishery Management Plan (FMP) was put into place in the latter half of 2001.[265] Before

[262] Barbara Enengel, Marianne Penker, Andreas Muhar, and Rachael Williams, "Benefits, Efforts and Risks of Participants in Landscape Co-Management: An Analytical Framework and Results From Two Case Studies in Austria," *Journal of Environmental Management* 92, no. 4, (2011): 1256–1267.
[263] B. Rountree, A. Kitts, and Patricia Pinto da Silva, "Complexities of Collaboration in Fisheries Management: The Northeast United States Tilefish Fishery," in *Case Studies in Fisheries Self-governance* (Rome: FAO), 2008: 135–148.
[264] This council was created pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of 1976 and is tasked with managing fisheries in the Mid-Atlantic region of the United States (i.e. from New York to South Carolina). The council includes representatives from U.S. Fish and Wildlife Service, the U.S. State Department, and the U.S. Coast Guard, in addition to state representatives and several fishermen.
[265] Mid-Atlantic Fishery Management Council, *Tilefish Fishery Management Plan*, special report pursuant to National Oceanic and Atmospheric Administration Award No. NA57FC0002, May, 2001.

the management plan was developed, fishers reported excessively rivalrous conditions that led to longer hours and longer trips and therefore, increased health and economic risks. Rather than continue to compete in this way, a Fishery Management Plan was adopted that set out the specific goals of preventing overfishing and rebuilding stocks to sustainable levels. The FMP took historical catch levels, placed vessels into one of three categories, and granted each of those categories a percentage share of the 905 live tons allowed to be caught. The FMP did not explicitly state that collaboration between fishermen was required, but it became clear that in order to achieve the desired results, collaboration was necessary. Indeed, the council itself represents a good model of collaborative management (see note 264). In response to the development (and acceptance) of the FMP, local associations began to form to carry out and influence these directives in an organized manner.

As should be clear, there are multiple ways in which an adaptive co-management scheme can proceed towards a conflict resolution, but perhaps the most likely is an iterative process of deliberation and weighting for the following reasons: After making the initial commitment to cooperate, the group should acknowledge that one view does not count more than any other. The group can collectively, either through qualitative imagination or through assigning number values, decide which concerns weigh how much. This isn't the same as the blanketing of utilitarianism or units of intrinsic value, but more like a ranked-choice. Multiple, divergent perspectives are polled, but at least one commonality—the commitment to cooperation and democracy—adheres the whole

https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5176d866e4b0e95e599d2670/1366743142476/Tilefish_FMP.pdf

process together.[266] As context changes, this weighting process allows different criteria to either fall or come to the forefront. It operationalizes decision making and provides a way for communities to make obligatory cooperative and conciliated choices.[267]

Challenge 3: Relieving the Anxiety of Management with Uncertainty.

Resilience building is one way in which environmental managers handle social-ecological uncertainty.[268] The methodology and outcomes of adaptive co-management are well-suited for resilience building and, indeed, resilience is typically considered the main goal of adaptive co-management schemes.[269] Resilience building adaptive co-management schemes are such that they attempt to address both current problems and problems that are yet unknown by remaining flexible in the face of new information. This does not come without challenge however. Anthony Charles (2007) identifies two implicit attitudes in environmental policy that fail to address uncertainty:

> *The illusion of certainty*. Resource systems are among the most complex and uncertain, yet many resource management institutions exhibit a perverse tendency to ignore major elements of uncertainty; these institutions suffer from an "illusion of certainty," in which policy, management, and/or operating practices take place as though major elements of uncertainty could be ignored, or even as though the world were somehow certain and predictable. Far from recognizing and working

[266] Norton, *Sustainability*. 250.
[267] This is just one of the many options that can be used to resolve conflict.
[268] Per Olsson, Carl Folke, and Fikret Berkes, "Adaptive Comanagement for Building Resilience in Social-Ecological Systems," *Environmental Management* 34, no. 1 (2004), 76.
[269] John Kearney and Fikret Berkes, "Communities of Interdependence for Adaptive Co-Management," in *Adaptive Co-Management: Collaboration, Learning, and Multi-level Governance*, eds. Derek Armitage, Nancy Fikret Berkes, and Nancy Doubleday (Vancouver: UBC Press, 2007), 192.

within the bounds of the uncertainty, the illusion of certainty leads to the opposite result.

The fallacy of controllability. Natural resource management is intrinsically an imperfect endeavour, with resource systems at best partially and imperfectly controlled. Unfortunately, this is by no means universally recognized. A "fallacy of controllability" is often in place, reflecting a perception that more can be known, and more controlled, than can be realistically expected in the real world.[270]

Myopic policy (*sensu amplo* Ostrom, 1990), which often treats management as an engineering problem, precludes managers from instituting practices that are effective in the long-run.[271] By remaining blind to contingency, uncertainty, and change, managers will struggle to meet defined goals and thus risk failing in the face of new crises and surprises.[272] This would be akin to having no management response to new possibilities, to doing nothing when presented with a novel problem. Therefore, to prevent such gridlock and inaction, Folke, Colding, and Berkes (2003) advocate that we learn from crises faced and that we integrate our new knowledge back into the system to build resilience against future disturbances.[273] This attitude leads to something like adaptive co-management where learning-by-doing is an important resilience-building component

[270] Anthony Charles, "Adaptive Co-Management for Resilient Resource Systems: Some Ingredients and the Implications of Their Absence," in *Navigating Social-Ecological Systems*, eds. Fikret Berkes, Johan Colding, and Carl Folke, (UK: Cambridge University Press, 2003), 87.
[271] Lance Gunderson, "Adaptive Dancing: Interactions Between Social Resilience and Ecological Crises," in *Navigating Social-Ecological Systems*, eds. Fikret Berkes, Johan Colding, and Carl Folke, (UK: Cambridge University Press, 2003), 44.
[272] Fikret Berkes, Derek Armitage, and Nancy Doubleday, "Synthesis: Building Resilience and Adaptive Capacity in Social-Ecological Systems," in *Navigating Social-Ecological Systems*, eds. Fikret Berkes, Johan Colding, and Carl Folke, (UK: Cambridge University Press, 2003), 356.
[273] Ibid., 359.

from the adaptive perspective, but also where diversification and risk sharing among stakeholders serves to build social resilience, a feature of the co-management perspective. Given that adaptive co-management is ultimately concerned with establishing resilience in resources, it is not always the case that what is desired by some populations is 'resilient'. Indeed, Gunderson (2003) worries about inescapable uncertainty being wielded as a resource in itself to maintain a status quo by management agencies and researchers;[274] this is something like a "wait and see" or "we do not have enough information" scenario such as what seems to be happening with current climate policy.

Conclusion

Transitioning toward management styles that engender resilience will require us to continue reshaping the way in which we interact with our environments. So far, the response has been akin to a global geo-engineering effort to meet the increasing demands of a burgeoning population. Brian Walker and David Salt (2006) open their discussion about resilience as a state-of-mind which, if adopted, produces sustainable behaviors by first pointing out the kind of purely market-driven arrangements that led to our current ecological dilemma.[275] These myopic attitudes that merely focus on short-term supply meeting short-term demand need to be shed for more long-term view which is responsive to stochasticity, surprise, and most importantly, degradation. What we have done, Walker and Nash state, is induce a state of optimization, where yield is the measure of success.[276] When the objective is to control the components of the system that confer the most

[274] Gunderson, "Adaptive dancing: Interactions Between Social Resilience and Ecological Crises," 48.
[275] Brian Walker and David Salt, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World*, (Washington, DC: Island Press, 2006), x.
[276] Ibid., 6.

benefit, we create externalities that are rarely addressed. As of 2012, we are utilizing about 11 percent of the global land area (roughly 1.5 billion ha) to feed the 9 world's billion people, although this food is assuredly not equally nor fairly distributed.[277] To meet this demand felt by increasingly developed countries, we have engineered high yield crops that are planted year-round and then supplemented by chemical fertilizers.

There remains cause some optimism however. The message is not simply that we should do *something*, *anything*, but instead, do *this.* The Resilience Alliance is a group of researchers that specialize in the maintenance and management of social-ecological systems—the kind of systems we exist in and rely upon for continued prosperity. Accordingly, they have promoted adaptive management as a response to the inherent limitations we have in our management abilities exacerbated, of course, by a transient climate.[278] It could be argued that adaptive management has been occurring for many millennia in a more informal composition. Indeed, many of the ideas now suggested as tenets of adaptive management are like those practiced by small-scale or traditional pastoral farmers. While interventions are not necessarily viewed through the lens of the hypothesis-testing, they are conducted by land-users anticipating certain results. If those results do not conform to their expectations, new interventions, including new technologies, are injected into the system, again anticipating specific results.

Simultaneously, the rife mismanagement of, mainly, fisheries sparked an increasing collaboration between resource extractors and governmental bodies who

[277] Food and Agriculture Organization, *World Agriculture: Towards 2015/2030*, ed. Jelle Bruinsma (London: Earthscan Publications, 2003). http://www.fao.org/docrep/005/y4252e/y4252e06.htm#P4_3
[278] "Adaptive Management," Resilience Alliance, accessed May 1, 2017, https://www.resalliance.org/adaptive-mgmt. While they simply refer to the management system as adaptive management, they recognize that it must be deployed as "…a social as well as scientific process."

oversaw extraction. Realizing their resources were often spread too thin, agencies saw an opportunity to engage with the communities of users who already had a stake in the continued persistence of their environmental resources. This bred the management system called co-management. Co-management is a special kind of collaborative management whose participants seem to understand that large-scale resource use, maintenance, and protection does not occur in isolation. Instead, participants recognize that these systems demand attention from all levels of social organization, from stakeholder groups to business leaders to non-profits to government agencies in some cases.

Given the increasing urgency surrounding our impaired natural resources and the vast socio-political interconnectedness now prevalent, it seemed natural that these two strands of management merge together to form the suitably named adaptive co-management. This brand of management is accurately described as a social learning enterprise where management actions/interventions are viewed as hypotheses and outcomes are likewise viewed as either affirmation and refutation in the same vein as the adaptive management tradition. Adopting the principal strengths from co-management, this process is made more robust by engaging with a collaborative community, making steps in the adaptive management process more digestible, and indeed, more efficient. For instance, the tasks of data gathering, scenario planning, implementation, monitoring, re-invention, etc. are shared amongst collaborators and therefore so are the risks in failure. The diversity of collaborators provides a resiliency buffer, akin to response diversity in an ecosystem.

Do we have a panacea in adaptive co-management? Not likely. Echoing Ostrom et. al (2007), I share some reservations about the idea that any particular management system is likely to work in *all* cases.[279] Indeed, in the previous chapter, I spilled a lot of ink over the claim that the hunt for a universal solution is a mistake we have inherited from a time when we could not imagine how complex the world is. It is worth noting that in that very same paper, the authors discuss moving beyond panaceas by referring to a general methodological approach which involves "diagnosis, monitoring, and learning." Specifically, the author's state:

> The study of the governance of [social-ecological systems], and of sustainability science more generally, is an applied science like medicine and engineering, which aim to find solutions for diverse and complex problems. In diagnosing problems, the applied scientist examines attributes of a problem, layer by layer, and focuses on traits that are thought to be essential in a particular context. When an initial solution is adopted, considerable effort is made to dig deeply into the structure of the problem and to monitor various indicators of the system. On the basis of this information, applied scientists change their actions and learn from failures.[280]

Admittedly, it then seems strange to prop up the adaptive co-management framework as providing the most effective advice on navigating environmental management challenges, while simultaneously maintaining that no problem-

[279] Elinor Ostrom, Marco A. Janssen, and John M. Anderies, "Going Beyond Panaceas," *Proceedings of the National Academy of Sciences* 104, no. 39, (2007): 15176–15178.
[280] Ibid., 15177.

solving framework is best suited for all dilemmas. What I am comfortable in staunchly supporting then, is whatever behavior that incorporates the management ethos of the sustainability pursuer—diagnosis, monitoring, and learning. Given the evidence that adaptive co-management is perceived (by participants) as producing better outcomes relative to the strength of collaboration,[281] I also firmly believe that a collaborative or community aspect is necessary to the establishment of a sustainable regime. Many others would agree.

This conclusion has been a kind of foreshadowing for the next chapter. The task there is demonstrate the connection between this rich and increasingly popular management tradition—adaptive co-management—to concerns felt by certain environmental ethicists, such as Bryan Norton (and me for that matter). This connection has been tacit throughout the first two chapters of this dissertation but will be explicated in the fourth by turning the discussion toward method. There is, evidently, a deep epistemic connection between the adaptive co-management framework and pragmatic environmental ethics. Environmental philosopher Bryan Norton has spent considerable time developing and enriching the epistemological connection between adaptive management (while only recently turning his attention to the collaborative expansion). In one of his many important books in the field, Norton seeks to provide clarity on what is exactly meant by sustainability. In *Sustainability: A Philosophy of Adaptive Ecosystem Management* (2005), he suggests that we lack precision on all issues surrounding sustainability and therefore perennially come up short on solutions because, at the core,

[281] Ryan Plummer, Julia Baird, Angela Dzyundzyak, Derek Armitage, Örjan Bodin, and Lisen Schultz, "Is Adaptive Co-management Delivering? Examining Relationships Between Collaboration, Learning and Outcomes in UNESCO Biosphere Reserves", *Ecological Economics* 140, (2017): 79–88.

we do not know how to effectively communicate with one another. We lack shared definitions, concepts, and ideas, and we do not have a shared method to resolving these disparities. His proposal relies on a deliberative, public-facing philosophy that "is capable of establishing a progression, of creating a more and more inclusive experiential basis for our expanding set of shared beliefs."[282] Although I do not share his optimism, a claim I have repeated in the first Chapter, Norton sees a practical role for philosophers involving the translation of policies into normative claims and, in general, acting as an attendant to the method of democratic deliberation.

A reader familiar with Norton's more recent volume, *Sustainability* and *Sustainable Values, Sustainable Change* (2015) will notice several significant similarities between his discussion and the approach taken in the next chapter. Both the method I develop and Norton's rely on similar truth-seeking/workable[283] practices toward the solution of complex environmental problems couched in pragmatism. But there are two areas in the next chapter where I take things in a somewhat different direction. For example, Norton effectively disposes of dominant alternatives to deliberative decision making,[284] but appears to take for granted that consensus will emerge in deliberative contexts. In co-management scenarios, the idea and rules of consensus are infrequently transparent as there is an implicit power imbalance between stakeholders and state actors. The rules surrounding consensus can change the course of the entire management venture. The establishment of these rules is itself a problem of consensus.

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[282] Bryan Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, (Chicago: University of Chicago Press: 2005), 572.
[283] These terms are treated as synonyms here because they are equal outcomes from both the pragmatic and adaptive co-management methodology.
[284] Bryan Norton, *Sustainability: A Philosophy of Adaptive Ecosystem Management*, (Chicago: University of Chicago Press: 2005), 403-428.

One other area that Norton has yet to develop centers on what you might describe as the sociological dimensions of environmental management. Is there a special meaning underlying environmental collaborations? Does it mean that we do indeed obtain shared values if we are willing and engaged participants? These questions, and more, are the subject of what I have called engaged pragmatism and are briefly discussed in the next chapter. Such a sociological understanding, I believe, can help to shed light on some of the linguistic failures that Norton identifies.

4. THEORYCRAFTING: HOW ADAPTIVE CO-MANAGEMENT OPERATIONALIZES A PRAGMATIC EPISTEMOLOGY

As mentioned earlier, one of the prominent works on the topic of ACM, *Adaptive Co-Management: Collaboration, Learning, and Multi-level Governance*, features a preface by the book's editors indicating that they hope to find "potentially fruitful directions for the evolution of co-management in an adaptive age."[285] Multiple intellectual traditions, namely, "social science, economic, and ecological theory,"[286] comprise the forward-thinking book, but interestingly, environmental philosophy goes unmentioned. This exclusion might indeed make sense given the overwhelming focus in environmental ethics (the most applicable branch of environmental philosophy) on articulating an all-encompassing, singular theory of environmental value. An active management practice such as adaptive co-management, which requires recognizing and balancing multiple stakeholder values (including both instrumental and intrinsic value claims) is therefore misaligned with the value structure and aims of a monistic environmental ethics. Given the inclusive and experimental orientation of ACM, environmental ethics therefore risks continuing irrelevance to environmental managers and stakeholders—some of the very people ethicists have long hoped to inform and influence.

I addressed this nagging concern in first two chapters of this dissertation, which focused on the practical and philosophical limitations of traditional environmental ethics and the promise of a more pragmatic approach in the field. Chapter three then explored one key area of environmental practice and management via a study of the ACM

[285] Derek Armitage et al., Adaptive Co-Management: Collaboration, Learning, and Multi-Level Governance, (Vancouver: UBC Press, 2007), xii.
[286] Ibid., xii.

tradition, which, as we've seen, has become a key feature in the attainment of sustainability goals. This chapter brings these two streams—environmental ethics and environmental management—together by examining a proposed methodological connection between the type of truth-seeking behavior promoted by American pragmatists (and an environmental ethics derived from the same philosophical school, that is, environmental pragmatism) and adaptive co-management. I argue that this connection is further strengthened by a related epistemological sympathy shared by the two traditions. Here, I develop a pragmatic method applied to the environment and contrast it to the 'method' conferred by a monistic environmental ethics. Drawing from the management scholarship, I present the stylized method of adaptive co-management and compare it to the pragmatic method uncovering a peculiar coherence. The comparison sheds light on some procedural hang-ups in the implementation of adaptive co-management while viewing the process through a pragmatic lens. This filter, for instance, can add moral force to the collaborative elements in the management process, that, at times, can effectively amount to tokenism due to power imbalances or the lack of a genuine democratic orientation. Collaborative mishaps then, are not just procedural, but moral failures. Further, this combination exposes significant challenges for pragmatism; i.e., that since the pragmatic epistemology relies on deliberation within engaged communities, the mechanisms that engender this arrangement come under scrutiny.

Ethical Methodology and Epistemic Value

I began this study with the premise that environmental ethics has lacked public and political influence despite the activist and applied mandates widely adopted in the field. So far, I've given a historical and philosophical account as to why this might be the

case. I now want to offer what I believe to be the *practical* differences between mainstream environmental ethics and the pragmatic alternative. That is, what would distinguish a decision-making methodology based on the epistemology and ethical positions advocated by principlist environmental ethics from one issuing from a pragmatist environmental ethics? And relatedly, which methodology – principlist or pragmatist - is more likely to secure its ethical objectives?

Principlist Methodology.

Recall from Chapter 1 that the basis of mainstream environmental ethics is a foundationalist epistemology. This just means that there are some beliefs—those that might be argued to constitute knowledge—that do not rely on their coherence with other beliefs. They are instead supposed to be reflective of the metaphysical reality, composed of true statements about the nature of being, existence, etc.; a "mirror of nature" as Richard Rorty would put it.[287] These beliefs are foundational in that they act as the initial premises from which ethical conclusions are derived. For example, consider the following argument extraction, a tool in propositional logic that is used to expose the deductive form of arguments:

1. All living things contain intrinsic value. (*basic*)
2. Things that contain intrinsic value should not be valued for its utility. (*basic*)
3. Therefore, a living thing should not be valued for its utility. (*1,2*)

The basic premises in this example are standard for environmental ethicists that might call themselves intrinsic value theorists, non-anthropocentric moralists.[288] They protect

[287] Richard Rorty. *Philosophy and the Mirror of Nature*. (New Jersey: Princeton University Press, 1979).
[288] Bryan G. Norton, *Toward Unity Among Environmentalists*, Oxford: Oxford University Press, 1991.

these claims by asserting that forms of non-intrinsic valuation allows for "selling out."[289] The debate between non-anthropocentric moralists and anthropocentrists of all persuasions occurs at the level of the first two premises. The anthropocentric crew does not buy the non-anthropocentric assertion that *any* kind of value can inhere in natural objects without a valuer, and even if it does, we cannot possibly know. Even hedging towards the existence of intrinsic value, anthropocentrists are likely to desire more nuance, perhaps constraining the types of things that can have intrinsic value or couching intrinsic value theory in environmental contexts.[290] They challenge the basic-ness of the claim that "*all* living things contain intrinsic value" and would perhaps settle for a claim that took the form: "*some* living things contain intrinsic value." Regardless, non-anthropocentrists believe either as a matter of metaphysics, as high-ground in a moral sense, or as a practical position (explained below) that environmentalists ought to promote the intrinsic value of nature.[291]

The fundamental adherence to the intrinsic value of nature then must inform the type of behaviors we ought to engage in, namely, to protect those things that, as a matter of necessity, fall under the purview of a non-anthropocentric value theory. Otherwise, we can be charged with engaging in and supporting immoral thoughts and behaviors.

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[289] Douglas J. McCauley. "Selling out on Nature," Nature 443, no. 7107 (2006): 27-28.
[290], Ben A. Minteer, *Refounding Environmental Ethics: Pragmatism, Principle, and Practice*, (Philadelphia: Temple University Press, 2012): 56-74.
[291] J. Baird Callicott, *Beyond the Land Ethic: More Essays in Environmental Philosophy*, "SUNY Series in Philosophy and Biology", (Albany, N.Y.: State University of New York Press, 1999).; Paul W. Taylor, *Respect for Nature : A Theory of Environmental Ethics*, (Princeton, N.J.: Princeton University Press, 1986).; Laura Westra, *An Environmental Proposal for Ethics: The Principle of Integrity*, (Lanham, MD: Rowman & Littlefield, 1994).; Holmes Rolston III, "Value in Nature and the Nature of Value," *Royal Institute of Philosophy Supplement* 36, (1994): 13-30. This can be cut up many ways. From 'biocentric' positions that extend the things that can have intrinsic value to "teleological centers of life" which can include all individual plants and animals to the more encompassing 'ecocentrism' which enfolds evolutionary processes and everything less complex. See, for instance,

Schematically, a methodology adopted from this non-anthropocentric, foundationalist position can be displayed as follows in **Figure 1**. The figure illustrates the way in which the two primary foundationalist alignments (and corresponding commitments) in environmental ethics approach an environmental management issue.[292] Any hypothetical management focus could be replaced with any other hypothetical conservation or environmental concern, but because similar preferences with respect to one's philosophical alignment are likely to result, the specific issue actually matters very little. This appears to be the case due to the unwaveringness built in to the foundational positions. The moralist is committed to the promotion of the intrinsic value of some entities (an area of considerable debate in this brand of ethics), but assuredly that promotion will come down to sequestering the entity under threat. Under certain circumstances, removing the threat could be an appropriate measure given that the threat's intrinsic value, insofar as it has any, is not violated. For instance, capturing and relocating animals to suitable environments is less 'violating' than say shooting-on-sight. While a defender of non-anthropocentric moralism might take issue with the way I have presented their simplified decision structure, they would likely agree with the way the aggregator is presented here. The charge is not that developers or those solely interested in economic growth are somehow evil actors, but more often than not economic growth comes at the expense of the environment and surrounding human communities and, according to some experts, will continue to do so.[293] In other words, the goal is seemingly

[292] The debate over the appropriateness of a purely economic actor being included in this schema is recognized. However, it is common for said position to be presented in juxtaposition with the non-anthropocentric theory to add emphasis or explanatory power.
[293]Andrew Jorgenson, and Thomas Dietz, "Economic Growth Does Not Reduce the Ecological Intensity of Human Well-being," *Sustainability Science* 10, no. 1 (2015): 149-56.

to convert natural capital into financial or manufactured capital while externalities related to development are passed off onto the public in the form of a reduction in ecosystem services or more tangible things like water or atmospheric pollution. Because the leading cause of biodiversity loss is habitat fragmentation,[294] the condemnation of unfettered development is widespread among all environmental camps. Although it may seem strange to include the aggregator in this example, she is still, in my mind, possessive of an environmental ethic. That ethic is just a view of nature as a kind of storehouse of

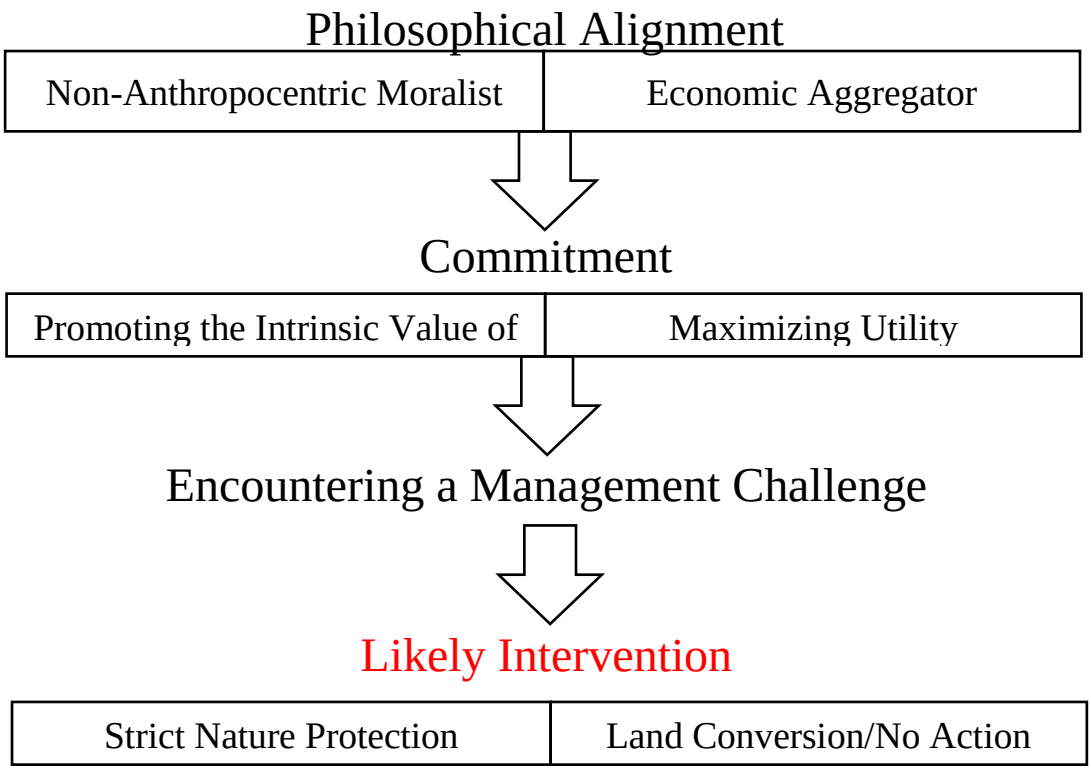

Figure 2. Decision accounting in a fictional example for a foundationalist in environmental ethics.

[294] Secretariat of the Convention on Biological Diversity, *Global Biodiversity Outlook* 3, Montréal, (2010), 37.

goods better put to human use than left alone. The difference here generally tracks with two historical adversaries, John Muir and Gifford Pinchot, where Muir is the Moralist and Pinchot is the Aggregator.

Throughout this section, I have borrowed Bryan Norton's nomenclature which describes the two foundationalist perspectives in environmental ethics, what he terms "moralists" and "aggregators."[295] Norton discusses this polarity most thoroughly in his 1991 book, *Toward Unity Among Environmentalists,* one of the classic, early statements of the pragmatic approach in environmental ethics. Both positions lack sensitivity to different contexts and, in some sense, might both be described as aggregators. Instead of units of utility, moralists think in terms of intrinsic value. For instance, if the management problem in **Figure 2.** was a declining stock of wild species, each animal in this artificial management scenario is "worth" some amount of utility and/or one unit of intrinsic value (presumably something cannot have more intrinsic value than another thing). With this perspective, sheep are 'worth' the same as a frog, or an eagle, or a resurrected mammoth should it exist. Accounting for endangered-ness or keystone-ness or any other characteristic that ought to be integrated in management decisions becomes problematic for the moralist whereas, the economic or utilitarian aggregator is likely to prioritize conservation targets based on either differential dollar amounts or some measure of utils, depending on the method with which they weigh their preferences. Clearly, amongst the potential problems with this 'version' of an environmental ethic is that land conversion is almost always a more profitable venture than, say, instituting a breeding program for wild sheep. This move represents what is perhaps the principle

[295] Bryan Norton, *Toward Unity Among Environmentalists,* (New York: Oxford University Press, 1991), 9.

worry of Moralists. Namely, that Aggregators are permitted to value natural objects in strict financial terms. Moreover, doing nothing is morally acceptable as the investment into conservation, especially the conservation of something potentially trivial like wild sheep, is unlikely to yield an economic return. This is not to say that all aggregation is inherently objectionable. There are cases were utility functions produced by environmental economists have actually suggested more stringent restrictions on take (something akin to sustainable harvest) than what we might believe to be a reasonable conservation target (based on effective population perhaps).[296] However, a real concern is that non-charismatic species or species that are not implicated in desirable ecosystem services are easily traded-off in this view. An empirical question here would be whether other kinds of utility have offered sufficient justification for protection when economic incentives simultaneously exist. Likewise, Biodiversity Offset, which has been on the receiving end of criticism from environmentalist groups, is increasingly used to achieve a "no net loss" in biodiversity, but ideally as a last resort.[297]

From both principled viewpoints, practical progress toward conservation goals has been difficult (and at the expense of human autonomy at times) and indeed, elusive. The philosophical alignments I have presented are generalizations and, to some extent, stereotypes. Certainly, there will be scenarios where management prescriptions are made that do not fit neatly into the heuristic I have constructed here. The point is that if you take the moralist position to its logical conclusion, then there would be more wildlife

[296] Nick Hanley and Edward B. Barbier, *Pricing Nature*: *Cost-Benefit Analysis and Environmental Policy*, (Cheltenham, UK, Edward Elgar Publishing, Inc., 2009).
[297] Anne-Charlotte Vaissière, Harold Levrel, and Pierre Scemama,"Biodiversity Offsetting: Clearing up Misunderstandings Between Conservation And Economics To Take Further Action," *Biological Conservation* 206, (2017): 258-262.

fortresses and nature preserves than habitable places for humans. One could argue that aggregators have had their way so far using a brief survey of ecology, climatology, and conservation literature as evidence.

Pragmatist Methodology.

Where traditional environmental ethics seems to have run aground is with the willful rejection of our pluralistic reality. Instead of deducing from first principles the set of appropriate management and policy practices, environmental pragmatists prefer to start the other way around.[298] The pragmatic methodology, committed to a democratic process, first internalizes a problem or conflict and considers what practical moves are available given a diversity of concerns and priorities (e.g., legal doctrines, economic resources, social norms, moral commitments, etc.) within a particular context. The experimental and experiential mandates supported by the pragmatic theory of knowledge requires investigation into the situational context. As a reminder, the pragmatic epistemology suggests that even if there is some reservoir of foundational knowledge which might dictate our realities, we do not have access to it. We must rely on our own experiences in order to generate knowledge, but we know this generative process creates errors in comprehension and corresponding judgement. Making informed decisions, at the very least, requires the intake of information, followed by a two-level consideration. The first level is acknowledging that there may be information or perspectives absent from the decision circle and the second is a foray into the apparent options. In the environmental context, effects of any intervention are likely to be felt by a number of local stakeholders, therefore their consultation should be solicited as the perspectives of

[298] Minteer et al., "Environmental Ethics Beyond Principle? The Case for a Pragmatic Contextualism," 141.

these stakeholders will inform what options ought to be pursuable. Welcoming the involvement and engagement of local partners jibes with the pragmatic mandate of creating critical communities, but also reflects a well-studied idea about the longevity and success of many environmental projects.[299] Social learning can take place. Transparency, trust, accountability and other desirable features can emerge. Legitimacy can materialize while power (decision making authority) is shared among different engaged groups and enables diversity. Resiliency is not only the end-game, but a feature of the entire collaborative enterprise.

Developing a Methodological Pragmatism.

Stakeholders' values, interests, and preferences can be balanced against the other two kinds of informational intake pertinent in environmental interventions: ecological and political. These options are, again, contextual. Assuredly there are economic barriers to be considered in addition to legislative concerns that can constrain choices—these might be wrapped up in a full accounting of political concerns. Likewise, certain ecological conditions are likely to produce a list of priorities to be considered. Once this information is taken in, figuratively or literally as part of a review, deliberation is likely to occur. This is where the critical community shines in the pragmatic methodology constructed here. The buy-in of each stakeholder is not petitioned, nor can it be expected. Indeed, the pragmatic commitment to plurality necessitates a respect for individual autonomy.[300] Following this dictum, the only recourse is to faithfully engage with

[299] Fikret Berkes, "Adaptive Co-Management and Complexity: Exploring the Many Faces of Co-Management," in *Navigating Social-Ecological Systems,* eds. Fikret Berkes, Johan Colding, and Carl Folke, (UK: Cambridge University Press, 2003), 23. The discussion of the benefits of collaboration around environmental objectives was undertaken in Chapter 3.
[300] Joseph Raz, *The Morality of Freedom,* (Oxford, UK: Clarendon Press, 1986): 407.

receptive interlocutors and engender a sense of understanding based on empathy and even compassion to reach agreement.

A problem that plagues deliberative arenas is the question of what is exactly meant by agreement or consent. According to Landemore and Page (2015), we can characterize consent (general agreement) in three distinct collaborative applications: as a goal, a stopping rule, or as an outcome.[301] The difference between goals and outcomes is just the difference between intentional consensus seeking activities in a deliberative context (such as life history sharing)[302] or the belief that it will emerge as a by-product. Procedurally speaking, determining a so called 'stopping point' where deliberation ceases and some action derivative of the conversation takes place (i.e. what is the rule for when deliberation should momentarily cease?) is, itself, a decision that could be subject to John Stuart Mill's tyranny of the majority. Here, Dewey has some additional insight: the perception of a tyrannical majority should never arise if the dialectical method preceding decisions is properly wielded.[303] That is, while camps may form and opinions and values move participants toward different ends, there ought to be some sense of satisfaction amongst participants that this division was reached without controversy. Participation in a democracy has, for Dewey, an educative effect, whereas other forms of governance, and in this case, forums for decision-making do not proffer such an opportunity.

The type of problem-solving or consensus-building technique that a coalition employs will rely on the exposure the stakeholders and facilitators have to these sorts of

[301] Helene Landemore and Scott E. Page, "Deliberation and disagreement: Problem solving, prediction, and positive dissensus", *Politics, Philosophy & Economics* 14, no. 3, (2015): 231.
[302] Steve Harrist and Scott Gelfand, "Life Story Dialogue and the Ideal Speech Situation Critical Theory and Hermeneutics", *Theory & Psychology* 15, no. 2 (2005): 225–246.
[303] John Dewey, *The Public and its Problems,* (Chicago: Gateway Books, 1946): 207.

methods. This is the first of two points that, in my view, don't receive enough attention. Dewey recognizes that "*the* problem of the public" is our infantile understanding of deliberative components including debate, discussion, and persuasion.[304] Thusly, we have relied on 'social-elites' to take up this task, acquiescing to a kind of oligarchy whereby a select few make decisions, even in a pseudo-deliberative context, without consultation or inclusion of the masses who would be affected by their choices (this should sound familiar). Prophetically, Dewey claims, "the world has suffered more from leaders and authorities than from the masses."[305] While the consequences of expert or intellectual rule in an environmental collaboration are subdued compared to the effects of this public complacency toward the decisions made by large governmental bodies, lessons should be taken to heart here. As we will see, the two land management and conservation cases I will examine in detail in the next chapter—the Cienega Watershed Partnership and the White Tank Mountains Conservancy—both suffer from this exact problem (although to different extents). Dewey goes on to suggest that insofar as there is tolerance for expertise to guide decision making processes, it might as well be public intellectuals (and philosophers) since the class chasm which separates the common person from the intellectual is narrower compared the very real division of economic classes.[306] The public intellectual does not seek to suppress the masses, and indeed, might be well equipped to include them, while the oligarch derives their power from suppression.

Secondly, there is some debate in decision theory and among deliberative democrats suggesting that consensus is subject to a difference in appeal based on whether

[304] Ibid. 208.
[305] Ibid. 208.
[306] Dewey, John, *The Public and its Problems*, (Chicago: Gateway Books, 1946): 205.

collectives are attempting to make predictions or to solve problems.[307] The debate revolves around a requirement that collective decisions are made merely based on a majority or through unanimous consent (e.g. Cohen, 1986; Habermas, 1991).[308] Landemore and Page (2015) again discuss the many roles agreement plays in deliberative contexts, specifically, what the larger purpose of deliberation is. Collectives that employ deliberation typically coalesce around some common purpose. That purpose can take the form of a problem-solving coalition (e.g. city planning) or one designed to offer predictions about some future events (e.g. economic forecasts). The lines here are not as clean as theorists would like—assuredly collective enterprises like adaptive co-management contains a predictive, or at least anticipatory element in addition to the coalescing around a perceived problem. For any suggested treatment, it must rely on some potential and likely normatively desired state-of-affairs that would not be seen through implementation if some weighting of benefits to costs did not occur. If it were possible to offer resolutions without any evaluation (i.e., before prediction), the idea of consensus appears to be the most attractive.[309] This would just mean that no one person would disagree with the path taken, no other ideas went unconsidered. But this thought experiment here is perhaps too idealistic to be commonly applicable. Accordingly, we might adopt a norm of 'positive dissensus,' counter to this Habermasian unanimity model

[307] Helene Landemore and Scott E. Page, "Deliberation and disagreement: Problem solving, prediction, and positive dissensus", *Politics, Philosophy & Economics* 14, no. 3, (2015).
[308] Joshua Cohen, "An Epistemic Conception of Democracy", *Ethics* 97, no. 1 (1986): 26–38. Cohen mainly offers a critique to Bill Riker's conception of populism, but while doing so agrees that the abuse of the 'popular will' is well documented. This abuse has forced the kind of nuance at issue here.
[309] Helene Landemore, "Beyond the Fact of Disagreement? The Epistemic Turn in Deliberative Democracy", *Social Epistemology* 31, no. 3 (2017): 287.

in some deliberative situations.[310] As Landemore and Page (2015) suggest, the Habermasian bar would be exceptionally high and, in some cases, could hamstring the evaluative/predictive phase of deliberation. For example, imagine if a president-elect garnered all possible votes, but could not be seated unless everyone agreed on the reasons, she was the better candidate. The resolution in this counterfactual is likely to go unachieved given the lack of access to an objective list of reasons to support said president-elect. Pragmatists believe that since we have no list, we are essentially engaging in a predictive task (where the problem-solving phase is akin to party primaries) as we cast votes every four years; therefore, the Habermasian ideal is unlikely to actually occur, but can still serve as an ideal model and a normative desire in smaller decision circles.[311]

The nature of deliberation, as eluded to above, is to offer an arena for the exchange of ideas. Along with moral and political, deliberation has epistemic value. Engaging with others opens one's claims to scrutiny on grounds of accuracy, the appropriateness of mental models, or conceptualization of the problem itself. To deliberate about the features of one's preferences could ultimately mean that one's choices change throughout the process. Theoretically, a deliberator could enter the process at point A and move toward B through deliberation, even as the rest of the collective begins to settle on A. The nature of dissensus, then, is in accordance with

[310] Habermas seems to support a view he called rational consensus where not only is unanimity required for decisions to be made but convergence is the result of similar reasons. He assumed that, in problem-solving contexts, the best reasons would emerge and be obvious on account of their best-ness.
[311] Helene Landemore and Scott E. Page, "Deliberation and Disagreement: Problem Solving, Prediction, and Positive Dissensus," *Politics, Philosophy & Economics* 14, no. 3, (2015): 245.

deliberative problem-solving norms which just asks that we engage honestly with one another and give reasons for our positions. The process is the good.

Deliberative and democratic arrangements are of course open to a number of criticisms. Chief among them is the supposition that not only should the process engender egalitarianism, but it must do so by bringing new, uncomfortable, foreign, and even reprehensible views under its umbrella.[312] How this can be done is empirical in nature, thus it might be momentarily prudent to view deliberative democracy (and its standards) as an ideal at the end of a continuum of good governance.[313] Each of our inadequate attempts at solving problems and achieving political agreement can then be seen in service of this end, if that is what we want at all.[314]

Acknowledging the conundrums of deliberation, the pragmatic methodology, at each point engaged in and committed to learning moments, then demands a reflection of the outcomes to see how closely the collective decision was to expectations. The *purpose* of the critical community is to assesses the outcomes of decisions and re-inject this new information into decision-making apparatuses, improving their accuracy over time. This process—from problem emergence, to information gathering, to problem-solving (proposing solutions and making predictions), to deliberation (which is deciding on the 'best' solution) through implementation and monitoring—might be displayed schematically in **Figure 3**.

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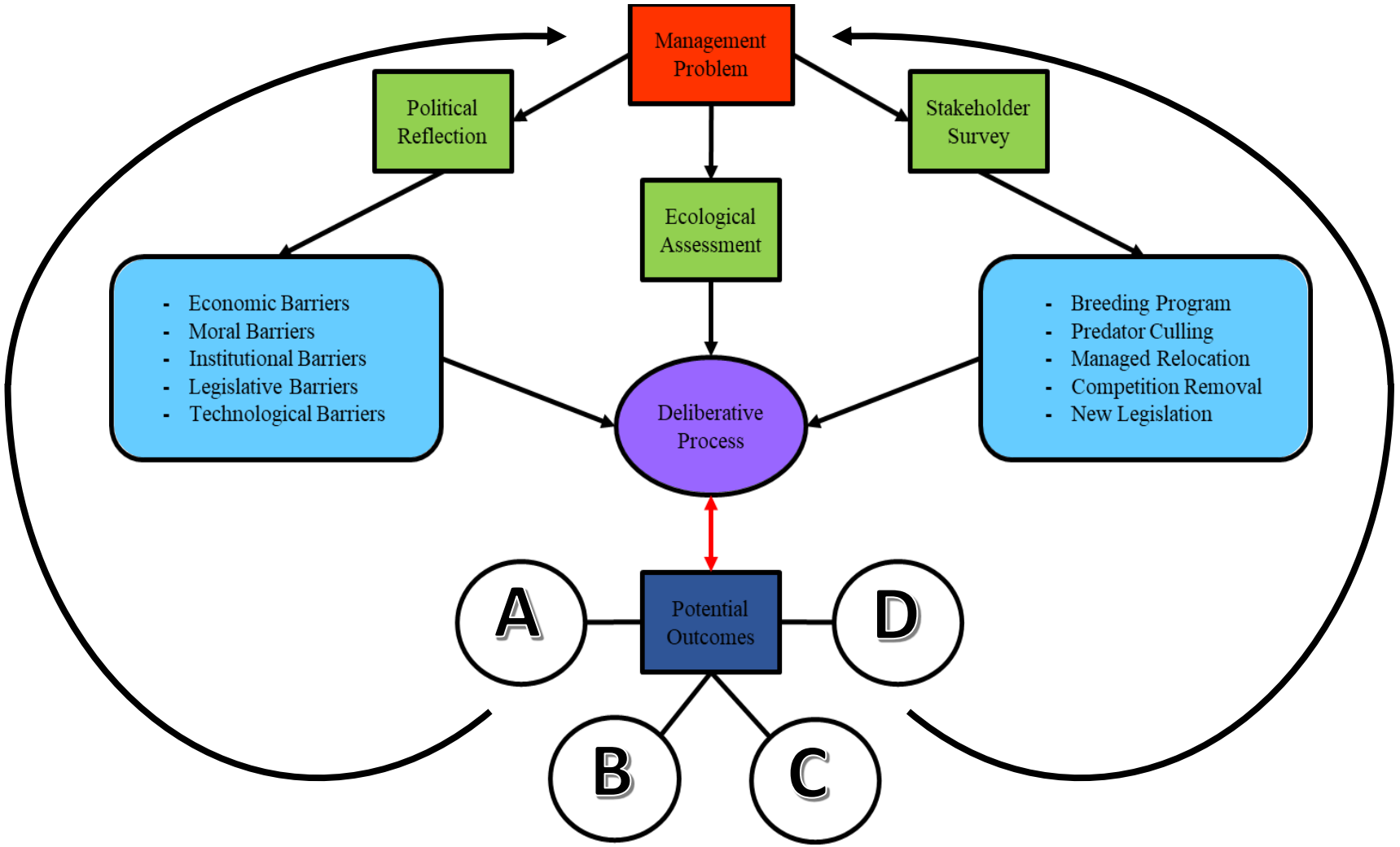
[312] Jack Knight and James Johnson, "Aggregation and Deliberation: On the Possibility of Democratic Legitimacy", *Political Theory* 22, no. 2 (1994): 289.
[313] Jürgen Habermas, *Between Naturalism and Religion: Philosophical Essays*, trans. Ciaran Cronin, (Cambridge, UK: Polity Press, 2008): 84.
[314] There is no shortage of literature that might be summoned in service to the deliberative and decision-making processes. What has been offered here is not adequate to resolve any of the challenges prescient to the critical reader or skeptic of democratic institutions. It simply serves as an acknowledgement and an area where further learning on my part can and will occur.

As might be apparent, the pragmatic methodology supports the discovery of integrative and innovative management solutions by appealing to the process of democratic deliberation. It is therefore true that the focus of ethical commitments derived from particular philosophical perspectives (i.e. an adherence to the intrinsic value of nature) plays a lesser role in this deliberative process. Arguably, this subdued role is necessary in democratic environments where there are few instances where one commitment ought to *always* override all others (with obvious exceptions like protecting human rights for instance). A side-effect of the rejection of first-principles philosophy is a focus on context and situational uniqueness. For instance, a preference for an endangered species over an abundant one, a preference for a functionally important species that has no substitutes, or one for a pharmaceutically valuable plant is not unconditionally condemned, but instead made possible. Pragmatists in an environmental context are not paralyzed by their inability to make managerial trade-offs due to an obligation toward nature's intrinsic value, but they also are not only motivated to cash-in on unprofitable species.[315] Either of these results that can of course occur given the constituency and their level of participation in the decision-making process.

[315] To be clear here, pragmatists can indeed come to value natural objects as if they have intrinsic value, see: Ben A. Minteer, "Intrinsic Value for Pragmatists?" *Environmental Ethics* 23, no. 1 (2001): 57–75.

Figure 3. Pragmatic, deliberative method in an ecological management context.



The differences between **Figures 2** and **3** are considerable. The pragmatic method begins with an encroaching management problem while the principlist model will always view a problem through a non-anthropocentric lens. This lens has a blinding effect on the constituent concerns held by other relevant actors whereas the pragmatic one requires the consideration of fellow stakeholders and community members. Importantly, there is no need of an adaptive mandate in the principlist approach as the preferred outcome is not sensitive to the decision context, although it would still be wise to incorporate learning processes. On the other hand, the pragmatic method does not compose a decision without first ingesting the wider context including the social and ecological barriers and opportunities.

In the most ideal process depicted in **Figure 3**, a multiplicity of community concerns are relevant topics of deliberation since conservation efforts are relatively local enterprises and thus almost always implicate locals (green, "Stakeholder Survey" box). Attention toward local communities is already a growing trend within international conservation efforts.[316] The contents in the connected blue rectangle are just some example responses to a conservation challenge in which these stakeholders are engaged. These ideas are taken to the deliberative arena (purple oval). Additionally, it is likely, especially in the United States that there will be some formal conservation agency, governmental or otherwise, that takes an interest in proceedings here, and indeed, may even be responsible for coordination and facilitation. Even if this formal entity is not present, some ecological data, including traditional or alternative, is best gathered to add

[316] James Gruber, "Perspectives of Effective and Sustainable Community-based Natural Resource Management: An Application of Q Methodology to Forest Projects," *Conservation and Society* 9, no. 2 (2011): 159-171.

additional environmental context to the deliberation. The remaining piece, "Political Reflection" marks the entry of other social factors that can constrain the possible responses to the conservation challenge. In ecological management terms, this is akin to having a capacity to respond.[317] With the focus on experience as the origin of facts and values, the environment is *where* we have experiences, the "field where experience occurs."[318] The knowledge (read: facts and values) we have and ever will have is the result of ongoing participation and exchanges with the environment and our relations with others. This is to say plainly that moral claims in the deliberative context are considered on equal footing as that of economic or political or ecologically-based claims. Political reflection here does not just mean state governance but is an attempt to capture the constellation of public and private concerns that need addressing as part of the collaborative process. For instance, legal and procedural rules or even moral and religious claims that may weigh on the type of policy that an individual could support as the result of the deliberative process. I tend to think of this as a kind of winnowing, where you begin with every real or imagined management option and given the available data brought by the plurality of stakeholders, a policy agenda can be set after deliberation.

Each of these submissions to the deliberative arena (purple oval in Figure 3) must be done in good faith and with a flexible mind. This is not to say that you *should* be swayed in your opinion given inputs brought by other collaborators, but you understand that it is possible, that you *can* be swayed. Even if done in good faith, there are no guarantees that deliberation will lead to better outcomes. Take for example, collaborative

[317] Chris Ansell and Alison Gash, "Collaborative Governance in Theory," *Journal of Public Administration Research and Theory* 18, (2008).
[318] Kelly Parker, "Pragmatism and Environmental Thought," *Environmental Pragmatism*, eds. Andrew Light and Eric Katz (New York: Routledge, 1996), 29.

arenas where there are significant power imbalances. It could be the case that the state seeks to maintain control, provides limited information or restricts access to resources, and engages in this process as a kind of tokenism—to say, "hey, we're collaborating." But this misses the point entirely and indeed, is rife moral failings.

As noted in Chapter 1, the Deweyan perspective here is that engagement with your environmental context followed by a reflective phase where value determinations can be made (e.g., "that experience was worthwhile and I would like to do it again"), is something like the 'good life.'[319] To Dewey, the environment in which this acting/reflecting rhythm takes place is as important as the actions within it. The pragmatic attitude then is to take seriously the multitude of environmental contexts, including the urban setting which has traditionally been ignored by environmental ethicists, although that trend is changing somewhat.[320] Environments are unique and the way people react, live, and derive value within them are equally unique. In the pragmatist landscape, values are both created and destroyed by the deliberative, reason-giving process that takes place after cognizant action occurs. In this way, action is treated like an experiment and the reflection is the evaluative phase where we either reject or accept our hypotheses about what leads to the best outcomes (abstaining from certain behaviors or instigating them respectively) in each context. These characteristics lay the foundation for an ever-evolving plurality of perspectives that are sometimes challenged and sometimes

[319] D. C. Mathur, "A Note on the Concept of "Consummatory Experience" in Dewey's Aesthetics," *The Journal of Philosophy* 63, no. 9 (1966): 226.
[320] William Cronon, "The Trouble with Wilderness: Or, Getting Back to the Wrong Nature," *Environmental History* 1, no. 1 (1996): 7-28; Andrew H. Light and Christopher Heath Wellman, "Introduction: Urban Environmental Ethics," *Journal of Social Philosophy* 34, no. 1 (2003): 1-5.

reinforced by our communities. That which survives this social scrutiny may take hold over time.

Engaged Pragmatism as Meaning Making.

Up to this point in the dissertation, much has been said about the pragmatic epistemology as experimental and empirical but only briefly did I touch on the aesthetic consequences and value dimensions of this epistemology in the previous section and in Chapter 2. The current discussion allows me to summon a related, additional source of influence that bears on the pragmatic method as described here, namely, the sociological framework of symbolic interactionism (SI) as proffered by the colleagues of George Herbert Mead (1863-1931).

G.H. Mead, who received post-humous credit for SI, much like the pragmatic tradition, developed these ideas as a response to the dominant sociological theories of the early 20th century which suggested humans were not interested in creating meaning, rather they were merely willing subjects of continuous conditioning by social norms and dominant institutions.[321] Contraposed to this uninspiring analysis of human identity, Mead believed that humans derived meaning (understanding of and ways of relating to the external world) and self-identification through interactions with other individuals. Our identities are reflexive (read: adaptive) to societal expectations and this identity, this conception of self, plays into our interactions (e.g. with whom we associate, modes of communication, etc). When taking these interactions of mindful humans as a whole, we, in turn, define communities of increasing size and eventually society.[322] Stryker (2008)

[321] Michael J. Carter and Celene Fuller, "Symbolic Interactionism," *Sociopedia.isa*, (2015), 1-17.
[322] Sheldon Stryker, "From Mead to a Structural Symbolic Interactionism and Beyond," *Annual Review of Sociology* 34, (2008), 14-31.

summarizes this triangular relationship as "society shapes self shapes social interaction"[323] where I would add the last leg for closure and emphasis: shapes society. The import the theory of symbolic interactionism has in this context is to aid in the explanation of both why participants might engage in collaborations (or any other type of social organization) in the first place, as well as what keeps them committed to them (or not). It offers a theoretical basis couched in sociology for the so-far scantly mentioned value dimension of pragmatic epistemology.

If, according to the thesis of symbolic interactionism, interaction with our environments presents the possibility of creating (and recreating) one's self—namely, recognizing/altering desires, preferences, and values—our behaviors are then physical manifestations of assigned meaning,[324] akin to the aforementioned Deweyean aesthetics position of the consummatory experience.[325] We navigate unknown situations and come away with greater understanding, with new or solidified interpretations that engage our reflective selves. We reflect and we learn by manipulating our environments such that we answer whether unfamiliar stimuli are what they are perceived to be.[326] A bidirectional influence between the actor and the objects or people that she encounters allows this learning to occur. Most pragmatists attempted to explain away the relativity that peeks out of this working description: that given two actors in similar contexts, each navigating through uncertainty, they might settle on different meaningful interpretations. Dewey,

[323] Ibid., 19.
[324] Charles Sanders Peirce, *The Collected Papers of Charles S. Peirce's*, eds. Charles Hartshorne and Paul Weiss (Cambridge, Mass: Harvard University Press, 1932), 5.388.
[325] D. C. Mathur, "A Note on the Concept of "Consummatory Experience" in Dewey's Aesthetics," *The Journal of Philosophy* 63, no. 9 (1966): 225–231.
[326] Dmitri N. Shalin, "Pragmatism and Social Interactionism" *American Sociological Review* 51, no. 1 (1986): 11.

Peirce, and to some extent James appealed to the forces of the community to resolve this indeterminacy. They thought that the social process of actors engaged in community membership would eventually settle upon, "meanings [that are] objective as well as universal."[327] For Mead, the significance of meaning is made concrete by the use of symbols, or language specific to the description of the object that is shared among those who ascribe meaning to it. For instance, most Westerners readily perceive the presence a shiny stone adhered to a metal band on the left fourth digit as a symbol of commitment to a significant other. The first pair to signal their marriage in this way presumably had interactions with others who then emulated the wearing of a ring. As interactions and encounters spread, many cultures that exist under the Western umbrella now share similar interpretations of wedding rings; it has achieved associated meaningfulness by a large number of people. Wedding rings are likely the most obvious example, but the point is that everyday behavior, including thoughts and language, can also be understood as a manifestation of meaningful interactions.

For collaborative enterprises with environmental objectives, we can utilize this theory to help situate the multiplicity of perspectives that might obtain in a group. Practicing symbolic interactionists have indeed done similar work. While I cannot be as charitable in my articulation as a professional sociologist, I think the lesson here is that participants have ascribed either positive or negative meanings to their continued engagement with collaboratives (i.e., a belief that participation will preserve or instantiate some collective value equivalent to their own personal beliefs, or, conversely, that the group is working to prevent or snuff out certain possibilities that may be dis-valuable).

[327] John Dewey, *Experience and Nature*, (NY: N.Y. Dover Publications, 1958), 58.

When persistent collaboratives reach the point of fatigue[328] and participants are no longer attentive, the possible interpretations here are the following: subjective value of any individual did not change throughout the course of the collaboration and the group was ineffective in identifying and relating with said value. So, despite best efforts, value consensus was not attained, and therefore, the opportunity cost to participation became too high and attrition took hold. Or, subjective value of any individual did change, and therefore the meaning initially crafted with and by participation in the collaborative did not persist. In other words, movement (perhaps to extremes) in individual values through the course of participation proved incommensurable. The SI theory also allows for the collaborative unit to be analyzed as if it were an actor. Dewey confirms, "The individual and society are neither opposed to each other nor separated from each other. Society is a society of individuals and the individual is a social individual,"[329] which comports with Mead: “He [a man] constitutes society as genuinely as society constitutes the individual."[330] Shared, collective values have the ability to shift overtime, thereby leaving participants with the choice to rally for their steadfast perspective or become decreasingly influential in charting the collective’s trajectory. It is also possible that the shared meaning becomes diffuse and separate incompatible camps form that fracture the collective identity.

Connected to this notion of meaning-creation *qua* interaction is the idea that these transactions occur within a specific physical and temporal context, an environment. The

[328] James Butler, J.C. Young, Iain Mcmyn, Ben Leyshon, I.M. Graham, Ian Walker, John Baxter, Jane Dodd, and Caroline Warburton, "Evaluating Adaptive Co-management as Conservation Conflict Resolution: Learning from Seals and Salmon," *Journal of Environmental Management* 160, (2015): 212-25.
[329] (Dewey, [1897] 1972:55).
[330] (Mead, 1935-36:70).

argument that pragmatism is an earnest environmental ethic made in Chapter 2 is bolstered here by the empirical work environmental sociologists conduct when examining the meaning of spaces. Some have pointed out that while meanings of space are susceptible to manipulation from the State and other, larger forces, the composition of spaces is perhaps the main import for meaning construction.[331] This means the plants, animals, geography, and 'presences' or a 'connectedness' in a space can be treated as independent variables.[332] Indeed, a study taking the SI perspective conducted by Leap (2015) seems to suggest that the values and attitudes citizens held toward a Wildlife Refuge in Missouri fundamentally shifted once the keystone Canadian geese changed their migration habits, visiting the Refuge less frequently. The collective meaning attributed to the Refuge commuted from avid birdwatching, research, and conservationist hotspot to merely an outdoor recreation site despite the U.S. Fish and Wildlife Service running educational programs to bolster the Refuge's previous attractions. With the missing geese, the Refuge changed in meaning. While, pre-Darwinian philosophy was characterized by Cartesian dominance, therefore the principal epistemological questions concerned the relation between the body and mind, Darwin's insights on natural selection represented a sea-change and brought to light the importance of the relationship between the organism and its environment,[333] essentially providing the sociological locus of analysis. McLaughlin and Dietz (2015) discuss this relationship in terms of responses to climate change and how effective vulnerability research really hangs on "a socially

[331] Braden Leap, "Redefining the Refuge: Symbolic Interactionism and the Emergent Meanings of Environmentally Variable Spaces" *Symbolic Interaction* 38 (2015): 521-538.
[332] Michael Mayerfeld Bell, "The Ghosts of Place." *Theory and Society* 26, no. 6 (1997): 814.
[333] Dmitri N. Shalin, "Pragmatism and Social Interactionism," *American Sociological Review* 51, no. 1 (1986), 11.

constructed adaptive landscape" combining "sociologists' insights into structure–environment interactions, constructivists' attention to agency, language and culture as well as critical theorists' concerns with political and economic power, inequality and processes of marginalization."[334] SI theory, and pragmatism more generally, has import in many of these defined areas.

The temporal components of action are often understated. Pragmatism is an anticipatory perspective in that actions are undertaken with certain expectations. Actions are swollen with previous experience, but nevertheless contingent. SI also aids in the theoretical exploration of pragmatic anticipation by offering a similarly aligned temporal component to its observational methodology. That like Dewey's description of the knowledge-building rhythm, SI suggests that actors, in their search for meanings are not in stasis, but are reflective of the previous experience and act in anticipation of imagined results that the individual hopes are affirmatory of established meanings.

The dissolution of collaboratives ought not be surprising. Indeed, the opposite is what many early sociologists believe to be true: The persistent coordination and management of shared, meaningful interactions is to be lauded. Participants in these schemes begin to self-identify as collaborators,[335] and while that identity is continuously put to the test by uncertainty and unexpected challenges, it remains a motivating and cohesive force.

[334] Paul Mclaughlin and Thomas Dietz. "Structure, Agency and Environment: Toward an Integrated Perspective on Vulnerability." *Global Environmental Change* 18, no. 1 (2008): 108.
[335] Anonymous interviewee, personal communication, November 2018.

Principlists and Pragmatists: A Compact.

The discussion extended here is not wholly inapplicable to the principlist methodology. Indeed, the principled individual should be invited to participate in collaborative environmental processes, but we can quickly see how, by remaining plainly rigid in one's environmental valuations, we reach an impasse. Reconciliation is unlikely, compromise is out of the question, common ground is improbable. Whether or not the creation of innovative policy proposals through the deliberative process is tantamount to a violation of any one's principles is a legitimate worry. This is one of the critiques leveled against the pragmatic method.[336] Friendly critics of environmental pragmatism like Willis Jenkins, who would celebrate the inclusion of what he refers to as 'cosmological approaches,' seem to gloss over the issue that we have experienced little cultural movement based on the adherence to non-anthropocentric environmental ethics as discussed in Part I of this dissertation. Many of these non-pragmatic positions which enjoy mainstream support in the field of environmental ethics have yet to move the needle towards addressing sustainability issues (and I think despite this 'failure', increasing awareness is to be commended, although some principled ethicists may not feel the same way).[337]

My preference for a pragmatic approach is not based on avarice, one-upmanship, or any strong desire for vindication. It is however a kind of bet, that if I had limited resources, limited time, limited knowledge, limited capacities for change, little (but

[336] Willis Jenkins, "Environmental Pragmatism, Adaptive Management, and Cultural Reform," *Ethics & the Environment* 16, no. 1, (2011): 53.
[337] Laura Westra quote. Principles right and wrong reasons

increasing) cultural inertia[338], shouting "a thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community!"[339] cannot suffice. While I may even agree with such a statement, my belief is that we need to generate workable policy proposals that can lead to actual outcomes while keeping a keen eye on all forms of justice, including environmental. My dissection of the mainstream/principlist/foundational/cosmological method in this chapter leads me to believe that, within that framework, it is unlikely to come to pass. Before pressing on to connect the pragmatic view to existent management approaches, there are a few points that I would like to restate:

Any indictment of mainstream environmental ethics here should be viewed as both a friendly critique of the field, but also of the larger systems that entice pro-environmental thinkers to turn toward problem-based approaches. I cannot say with any certainty that my adoption of a pragmatic environmental philosophy would carry the same potency if we lived in a principlist utopia where humans and nonhuman species co-existed without violence nor dilemma. For now, I think that we can be diverse in our approaches, we can view the plurality of perspectives as tools in a tool-kit.[340] Secondly, engagement with the pragmatic method is not to say that any one person should be resigned to contentment with the results of the decision-making process, the

[338] For instance, House Resolution 109 of the 116th Congress, colloquially known as the Green New Deal quickly garnered a plurality of public support, even from politically opposed constituents. See: Abel Gustafson, Seth Rosenthal, Anthony Leiserowitz, Edward Maibach, John Kotcher, Matthew Ballew, and Matthew Goldberg, *The Green New Deal has Strong Bipartisan Support*, Yale University and George Mason University. New Haven, CT: Yale Program on Climate Change Communication (2019).
[339] Aldo Leopold, *A Sand County Almanac and Sketches Here and There*, (New York: Oxford University Press, 1949), 88.

[340] Ben A. Minteer and James P. Collins. "Ecological Ethics: Building a New Tool Kit for Ecologists and Biodiversity Managers." Conservation Biology 19, no. 6 (2005): 1803-812.

implementation, the outcomes, etc. In the end, the pragmatic method makes a promise of both procedural and resultant improvement based on a belief that social-learning and coordination around specified problems is likely to occur.

Adaptive Co-Management Methodology

By now, it should be clear that there is some coherence between the pragmatic worldview and the management tradition known as adaptive co-management. While much ground was already covered on this front in Chapter 3, I want to be explicit with my conception of adaptive co-management and its corresponding methodology for proposing solutions to environmental management problems. The exercise that follows is an attempt to propose a direct linkage between the methodology of a pragmatic environmental ethic as I understand it and participation in an adaptive co-management scheme. Concurrently, the exercise should also expose the methodological deficiencies with the mainstream environmental ethics position.

Thinking of a management actions as a chain of events has proven useful to analyze potential influences toward a desired outcome, a kind of causal mechanism analysis.[341] Baird et al. (2018) utilize a process tracing methodology that looks earnestly at the relationship between initial conditions and outcomes while offering evidence from a case study of the different causal mechanisms that are indeed at play. Their case study demonstrates that the perceived existence of some environmental threat can spur so-called entrepreneurs (leaders, organizers, advocates) to seek out resolutions developed by actors from similar ecological contexts and, while in-group coalitions begin to form to

[341] Jens Newig, Edward Challies, Nicolas W. Jager, Elisa Kochskaemper, and Ana Adzersen. "The Environmental Performance of Participatory and Collaborative Governance: A Framework of Causal Mechanisms." *Policy Studies Journal*46, no. 2 (2018): 272.

tackle these problems, out-group members slowly involve themselves due to a desire to be heard in the decision-making process.[342]

A working theory in environmental management is that collaboration not only exemplifies a good, just process by legitimizing a plurality of worldviews, sharing decision-making authority, providing a space for learning, etc., but also has the added benefit of resulting in more acceptable outcomes (i.e. these outcomes would be viewed as equal or better compared to products of some other decision-making process like central authority).[343] This comes even with the recognition that collaboration has associated administrative requirements (e.g. development, organization, financing) and participatory demands (e.g. time, dedication, communication), all of which can be considered transaction costs.[344] Adopting an iterative management philosophy itself requires comfort with sets of challenges such as the acceptance of failure, missing the desired target, and understanding that the learning process can take multiple management cycles. Despite these costs, there are some factors, such as the perceived severity of an ecological problem, that can inspire initially opposing groups to not only form, but engage long-term with problem-solving coalitions.[345] Further, the learning that takes place within these groups is naturally augmented through an open process of hypothesizing, testing, and monitoring (i.e. adaptation).[346] Each of these steps (see **Figure 4**) contains finer grain

[342] Julia Baird, Lisen Schultz, Ryan Plummer, Derek Armitage, and Orjan Bodin, "Emergence of Collaborative Environmental Governance: What are the Causal Mechanisms?", *Environmental Management 63, no. 1 (*2019):16-31.
[343] Carl Folke, Thomas Hahn, Per Olsson, and Jon Norberg, "Adaptive Governance of Social-ecological Systems", *Annual Review of Environment and Resources* 30, (2005): 441–473.
[344] Mark Lubell, Mark Schneider, John T. Scholz, and Mihriye Mete. "Watershed Partnerships and the Emergence of Collective Action Institutions." *American Journal of Political Science* 46, no. 1 (2002): 148–63.
[345] Julia Baird, Lisen Schultz, Ryan Plummer, Derek Armitage, and Orjan Bodin, "Emergence of Collaborative Environmental Governance: What are the Causal Mechanisms?" *Environmental Management* (2018): 3.
[346]

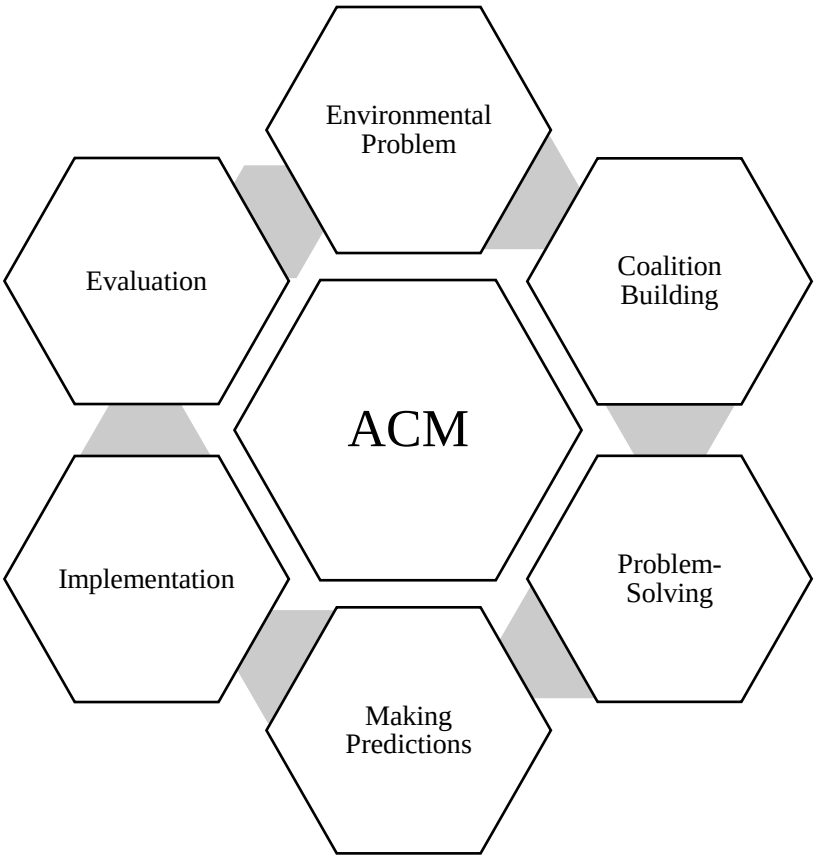


Figure 4. Stylized process of Adaptive Co-management.

concerns like those echoed in the preceding pragmatic section (e.g. how decisions are reached, what consent and agreement means).

Having said that, the literature covering both the collaborative and adaptive aspects of environmental management is increasingly vast. Even the most generous attempt to relay the growing knowledge about best practices is likely to miss out on essential contributions. At the same time, a breakdown exercise, like the one that follows, can help elucidate the many moving pieces that exist in a management effort and allow a closer look at some of the trade-offs or turning points that might be potent enough to, in the end, steer a project's trajectory. I will impose a linear structure over what is assuredly a dynamic process that ebbs in flows and make a few comments on each of the following

pieces: problem emergence, coalition building, problem solving and making predictions, implementation and evaluation, and lastly, capturing adaptation.

Problem Emergence.

This is perhaps the least controversial block in the process, but because it both serves as the impetus and object of organization, some considerations are worth mentioning here. The socio-ecological context in which this problem emerges as well as the pre-conditions for cooperation[347] are relevant factors which can influence the perceived urgency of a problem.[348] For instance, in a sensitive ecosystem characterized by individualists with low social cohesion and a subsistent economy, it's likely the management problem, say, an invasive species, would be fairly characterized as severe. With so little capital, coordinating a response will be costly and perhaps out of reach in some communities. Even if a problem that threatens shared values is identified, there may be little or no capacity (e.g. human, social, economic capital) to respond to it.[349]

Coalition Building.

Before a project might be earnestly referred to as a collaboration, the coalition building phase is integral to reaching said designation. The level of 'openness' a collaboration, insofar as it can be called one, is the first (even implicit) choice.[350] This forces a discussion over inclusiveness, over what level of participation is deemed appropriate by those that, by luck, are part of the initial salvo of collaborators. This has been diced up in three ways to aid in the measurement of participation: breadth of

[347] Baird et al., "Emergence of Collaborative Environment Governance: What are the Causal Mechanisms?" 17.
[348] Lee, *Compass and Gryoscope*, 63.
[349] Fikret Berkes, "Cross-Scale Institutional Linkages: Perspective From the Bottom Up," in: *The Drama of the Commons*, Ostrom, E., Dietz, T., Dolsˇak, N., Stern, P.C., Stonich, S., Weber, E.U. eds., (National Academy Press, Washington, DC, 2002): 366.
[350] Jens Newig et al., "The Environmental Performance of Participatory and Collaborative Governance: A Framework of Causal Mechanisms," 269.

involvement, communication, and power delegation.[351] True co-management arrangements should score highly on each of these measurements.

This analysis speaks mostly to the importance of context and the relevance of initial conditions (including key-actors) in the developmental phase of self-emergent environmental collaborations. Certainly, there are many cases where despite these extant conditions, the resultant outcome is not a product of faithful and open attempts at collaboration. This speaks to the kinds of decisions that occur in all phases of a management effort. For instance, key-actors or entrepreneurs can forestall the inclusion of outsiders, essentially squelching the potential for a plurality of environmental concerns to be raised as part of the planning process.[352] The goal of collaborative arrangements however, is to leverage the collective swath of skills and expertise to facilitate the efficient achievement of shared goals and share the burdens (and rewards) fairly.[353]

Problem Solving and Making Predictions.

As before, the generation of alternatives is the key piece to problem solving, while the predictive phase amounts to making a choice about which alternative will work. Collaborative arrangements are particularly suited for both tasks.[354] The first step here is to define the unit of analysis.[355] This will not only be informed by the magnitude of the

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[351] Jens Newig et al., "The Environmental Performance of Participatory and Collaborative Governance: A Framework of Causal Mechanisms," 273.
[352] This entrepreneurial role comports nicely with the pragmatic desire to retrieve social organization from 'elites'. As broached in the previous section, the process of developing problem-solving forums (including adaptive co-management) need not default to those with heavy influence—instead, it may be created through grassroots efforts. Contra to the insinuation in the text that entrepreneurs might actually act as a gatekeeper for participation, a pragmatic orientation would necessitate a pure openness and inclusivity.
[353] Lars Carlsson and Fikret Berkes, "Co-management: Concepts and Methodological Implications," *Journal of Environmental Management* 75 (2005): 66.
[354] Per Olsson, Carl Folke, and Fikret Berkes, "Adaptive Co-Management for Building Resilience in Social–Ecological Systems," *Environmental Management* 34, (2004), 83.
[355] Lars Carlsson and Fikret Berkes, "Co-management: Concepts and Methodological Implications," *Journal of Environmental Management* 75, (2004), 72.

problem, but the composition of stakeholders from the coalition building phase.[356] Certain collaborators may have expert policy or scientific knowledge which opens or closes management opportunities. In the process of sharing knowledge, taking note of who has other areas of expertise, where they are best put to use, and formalizing the distribution of labor, works towards efficiency and fairness. Research also seems to suggest that successful integration of a plurality of knowledge bases as part of the initial problem solving and predictive process leads to innovate results.[357] A plurality of experiences, expertise, and value is also key to recognizing structural uncertainty (i.e. how the system will react to management), which again feeds back onto the weighting of alternatives.[358] Coursing through this phase is also the process of conflict resolution and deliberation (and potentially debate) [359] after which begins the process of implementation followed by evaluation.[360]

Implementation and Evaluation.

Here is perhaps the most appropriate space to talk about the iterative learning process indelible to the adaptive management scheme. This learning occurs post-implementation, during the monitoring and evaluative phase. Learning in collaboratives has been described in multiple ways (e.g., learning communities or epistemic

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[356] Peter M. Haas, "Introduction: Epistemic Communities and International Policy Coordination," *International Organization* 46, 1 (1992), 1–35.
[357] Peter J. Richerson, Robert Boyd, and Brian Paciotti, "Evolutionary Theory of Commons Management," in: *The Drama of the Commons*, Ostrom, E., Dietz, T., Dolsˇak, N., Stern, P.C., Stonich, S., Weber, E.U. eds., (National Academy Press, Washington, DC, 2002): 428.
[358] Michael J. Conroy and John P. Carroll, *Quantitative Conservation of Vertebrates*, (Hoboken: John Wiley & Sons, Incorporated, 2011), 274.
[359] Lars Carlsson and Fikret Berkes, "Co-management: Concepts and Methodological Implications", 74.
[360] It is also worth mentioning that much of the practical literature involves the development of conservation and biodiversity models that are used as inputs for decision-making. These techniques can be invaluable when the expertise to develop and interpret them exists.

communities) but, at the core, is a learning-by-doing attitude. This approach has shown useful in systems of high uncertainty with inherent unpredictability and stochasticity as repeated iterations confers more and more knowledge about the system.[361] I follow Cundill et al. (2012), who define learning that takes place in adaptive collaborative systems as inherently social:

> the collective action and reflection that takes place among both individuals and groups when they work to understand the relations between social and ecological systems; it is conceptualized as a process of transformative social change in which participants critically question and potentially discard existing norms, values, institutions, and interests to pursue actions that are desirable to them.[362]

Knowledge that is generated through the collaboration builds social capital and creates a capacity to respond to future collective challenges.

Capturing Adaptation.

Advocates such as Kai Lee (1993), Lance Gunderson (2003), Craig Allen (2011), and others suggest that environmental management ought to be viewed as experimentation and that iterative learning is essential to managing natural resources and "establishing" or "enhancing" the resilience of a desired state. Practitioners of adaptive management recognize inherent uncertainty in ecosystem level knowledge and manipulations. But rather than take surprises and miscalculations as failures, they are

[361] Emilie Lindkvist and Jon Norberg, "Modeling Experiential Learning: The Challenges Posed by Threshold Dynamics for Sustainable Renewable Resource Management," *Ecological Economics* 104 (2014): 107–18.
[362] Georgina Cundill, g. S. Cumming, d. Biggs, and c. Fabricius. "Soft Systems Thinking and Social Learning for Adaptive Management." *Conservation Biology* 26, no. 1 (2012): 16.

viewed as opportunities to learn. This requires management flexibility and the exploration of alternative strategies for achieving desired outcomes. Wherever possible, new information learned through careful monitoring and measuring of trials-and-errors is injected back into the management scheme. Managers have the opportunity to implement plans that either create a desired set of outcomes or respond to system perturbations (new development fragmenting a wildlife corridor, for instance) to ensure the current state of affairs is maintained. In addition to following models of learning (i.e. constructivism) and developing alternative strategies, recognizing the political options to create and use an evaluative framework is essential to properly wield the theory of adaptive co-management. Taking advantage of the ability to inherit the collective experience to plan for the future requires some reflective steps when certain outcomes are desired.

However, using resource management policies as experiments comes with familiar costs such as operating with imperfect information and the political risk of embracing failure. That is, the development of other possible strategies is, at some level, the recognition that one or many may not reach the desired goal. An added dimension to adaptively managing scarce or depleted resources (or endangered species) is that costs of operating are likely higher and a risk averse actions are preferred. Accepting failure and working with an imperiled management object are typically at odds. Thus, they are both potential barriers to adopting a strategy of adaptive management which tends to work best when there is adequate time for monitoring, learning, and reiteration. This process is also potentially a "top-down" venture, excluding many of those who might be influenced by the decisions made.

Adaptive management is also possibly very technical and inaccessible to laymen or citizen scientists interested in contributing to the process. Carl Walters, one of the early pioneers of adaptive environmental management for instance, dedicates roughly 5 times the number of pages to mathematical models detailing various contextual approaches to measuring ecological response as he does to speaking to the basic principles of adaptive management in his most eminent work.[363] Nevertheless, the lessons are clear that, in cases where management is deemed necessary, one-shot interventions are inadequate for the long-term sustainability of resource systems.[364]

Synthesis

Here, I have attempted to demonstrate a methodological correspondence between adaptive co-management and a pragmatic method applied to an environmental context. A side effect of this correspondence is that it exposed the practical deficiencies with a principlist (namely, non-anthropocentric position) orientation in environmental ethics. The principlist who follows their strict methodology can only show support for activities that protect the intrinsic values of management objects, which, practically speaking, would be to deploy countless miles of fencing and establishing areas of refuge absent human presence. The principlist will often be disappointed. Conversely, the pragmatic/ACM method invites the principlist to open dialogue and considers their nature protection position as a live option. Ultimately, the composition of the deliberative group will influence the selected management activity, but regardless of this composition, the

[363] Carl Walters, *Adaptive Management of Renewable Resources*, (NY: MacMillan Publishing Company, 1986). This disparity is not a value judgement. Of course, I believe that the models are incredibly important to the intellectual agenda of adaptive management. The point here is that the use of these models requires a level of familiarity and sophistication most people do not have.
[364] Lee, Compass and Gyroscope, 173.

process needs to be adaptive. That is, if the principlist's position receives a degree of lesser priority in the first implementation, results of other activities could force reconsideration.

The benefits of this project were not so clear in the initial, formative stages. In a true learning-by-doing fashion, multiple constructive thoughts have since occurred, some with import from conversations with environmental management experts, Drs. Lance Gunderson and Ryan Plummer.[365] Namely, that this relationship has the potential to address practical and theoretical areas of concern for pragmatism and adaptive co-management alike in at least five ways.

1. Adaptive co-management and pragmatism together suffer the same burdens of a deliberative, democratic process where actors, whose values and attached-meanings, can muck up the process and simply lead to ineffectual paralysis. A conversation with Dr. Ryan Plummer in January of 2019 touched on this point. Adaptive co-management assumptively provides an arena for deliberating perspectives, values, and desired outcomes, among other procedural tasks. The optimistic reading suggests the deliberative form of decision-making will generate more equitable and effectual policy proposals (which is proceeded by implementation and monitoring). In my view, the pragmatic approach straddles the philosophical line between a consequentialist and a deontological assessment of ethics. This is important to note because this carries forth the classical reading of pragmatism proffered most notably by James and Dewey that truth is what is

[365] Each interview began with introductions and a detailed explanation as to why I had requested a conversation. This entailed explaining my background and the aim of my dissertation: recognizing a methodological similarity between pragmatism and adaptive co-management, then attempting to bridge the theory by explaining similarities, discontinuities, and what the benefits would be for such a lengthy process. Interviews were conducted semi-structurally, but with no script.

useful and combines it with a focus on the *process* through which reaching this 'truth' is possible. The Categorical Imperative for pragmatists, insofar as there can be one, is the deliberative process to be found within critical communities. What this means for its application to a practical natural resource problem, is that we can be equally attuned to what the outcomes are and how we go about achieving them. Dr. Plummer also pointed out that this latter point has often been lost on resource managers that are not exposed to different ways-of-knowing, or more plainly, any form collaborative management, instead opting for traditional command-and-control management styles, that while adaptive, focuses on the results of intervention, not on how to intervene. I'll call this potential benefit an avoidance of *outcomes tunnel-vision*.

2. Biodiversity conservation and natural resource management more generally cannot be divorced from value claims or even implicit ethical orientations. Given the SI discussion above, I believe this can be said for any occupation, but is especially true in the fields of education, medicine, and of course, ecosystem management among others. Indeed, you'd be hard pressed to find a biodiversity conservation undergraduate engaged in a four-year program of study that has no underlying pro-animal perspective (not to mention any potential student debt). Students in this field are increasingly receiving training in environmental ethics and related science and society courses, but once they enter the professional field, rarely do their jobs require them to adhere to an *environmental* ethical code (but assuredly a professional one). What this might mean is practitioners are not being continuously exposed to, in my view, the necessary ethical toolkit that will help them obtain a sensitivity to communities in which they work (e.g. to understand a community member's environmental ethic and how it explains meaning and

values locals attach to places and/or species). Conversations with Dr. Lance Gunderson in February of 2019 substantiate this view. We discussed the difficulty associated with attending to all the component pieces of both adaptive and collaborative management schemes. It becomes incumbent on the practitioner to develop said sensitivities, but scarcely are they prepared to undertake this task. The larger role of philosophers then, is as I argue in Chapter 2, to aid in the translation of values, to act as a conduit to improve the coordination between resource management efforts and communities that are affected by the persistence of sometimes invasive or restrictive, management activities. This can also apply to situations that are not deploying the adaptive co-management schema.

Relatedly, adaptive management in an ecological context primarily developed in a technical sense, as a tool. Dr. Gunderson admits that adaptive management construed merely as an instrument for ecological intervention could have difficulty responding to "non-scientific" questions like the ones raised by environmental ethicists. Therefore, the attention adaptive management has received from philosophers like Bryan Norton (and might I humbly add, myself) is welcomed. Clearly there are normative dimensions inherent in the adaptive process and greater attention to these dimensions should be illuminated. I'll call this *value-laden.*

3. Related to the discussion that took place with Dr. Plummer, he and I wondered whether the alternative framing of pragmatism held the potential to add justification to the adoption of adaptive co-management in contexts where it had not yet been considered. The idea seems to be that some systems are the result of social-ecological traps (highly resilient, yet undesirable states-of-affairs).[366] The causes of this are many-

[366] Wiebren Boonstra, Johannes, Emma Bjorkvik, L. Jamila Haider, and Vanessa Masterson. "Human Responses to Social-ecological Traps." *Sustainability Science* 11, no. 6, (2016): 877–89.

fold but included among them is systemic illiteracy amongst key actors, especially if those actors maintain hegemonic control.[367] An environmental pragmatism in such a system could prove useful to frame the imbalanced power structures, among other imbalances (e.g., inequitable access to some resource for an unjustified reason) as an ethical issue We can refer to this benefit as *transformative*.

4. As I argued in the first chapter of this dissertation, ethicists, even in a generous reading, are not leaving a lasting impact on some of the most influential actors, namely environmental policy makers. Even if we can only improve our relations, I believe there is an opportunity here for the applied philosophy of environmental ethics to attain greater relevance in a society that is experiencing rapid ecological change. I cannot be sure that the progenitors of environmental ethics proper understood that in half a centuries time, the intellectual foundation they laid would be, in my view, desperately needed. Unfortunately, as I discussed in the first two chapters of this dissertation, we have not learned the value of abatement or restraint, much less ingested any understanding of the intrinsic value of nature. Now, I think, we as philosophers and ethicists should relax our expectations, become flexible in our own principles in order to address the increasingly large number of wicked sustainability problems. This means diversifying our approaches, attaching ourselves to related bodies of work (as I have attempted to do here), and as Dewey said, help 'philosophy recover itself.'[368] I call this *recovery*.

[367] Stephen R. Carpenter and William A. Brock. "Adaptive Capacity and Traps", *Ecology and Society* 13, no. 2 (2008): 40.

[368] Derivation of the following quote: Philosophy recovers itself when it ceases to be a device for dealing with the problems of philosophers and becomes a method, cultivated by philosophers, for dealing with the problems of men [and women]." 1917

5. Lastly, this exercise gives us an opportunity to plainly consider some of pragmatism's own deficiencies (perceived or real) in light of this exposure to ACM. As touched on in the first section of this chapter, pragmatism, as a philosophical perspective is often applied across disciplines and typically runs against the dominant theory in those disciplines. Pragmatism can therefore be exhausting: it requires genuine faith in process and people, it requires determination and engagement and constant articulation, and it can be as enchanting as any other position. As a philosophy and as a method, the acknowledgement that a plurality of values inheres in groups of people is, to some, tantamount to a relativistic value theory. That is, because the pragmatic philosophy is one about process, not principles, it is seen as incapable of rejecting certain values that are *prima facie* immoral. The ACM process here might give some insight toward this apparent handicap (although I think there are other good, meta-philosophical rebuttals to this claim, see: Lo, 2009). The social-learning and experiential piece of the pragmatic method is often hard to capture. Because the process is contextual, there will be different understandings of what social-learning is, how it can be measured, how to best facilitate it, etc.

Despite these open questions, there is an undercurrent that I believe is a kind of fundamental understanding about what will fly and what won't in a pragmatic circle, a circle that requires a pseudo-democratic political context. To illustrate this point, we need only look at the commonly invoked 1st Amendment protections, namely the guarantee to free speech in the United States. There are, along with this seemingly objective or 'unalienable' right, types of speech that are unprotected. Ensuring that minority values and perspectives receive respect is different than a rigid inclusivity, determined to

amalgamize and conciliate all views into one. There is no directive within the pragmatist or ACM charter that necessitates the support of a minority view that, in many other social circles, is considered deplorable. In an environmental management context, it's hard to even imagine what a view like this might be—using inhumane species removal techniques perhaps? Setting forests ablaze? Contaminating streams? These are the sorts of ideas that the critical, collaborative communities would reject. Based on the methodological steps discussed here and elsewhere in this dissertation, I feel that pragmatism is more robust as a framework for collective action as any other.

Up to this point, we have been exploring the theoretical connections based on a methodological and epistemological similarity between pragmatism and adaptive co-management. The following chapter, and the beginning of the third part of this dissertation, will seek to further this cause with the use of case study research. The primary aim in Chapter 5, therefore, is to seek solid ground for these ideas. As a practice of descriptive ethics, I am curious about the ethical motivations participants and coordinators of adaptive co-management schemes actually carry forth in their management efforts. In particular, I'm interested in whether a form of environmental pragmatism, distilled from several semi-structured interviews, is to be discovered in the inner-workings of the Cienegas Watershed Partnership within the Las Cienegas Natural Conservation Area near Tucson, Arizona and the White Tank Mountains Conservancy Wildlife Corridor project near Phoenix, Arizona. The result of the following investigation therefore completes a trilateral argument on the virtues of adopting a pragmatic perspective in environmental ethics.

PART III: Empirical Argument

5. CULTURES OF COLLABORATION IN THE SONORAN DESERT: EMPIRICAL PRAGMATISM THROUGH ADAPTIVE CO-MANAGEMENT CASE STUDIES

Across the environmental management landscape, local collaborative efforts are increasingly understood as an essential element for realizing sustainability outcomes. Many scholars are now encouraging local communities to rally together to respond to natural resource scarcity and mismanagement, with the idea that a mosaic of local efforts build enough inertia to transform the larger socio-ecological systems in which they persist.[369] Among many other challenges, collaboration around environmental objectives pits the values of stakeholders against one another, highlighting the need for leadership, resource capacity, and effective communication skills.[370]

At the same time, ecosystems are complex and therefore difficult to sustainably manage long-term. Coupled with inherent uncertainty, ecosystem management has many cross-scalar effects in which surprises and unexpected consequences, sometimes devastating, may emerge.[371] Adaptive management has developed as an appropriate response to this complicated task.[372] Adaptive management is a learning-based approach that emphasizes careful policy crafting, but with the caveat that outcomes may not

[369] Lars Carlsson and Fikret Berkes, "Co-management: Concepts and Methodological Implications," *Juornal of Environmental Management* 75, (2004), 65-76; Carina Wyborn and R. Patrick Bixler, "Collaboration and Nested Environmental Governance: Scale Dependency, Scale Framing, and Cross-scale Interactions in Collaborative Conservation, J*ournal of Environmental Management* 123, (2013), 58-67.
[370] Fikret Berkes, Johan Colding, Carl Folke (Eds.*), Navigating social–ecological systems: Building Resilience for Complexity And Change*, (Cambridge, UK: Cambridge University Press, 2003), 352-387.
[371] Lance H. Gunderson and C.S. Holling, *Panarchy: Understanding Transformations in Human And Natural Systems*, (Washington, DC: Island Press, 2002).
[372] Derek R. Armitage, Ryan Plummer, Fikret Berkes, Robert I. Arthur, Anthony T. Charles, Iain J. Davidson-Hunt, Alan P. Diduck, Nancy C. Doubleday, Derek S. Johnson, Melissa Marschke, "Adaptive Co-Management for Social–Ecological Complexity," *Frontiers in Ecology and the Environment* 7 (2009): 95-102.

materialize in the way most desired.[373] This means then that adaptive management is iterative. The effects of previously implemented policies can be monitored and evaluated to inform the next policy proposal where it will, in turn, receive monitoring and evaluation. Careful consideration of management policies and their effects requires some territorial knowledge however, whether that is scientific or 'traditional.'[374] These challenges, among others, have led to a marriage between learning-based adaptive management with the community focused co-management schemes.[375] This chapter is an examination of two cases in Arizona that have both adaptive and collaborative elements.

The arena of investigation here are two groups of collaborators that have coalesced around environmental causes in Arizona. Case 1, the Cienega Watershed Partnership (CWP) in the Las Cienegas National Conservation Area (LCNCA), represents a nationally recognized example of successful collaboration (see: Caves et al., 2013; H.R. 2941)[376] which has served as a model for other collaborations in the state of Arizona.[377] Case 2, the White Tank Mountains Conservancy (WTMC) corridor project, is best described as a developing collaboration with lofty, but no less important, environmental targets. A true case comparison would likely enjoy at least some synchronicity in the procedural phase (e.g. both cases would have reached the same

[373] C.S. Holling and Gary K. Meffe, "Command and Control and The Pathology of Natural Resource Management," *Conservation Biology* 10, (1996), 328-337.
[374] Fikret Berkes, "Evolution of Co-management: Role of Knowledge Generation, Bridging Organizations and Social Learning," *Journal of Environmental Management* 90, (2009), 1692-1702.
[375] Armitage et al., "Adaptive Co-Management for Social–Ecological Complexity," 95-102.
[376]Jeremy K. Caves, Gitanjali S. Bodner, Karen Simms, Larry A. Fisher, and Tahnee Robertson. "Integrating Collaboration, Adaptive Management, and Scenario-Planning: Experiences at Las Cienegas National Conservation Area," *Ecology and Society* 18, no. 3 (2013); An act to establish the Las Cienegas National Conservation Area in the State of Arizona, H.R. 2941, 106th Cong. (2000).
[377] Cameron Childs, Abigail. M. York, Dave White, Mike L. Schoon, and Gitanjali S. Bodner, "Navigating A Murky Adaptive Comanagement Governance Network: Agua Fria Watershed, Arizona, USA," *Ecology and Society* 18, no. 4 (2013).

process milestones). Unfortunately, Case 2 did not progress as quickly as hoped. We can however compare how its trajectory comports with that of Case 1.

In addition to providing some whole-case commentary, interviews conducted with stakeholders in each setting uncover management characteristics which correspond to philosophical pragmatism. A codebook developed from relevant features of pragmatism[378] is used to employ a thematic analysis with the following aims: (1) discuss the coherence between adaptive environmental collaborations and a pragmatic praxis applied to the environment, (2) discuss challenge areas relevant to the cases at hand and how these challenges might be addressed with an explicit pragmatic orientation (3) discuss areas of deficiency within the pragmatic tradition in light of the cases. Whereas case study examinations in the philosophical pragmatism literature have been primarily utilized secondary sources,[379] this final point, and to some extent, the second, is a novel contribution to the literature.

Case Study Settings

Case 1: Cienega Watershed Partnership in Las Cienegas National Conservation Area

Las Cienegas National Conservation Area (LCNCA) is situated 40 miles southeast of the Tucson metropolitan area. The LCNCA exists centrally within the borders of the Empire-Cienega Resource Planning Area (ECRPA) which itself is bounded by Interstate 10 to the north, State Highway 83 to the west, the Whetstone Mountains to the east, and the Appleton-Whittell Research Ranch of the National Audubon Society to the south (**Figure 5**). This makes the ECRPA roughly 266 square

[378] Codebook is available in Appendix B.
[379] Bryan G. Norton, *Sustainable Values, Sustainable Change*, (Chicago: University of Chicago Press, 2015), 237-273.

miles while the LCNCA is about 71 square miles. Additional designations of concern are the Cienega Watershed Partnership (CWP) and the Sonoita Valley Planning Partnership (SVPP). In true co-management fashion, the latter was the initial group comprised of the Arizona Department of Game and Fish, U.S. Fish and Wildlife, U.S. Forest Service, Phoenix Zoo, The Nature Conservancy, and numerous locals interested in influencing the direction of the planning partnership among other non-profits.

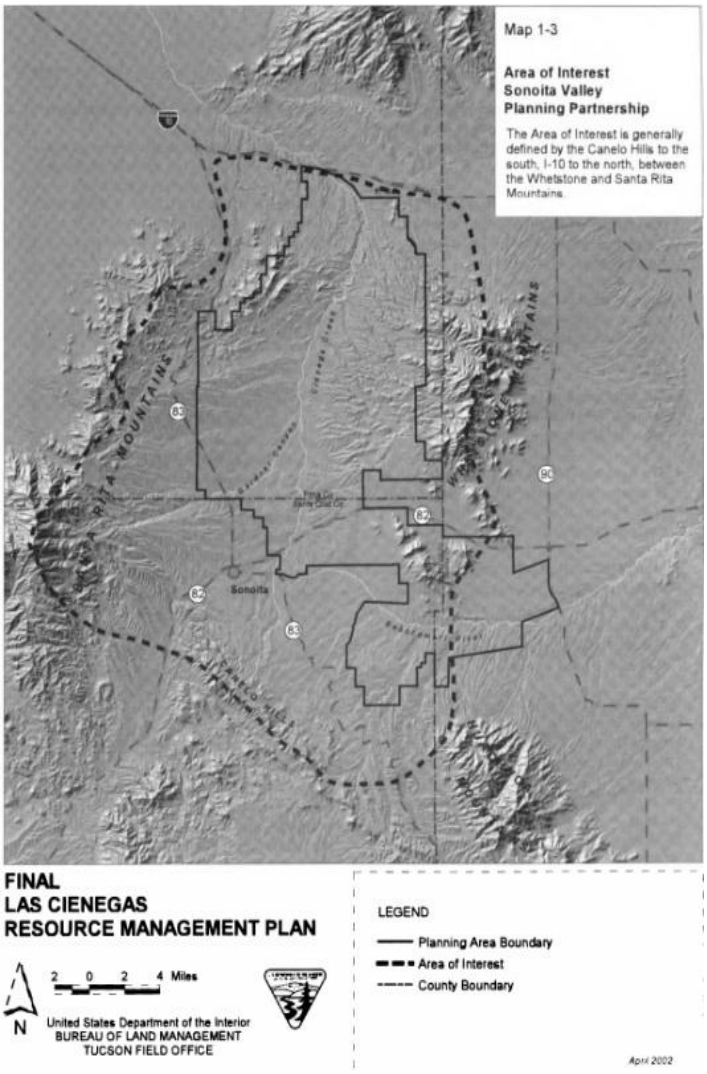

Figure 5. Map of LCNCA area grabbed from Shela McFarlin, *Proposed Las Cienegas Resource Management Plan and Final Environmental Impact Statement*, special report prepared to fulfill Bureau of Land Management's mandate to develop a management plan under 16 U.S. Code § 460ooo–4, June 2002.

The story of this collaboration can be traced to the 1960s when developers purchased available lands in what are now the ECRPA borders. These developers sold their lots to a copper mining company who planned to utilize the Cienega groundwater

for their mining operations in nearby mountains. The mining company cited an economic downturn as the reason to not establish long-term mining operations on the lot and offered the land up for sale instead. Local county officials, acutely aware of the city of Tucson's continued growth, approached the Bureau of Land Management (BLM) to consider purchasing the land—which they did—to protect and restore the watershed's ecosystem services. Now that the BLM is the primary owner of the land, they are mandated to cater to a plurality of public values and uses, for instance, grazing allotments, biodiversity conservation, and outdoor recreation.

Ecological Context.

The LCNCA is characterized by high desert grasslands and the convergence of three waterways (Babocomari River, Cienega Creek, and Sonoita Creek) indelible to local people and wildlife, such as the endangered black-tailed prairie dogs, Gila topminnows, and Southwestern willow flycatchers. The planning boundaries include five increasingly rare habitat types: Cienegas, cottonwood riparian zones, sacaton grasslands, mesquite forests, and desert grasslands.

Community Context.

Preceding the designation (in 2000) of the of Las Cienegas landscape as a National Conservation Area, a semi-informal group of representatives of governmental agencies and locals that called themselves the Sonoita Valley Planning Partnership was formed in 1995. Once the BLM was able to acquire a large portion of the land, that was at the time (and remains) a mosaic of ownership (Figure 5), the planning process was able to begin in earnest. As above, this group coalesced around perceived threats to the watershed from the promise of nearby development. One interviewee recalls coming

across a flyer posted in a diner in nearby Elgin, Arizona asking for community engagement in the planning process. For 5 years, the SVPP reportedly met once a month, steadily increasing in membership as participants recruited friends and neighbors. By 2002, the mailing list exceeded 220 people, 30 local businesses including ranchers, 75 NGOs, and numerous federal, state, county, and city officials and agencies. Although this is no gauge for level of collaborative activity and it is unclear how many members the SVPP began with, this level of growth is impressive. According to another interviewee, it can be attributed to several factors, including a culture of stewardship and community cohesiveness, as well as a sensitivity to environmental issues in the southern Arizona region.

Adaptive Co-management Process.

Some disciplinary insights suggest that co-management functions best as an emergent process, rather than one implemented with intent. Arguments for what counts as emergent vs. intentional cannot be covered with any great detail here, but, simply put, a distinction between enabling factors and conscious implementation is primarily at issue (and the point at which pre-conditions can be said to coerce adaptive co-management). The adaptive co-management process in Las Cienegas, I suggest, benefitted from both the communal aspect as described above (e.g. enabling factors or pre-conditions) and the expertise that managers, namely, Karen Simms, brought to bear in the area. Simms had learned about what she referred to as collaborative adaptive management (CAM) as a student in the early 1990s and thought that it would serve as a significant improvement

over traditional resource management plans which had garnered public agitation.[380] This agitation, again, was likely due to the strong sense of community and assuredly a desire for locals to control their environmental destinies.

Early on in this process (late 1990s), the development of two large, umbrella planning groups—one more explicitly human-centered and the other more focused on environmental conditions—emerged in initial workshops where interests, expertise, and values were solicited. Under both umbrellas, smaller working-groups were organized based on the aforementioned participant interests. The 'human' umbrella included recreational interests, livelihoods (primarily grazing), and management of heritage sites. The 'nature' or environmental group coalesced around concerns over species management, water health, habitat restoration projects, and erosion control, among other concerns. Over time, the dualistic umbrella diffused and five primary planning groups, now known as biological planning groups, emerged: landscapes, uplands, riparian/aquatic, and heritage. Each team produced organizing documents, including statements of purpose, defined their geographical scope, and developed loose research questions. These groups have persisted to this day and continue to meet quarterly. Bi-annual meetings occur in the spring and fall where all planning groups meet to share progress.

Outcomes.

Largely regarded as a success by its members,[381] the Cienega Watershed Partnership has persisted for over 25 years, itself a signal that there are some perceived

[380] Karen Simms, "Karen Simms Oral History Interview," interview by Shela McFarlin, *Arizona Memory Project*, April 18, 2012. http://azmemory.azlibrary.gov/digital/collection/cienoral/id/15/rec/5
[381] Anonymous interviewees, in discussion with the author, September-November 2019.

benefits to continued collaboration. According to a recent evaluation report conducted by the BLM in 2015, overall satisfaction was expressed by participants.[382] The survey did not dice up the results into the five existing planning groups under the Partnership's umbrella, but instead provided some commentary on both general process questions and how resources have been affected by management decisions. Table 8 below summarizes the report's findings based on my interpretation of the data provided. Responses solicited by authors were transposed to a Likert scale for quick comparisons.

[382] Chris Horyza, Amy Markstein, and Karen Simms, "Las Cienegas Resource Management Plan Evaluation," special report prepared to fulfill Bureau of Land Management mandate 43 CFR 1610.4-9, October 2015: 14. https://eplanning.blm.gov/epl-front-office/projects/lup/77418/104709/128277/LCNCA-RMP-Evaluation_FINAL.pdf

Table 7. Compiled results from Chris Horyza, Amy Markstein, and Karen Simms, *Las Cienegas Resource Management Plan Evaluation*, special report prepared to fulfill Bureau of Land Management mandate 43 CFR 1610.4-9, October 2015.

Resource	**Relevant Partnerships Involved**	**Stakeholder Evaluation**
Cultural	Empire Ranch Foundation, BLM Tucson	+
Fire and Fuels	Appleton-Whittell Research Ranch	++
Livestock Grazing	Cienega Watershed Partnership, The Nature Conservancy	~
Paleontological	BLM Tucson	n/a
Recreation	BLM Resource Advisory Council	--
Riparian	Cienega Watershed Partnership	++
Soil, Water, and Air	Appleton-Whittell Research Ranch	+
Special Designations (Areas of Critical Environmental Concern)	BLM Tucson	++
Travel Management	BLM Resource Advisory Council	-
Tribal Interests	BLM Tucson	~
Vegetation	Agricultural Research Service, Appleton-Whittell Research Ranch	+
Visual	Tucson Electric Power Company	--
Wilderness Characteristics		n/a
Wildlife and Special Status Species	Frog and Fish Restoration Outreach Group, Appleton-Whittell Research Ranch	~

Key: extremely positive (++), positive (+), neutral (~), negative (-), extremely negative (--), no evaluation (n/a).

Case 2: White Tanks Conservancy Wildlife Corridors Project.

To the west of Phoenix, Arizona, the White Tank Regional Park consists of roughly 30,000 acres of mixed-use land. According the Park Master Plan, the park is designed to offer passive recreation to city dwellers without the need to travel to a state or national park. As such, the White Tanks, along with the other regional parks that surround Phoenix, offer a blend of unspoiled nature and a sense of remoteness. In 2015, a non-profit Conservancy was organized as an advocate for the protection of the species

within the park boundaries and the natural Sonoran Desert landscape that encompasses it. While Phoenix's metropolitan area abuts the White Tank Mountains Range to the east, the south, and fractionally to the north, the entire western side, falling under the jurisdiction of the city of Buckeye, Arizona, is currently undeveloped, natural desert. Camelback Mountain is a notable range within the city of Phoenix that has become completely enveloped by urban development. Consequently, there is almost no native fauna and the flora is rapidly moving away from native conditions. The Conservancy is on record stating that their goal is to prevent a similar environmental situation in the White Tanks.

The threat lies within the desert swath to the west of the White Tanks as plans for development are becoming more concrete. Up to 40 years ago, the area was an eclectic mix of State Land, BLM land, and private land. Much of that land is now in private hands and was annexed (as they lobbied for) into the city of Buckeye. Since then, numerous developments have had their master plans approved by the City of Buckeye.

Ecological Context.

The area under the Conservancy's purview is the White Tank Mountain Regional Park. The accessible recreation spaces are within the Park's mountainous areas which consist of multiple peaks, the highest—Barry Goldwater Peak—reaches 4,000 feet. The range and the surrounding Sonoran Desert are home to several endemic species such as the Sonoran Desert Tortoise, Gila Monster, Tiger Rattlesnakes and Kit Fox. More mobile species, like Mule Deer, Javelina, and Mountain Lion regularly migrate between a triangular patch of undeveloped desert to the west where the White Tank Mountain Range, the Belmont Mountains (~20 miles West), and the Vulture Mountains (~23 miles

northwest) act as primary natural boundaries. The Hassayampa River Basin, although usually dry, flows from north to south through the middle of this migratory triangle. Native raptors such as the red-tailed hawk and Harris hawk are particularly sensitive to ecological changes in this region as they prey on jackrabbits and other smaller critters in addition to utilizing native saguaro cacti and desert ironwood as places for observation and nesting.

Community Context.

The modern history of the land commonly referred to as Sun Valley was the subject of many newspaper articles detailing financial ruin, allegations of land theft, and even suicide in the late 1980s.[383] The relevant part of the story begins 35 years ago when the Bureau of Land management traded nearly 50,000-acres of the at the time un-named land for ecologically sensitive acreage in the San Pedro River Valley in southern Arizona (only 20 miles south east of the LCNCA).[384] The White Tanks Associates, an umbrella organization formed by the land-owner who proffered the BLM exchange, secured funding for a six-laned roadway to aid in this large-scale development process. The road was built in the late 1980s (see **Figure 6**). It should be noted that while the Sun Valley area has enticed many savvy developers, it remains largely undeveloped. The collection of roughly 30 remaining developers certainly have a vision for their communities (as evidenced by published master plans), but this is predictably different than the Conservancy's desire for open-spaces and environmental continuity.

[383] Barbara Deters, "Investor's Suicide Blamed on Project," *The Arizona Republic*, June 24, 1990, A13.
[384] Anonymous interviewee, in discussion with the author, May 2018, Buckeye, Arizona. Although I have not found a reliable source, an interviewee claims that BLM first acquired this White Tanks land as a part of another land swap involving an area north of Phoenix known now as the Agua Fria National Monument, which is itself the subject of an ACM project.

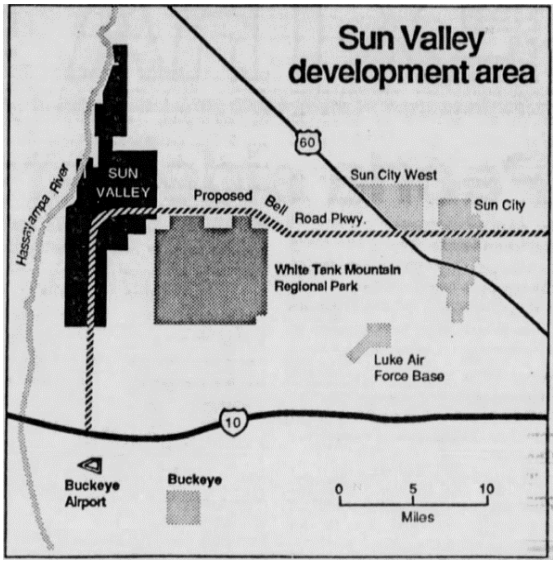

Figure 7. The proposed (and actualized) Sun Valley Parkway in the Sun Valley development zone. Credit to Matthew Chatterly of the *Arizona Republic*. Accompanying article appears on page 60 of Jun. 8, 1987 issue. Image downloaded from https://www.newspapers.com/image/?spot=26780745 in December 2018.

After Sun Valley was annexed into the nearby city of Buckeye in the mid-90s, city officials agreed to provide utilities and began rubber stamping development master plans. These plans stalled due to slow economic conditions, but, recently, the possibility of development has again become real. A new intercontinental highway—the Canamex Corridor—which would connect Mexico and Canada with an interstate pathway through Arizona, Nevada, Idaho, and Montana is seemingly inevitable. Current plans will bisect the Sun Valley region either by adopting the north-south portion of the current Parkway or by building a new multi-use pathway (car/rail/data/electricity) 15 miles to the west.

The community composition remains somewhat unknown but based on the promotional materials and the profile of adjacent master-planned communities, these developments are targeting a wide diversity of family types. Each community master plan boasts K-12th grade education, a range of employment opportunities, recreation hotspots, and venues for nightlife among other modern amenities. The idea seems to be that each community is self-contained such that everything a resident could need or want can be found within the community boundaries.

Adaptive Co-management Process

The application of ACM by the White Tanks Conservancy is somewhat loose. According to interviews, organizing members are aware of the framework but did not adopt it in earnest like CWP organizers did. Further, the possibilities of adaptation in this case are somewhat restricted given the Conservancy's relative lack of power to guide the decision-making process. This feature (or lack thereof) is related to its failure to engage all relevant parties, hamstringing their collaborative attempts. As a tactical matter, anxiety that they will fail to reach their goal is warranted. The Conservancy has no realistic expectation to be able to dictate the direction of development in the Sun Valley area because they hold no property rights. They wager that their best bet is to produce a ready-made plan that city-builders can easily adopt, if they can be convinced to. Again, the Conservancy's primary concern is that any development to the west of the White Tank Mountain Range will greatly interfere with the ability for native species to engage in their natural migratory habits. Since development is seemingly inevitable, their interest has turned to the establishment of wildlife corridors that transect this western landscape and are preserved such that development goes around them. This complication makes the task of engaging in an adaptive co-management scheme, if they can be said to be doing this at all, incredibly difficult.

I believe this arrangement is worth comparing to an earnest ACM attempt like CWP, for the following reasons:

1) After the creation of a proposal for adequate wildlife corridors, the Conservancy must engage with the development community. At this point, it will be more reflective of a co-management arrangement as actors will include city, county,

and state officials, interest groups (NGOs), development companies, researchers and academics, and surrounding (and potentially) future denizens. Viewed this way, the project is in an embryonic stage of collaboration. Of course, it is entirely possible that an attempt at co-management could be foiled or rebuffed by developers since they maintain property rights. They can do almost anything they please. From an analysis standpoint, what unfolds post-developer contact will be of interest.

2) A kind of adaptation is already part of the project's process as they engage wildlife biologists and corridor specialists to create a set of proposals. There are at least four proposals that are internally ranked based on the "biologically best" design for nine sensitive migratory species. The Conservancy's approach, which I have gleaned through interviews and sitting through planning meetings, is to start with the proposal that asks the most as a kind of bargaining tactic. If discussions can proceed to a deliberative stage with developers, then assuredly some adaptations that integrate the corridors into master plans will be made. The Conservancy then has other additional, albeit less preferable, options to offer. Further, if any option is incorporated into development plans, then there will simply be an end to the adaptive phase surrounding corridor design. In its place, project members will need to work together to support the use of the corridors by wildlife. Tracing this pathway is of interest given the common critique of adaptive management that asks: how much adaptation? Suffice it to say that this case will not offer an adequate answer, it, at least, represents a single data point with which a larger narrative can be told.

3) There are good reasons to categorize an object of investigation into accepted disciplinary boxes (e.g., it reduces theoretical and semantic ambiguity thus making analysis cleaner). Admittedly, along strict disciplinary lines, I would hesitate to call the White Tank Mountains Conservancy corridor project sufficiently collaborative and sufficiently adaptive. But it contains, or promises to contain, elements of both. In this case, three results (or a combination thereof) can seemingly occur:
    a. we can critically apply the evaluative frameworks for ACM as guidance (e.g., using what we know about ACM we can improve the current process, at least in theory);
    b. we are forced to admit that ACM is not the answer in this case (e.g., some other management framework is equally satisfactory or better suited towards steering this project toward its goals)
    c. we can widen this threshold for what counts as ACM.

Further, the possible comportment and import of pragmatism into ACM schemes, will allow for a deeper critical comparison between those projects that utilize an earnest ACM framework and those that do not.

Outcomes.

There are no relevant ecological outcomes that can be attributed to the Conservancy's collaboration so far. However, several beneficial institutional connections have been extended between the Conservancy and sympathetic organizations, local universities and their departments, and governmental agencies. As was stated previously, deliverables include fully mocked up master plans that include wildlife corridors with the

help of AZ Game and Fish and wildlife corridor expert Paul Beier. Additionally, a 3-D flyover video was created with the help of the School of Design at Arizona State University. These items are probably best viewed as marketable attempts necessary to convince developers that there is an opportunity to be innovative by embracing the surrounding landscape and local environmental sentiments in their community designs.

Methods

Case study examinations of environmental interventions are an increasingly popular methodology, but the neat conceptual schemes that have been built up through generations of research design have some difficulty corralling the aim of this study. Indeed, digging into past studies turned up no relevant literature to be used as a springboard for the approach and research questions at hand. Typically, researchers will designate a study that focuses on group interaction as *ethnographic,* while a *historical* study utilizes past-dated documentation to lay context and analyzes historical or archival events, and *psychological* studies target the connectivity of individual behavior to their beliefs. *Sociological* designs attempt to capture interpersonal relationships and group functioning within a given social context.[385] There are, further, delineations regarding the scope of the research: *intrinsic, instrumental,* and *collective.* That is, a focus on internal conclusions, generalizable results regarding particular issues, and a theory-building purview that typically aggregates *instrumental* cases respectively. To the present study, I see that there are several boxes in each category that might be checked. Group interaction, document analysis, investigation of values that signal a level of

[385] Dawson R. Hancock and Bob Algozzine, *Doing Case Study Research: A Practical Guide for Beginning Researchers*, (New York: Teachers College Press, 2006), 33.

connectedness to one's environment, and indeed, the interaction of multiple parties with one another as members of environmental collaborations are areas of interest here.

The disciplinary perspective that I held as I approached the case studies was multi-faceted. As an environmental ethicist interested in the impetus and process of collaboration forming around objectives related to desired ecological traits, this investigation will be fully realized when it addresses pertinent questions in descriptive environmental ethics and when it can serve as a general *instrumental* (as defined above) examination into adaptive collaborative approaches, however, only the first prong will be broached here.[386]

As a research orientation, true to its epistemological origins, pragmatism seeks to clarify the role of knowledge in dictating action and engagement. Following Peirce's dictum, some similarly-minded pragmatists might maintain that the role of knowledge is simply its use for action.[387] While I generally agree, I understand that knowledge could also be sought for a kind of cognitive satisfaction, that is, knowledge for the sake of knowledge or because one feels that knowing things is interesting, entertaining, enlightening, etc. is a legitimate aim. Pragmatism so conceived coheres with an interpretive approach to understanding the knowledge and value claims of others, so it is epistemologically and methodologically appropriate to adopt such an integrated

[386] By the time this document is needed to fulfill the requirements of my dissertation, a codebook continues to be under development as a joint effort in Dr. Michael Schoon's Col-lab at Arizona State University. This codebook intends to capture the characteristics of successful ACM implementations such that we might develop a typology for ACM schemes. Interview transcripts from both case studies will be analyzed with said codebook once that project is completed. The present information will only be used to address the concerns foreshadowed in the previous dissertation chapters and the title of this chapter. That is, can we find environmental pragmatism in adaptive co-management schemes?

[387] Charles Sanders Peirce, "How to Make our Ideas Clear," *Popular Science Monthly* 12, (1878): 294.

perspective here.[388] What this means for the study at hand is that my role as the researcher is not only to understand the experiences of interviewees and other active collaborators (the primary purpose of interpretation), but also engage with the problem-solving communities as part of an exchange (a pragmatic mandate). I believe researchers (and as articulated in Chapter 2, philosophers too) should contribute where possible, not just investigate and extract.

In this spirit, I designed and conducted semi-structured interviews with participants in both case study areas. Interviewees in both cases include recreationists, conservation activists, land planners, non-profit managers, business leaders, representatives from municipal governments, and citizens. Stakeholders in the WTMC case responded at a higher rate than the CWP collaborative, possibly due to the group's novelty and excitement in broadening their base in addition to the collaborative fatigue experienced by Las Cienegas participants.[389] Most interviews exceeded 80 minutes and were imagined as conversations, rather than stunted question-answer sessions. While I did not specifically employ a narrative approach, I did solicit a personal story to achieve clarity on experiences, beliefs, and environmental values.[390] Additional, resource-centered inquiries were also necessary to capture context and the ecological challenges that served as collaborative impetus. Sampling in these cases was mostly based on convenience and snowballing. While several dozen emails (and follow-ups) were sent,

[388] Göran Goldkuhl, "Pragmatism *vs* Interpretivism in Qualitative Information Systems Research," *European Journal of Information Systems* 21, no. 2, (2012): 135-146; T. A. Schwandt, "Constructivist, Interpretivist Approaches to Human Inquiry. Pages 118-137 *in* N. K. Denzin and Y. S. Lincoln, editors. *Handbook of qualitative research*. Sage Publications, London, UK. 1994.
[389] Anonymous CWP interviewee, 2018.
[390] Question sets can be found in Appendix A.

only a total of 12 interviews were able to be completed. Thus, a breadth of experiences is assuredly a limiting factor here.[391]

Audio recordings of the interviews were transcribed with the assistance of Dragon NaturallySpeaking 15 (text-to-speech software) and edited by hand. Although interviews were semi-structured and often took on a conversational form, I attended to questions as the discussion allowed, usually taking a few moments at the conclusion of the interview to ensure all pertinent questions were addressed. The transcripts were segmented structurally (i.e., by answers to specific questions) which sometimes required segments to be rearranged to match the ordering of the interview guide. Interviewees have been anonymized and are represented here by a site-acronym (CWP for Cienega Watershed Partnership and WTMC for White Tank Mountains Conservancy) and a random number.

Qualitative coding was done with MAXQDA Analytics 18.2.[392] Themes were organized into five overarching categories reflecting the pragmatic commitments: (1) experiential, (2) experimental, (3) critical communities, (4) uncertainty and contingency, and (5) pluralistic.[393] Each category was assigned multiple sub-themes (sub-codes) to further capture the interpretive ambiguity inherent in this process. For instance, the presence of theme five—value pluralism—could be understood in many ways, therefore I developed codes to capture multiple interpretations of what it might mean for value pluralism to exist in any given case. Here, value pluralism is borne out with the three sub-codes: (a) presence of an environmental ethic held by stakeholder(s), (b) evidence that

[391] It is important to note though that in the White Tanks case, I spoke to 7 of the available 8 interview targets. The CWP situation is more complicated. Multiple attempts were made to connect with interview candidates including securing an invitation to two bi-annual biological planning meetings scheduled to be held in the Spring and Fall of 2018. Due to unforeseen circumstances (weather and a government shutdown), both meetings were canceled, squelching face-to-face opportunities to solicit interviews.
[392] https://www.maxqda.com/
[393] The codebook can be viewed in Appendix C.

there was a change in ethical attitudes, and (c) evidence that stakeholder is sensitive to other value claims. Codes were attached to text segments based on the acknowledgment of the code's contents by interviewee. There is no judgement about the efficacy of any of the mechanisms I sought out. For instance, adaptation to changing conditions—under the experimental theme—was referenced in a majority of interviews, but whether it was successful or not is beyond the purview of this descriptive report.

Coding Results and Discussion.

Because sample sets are not comparable in terms of the number of interviews completed between case settings, qualitative interpretation is the most appropriate and defensible approach here.[394] As a reminder, a codebook was developed based on Richard Bernstein's distillment of a pragmatic ethos: *experiential, fallibility, critical communities, contingency, and pluralistic.*[395] Interviews from stakeholders in two distinct environmental management case studies were solicited for comparative analysis. The assumption from the outset is that each pragmatic theme is present in both case settings. Consequently, codes were applied to interview transcripts from both cases. The interview excerpts presented in the tables below are subject to a kind of confirmation bias in that I have selected them to convey a specific meaning to the exclusion of other interpretations. In practice, this bias means that I have done my best to choose coded texts which convey the closest representation of the pragmatic theme under which the code falls, from the

[394] Greg Guest, Kathleen M. MacQueen, and Emily E. Namey, "Comparing Thematic Data," in *Applied Thematic Analysis*, (Thousand Oaks, CA: SAGE Publications, Inc., 2012): 161-186.
[395] Richard J. Bernstein, "Pragmatism, Pluralism and the Healing of Wounds," *Proceedings and Addresses of the American Philosophical Association* 63, no. 3 (1989). The sub-codes which are developed here to capture multiple understandings of a particular theme are very fuzzy. In development, I asked myself: "what are the kinds of things that occur in a management setting that might fit the thematic category?" The resultant coding structure is an attempt at answering this question.

available transcripts of course. Further, coded excerpts offered here are sensitive to the conversational context in which the quote was solicited and interpretations of coded texts are not different between cases as a result of my selection (if there is a difference at all). The import then, is to point out if there are different interpretations of thematic elements by stakeholders in their different contexts and elaborate on why this difference might exist. Further discussion follows the presentation of the results in **Tables 9-13**.

Experiential.

The first theme relevant to a pragmatic orientation is referred to as "experiential." The theme and its sub-codes are derived from the pragmatic rejection of a foundationalist epistemology, which I described in detail in the first part of this dissertation. The pragmatic alternative to foundationalism is the view that the process through which we acquire knowledge is and can only be through lived experience. Learning is the process of empirical probing, which produces knowledge. In this case, it is worth specifically denoting that the generation of knowledge is a collective endeavor; that is, it is social. Further, adaptability—closely related to both social learning and monitoring/evaluation—refers to the activity of integrating the results of intervention into future designs. Lastly, and importantly, the intervention policy itself should resemble a hypothesis so that the resultant management steps (e.g. intervention, monitoring, evaluation) can follow.

Social learning in the CWP case is seemingly a by-product of the communal characteristics inherent in the collaboration. This excerpt is one of many (e.g., see excerpts in COH and CHG_ETH), that speaks to a connectedness between participants. Normally, social learning does not require such a high level of cohesiveness, but it aids in

multi-loop learning through continued participation.[396] Inertia has built up within the collaboration and has produced confidence in their ability to respond to new management problems as a function of their attentiveness to learning. Social learning must be occurring in the WTMC to some extent, but it is difficult to gauge how serious of a concern this is. Expanding the base of collaborators can be construed as a social learning process.[397]

In the ADAPT code, the CWP interviewee specifically referred to adaptative design in the context of grazing treatments, further adding that the stakeholders were committed to the adaptive process. Note takers were brought on in order to keep detailed records of treatments and results, demonstrating a deep commitment to the adaptive process. Indeed, in another area of the interview, the stakeholder mentioned that ranchers had previously sold their lots only on the condition that buyers had to participate in the CWP. Conversely, the WTMC does not enjoy the same deliberative freedoms that the CWP does, despite their commitment to learning collectively. Though it could be argued that the WTMC does conduct day-to-day activities in an adaptive and hypothetically driven manner (deliberation over recruitment strategies, for instance), the explicit mission of this collective is not adaptively driven.

[396] Fikret Berkes, "Evolution of co-management: Role of Knowledge Generation, Bridging Organizations and Social Learning," *Journal of Environmental Management* 90, no. 5 (2009), 1697.
[397] Ibid., 1697.

Table 8. Experiential theme and corresponding coded quotations.

EXPERIENTIAL	Cienega Watershed Partnership (CWP)	White Tank Mountains Conservancy (WTMC)
Attention toward social learning (SOC_LEARN)	They come to the biological planning meetings, partly to be a part of something that's happening very differently from the world around them right now. To participate in a group that is still civil and working things out and solving together making mistakes and moving on. A little social refuge in a way (CWP1, 42:51).	The rationale for patience is that I don't want the Conservancy to be misunderstood as only about the protection of these wildlife corridors. That's a huge initiative but we also need people to help build and maintain trails and teach children about the desert and all these things that conservancies do. And there is some time, we have the benefit of time. We don't have forever and now's the time but we're comfortable exercising patience because we don't want to be misunderstood as cactus-hugging desert people that are anti-development. So, we need to be patient in that effort (WTMC4, 46:20).
Management design includes adaptability (ADAPT)	It was developed out of a new way of looking at grazing, to adapt to changing situations, which you can do in a great many grazing plans. It's intended to guide decisions…how changes are made, where water goes. It is a way of doing business. It is so important that the major stakeholder, the leaseholder, actually paid for the facilitator and notes for the biological planning sessions… (CWP3, 43:04).	Not found.
Hypothesis (even informal) driven collaboration (HYPO)	We got together and started identifying certain questions: what are the stressors on this component of the resource? What are we concerned about? Are the sites protected? (CWP2, 32:36).	Not found.

There is a stark difference here in the level of 'adaptiveness' between the two case settings. Due to the focus on the outcome of the WTMC collaborative (namely, installment of wildlife corridors), the management problem would not be responsive to a long-term adaptive design. Given unlimited resources—which would require continuous construction and demolition projects—adaptive management would surely be a compelling approach aiding in the triangulation of effective wildlife corridors. Does this mean that adaptive management is not suited for all management problems? Perhaps, but the pragmatist can push back on this by underscoring the smaller adaptive learning cycles that still occur within the collaboration. This is related to the 'outcomes tunnel-vision' lesson in the concluding section of Chapter 4. Adaptive management is not just about reaching specific outcomes, but the process through which those outcomes fall out.

Fallibility.

Fallibility is the recognition that knowledge garnered through experiential transactions have the potential to be mistaken. In a management context, this might mean that policies require monitoring and evaluative mechanisms to complete an adaptive mandate. Monitoring the intervention is imagined here as the data gathering process after an (experimental) treatment has been applied, where evaluation is the process of judging the efficacy of the treatment. As ideas about improvements are created, evaluation can also be seen as the beginning of a new iterative cycle. In **Table 10**, the CWP, like their attentiveness to adaptative management in their resource management plan, here specifically speak to the importance of the monitoring and evaluative components. These pieces move adaptive management from theoretical construct into the realm of practice.

The running theme throughout the WTMC case is the handicapped adaptive process, including monitoring and evaluation. What this might mean is that while the process is ultimately a collaborative one, it does not have the capacity to adapt given the problem context. This will be addressed more thoroughly in the concluding section.

Table 9. Fallibility theme and corresponding coded quotations.

FALLIBLE	**Cienega Watershed Partnership (CWP)**	**White Tank Mountains Conservancy (WTMC)**
Monitoring of interventions (MON)	That relies on us annually collecting data, and each year looking at how that data fits in with long-term trends and how those different ecological sites out there are changing through time (CWP2, 49:00).	Not found.
Evaluation of interventions (EVAL)	Okay, well this method of doing this treatment is not working—why is it not working, what can we do differently, what is the feedback loop, is it having the impact that we want it to have? Why not? (CWP2, 50:26).	Not found.

Critical Communities.

Perhaps the most important piece of the pragmatic ethos (and the one that is often most difficult to move to praxis) critical communities refer to groups of people that are engaged in the decision-making process. And not just token engagement, but a real contributory embrace among the majority of actors. Although critical communities rarely reach the idealized versions pragmatists had in mind, the analysis below (**Table 11**) suggests that the CWP collaboration was slightly closer to this ideal than the WTMC. For

instance, while the WTMC expressed a similar kind of conflict resolution process (mostly informal and consensus-based), shared environmental values, and recognition of a threat to that value, the differences are clear in the cohesive narrative told by the CWP stakeholder compared to the WTMC stakeholder.

Table 10. Critical communities theme and corresponding coded quotations.

CRITICAL COMMUNITIES	Cienega Watershed Partnership (CWP)	White Tank Mountains Conservancy (WTMC)
Cohesion among stakeholders (COH)	And there's just certain amount of spending time with people, and spending time out on the land with people that tends to speed the appreciation for who they are and what they bring and makes us more likely to both assume good intent and to say: "now I can see things more from your side" (LC1, 65:14).	Everyone's here for the long haul, and that'll change, but we're growing our stakeholder database for sure (WTMC4, 60:01).
Deliberative decision arena (DELIB)	You come together as a group, you develop through a series of meetings or workshops or whatever, a long trust about what can and cannot happen (LC3, 17:58).	When we first rolled out the idea, we invited everybody, including the folks that we thought would be less receptive—developers so to speak. And there were a couple in the room and they listened and didn't say anything for them most part and left. And then we went back in and met with them 1-on-1 and some of the were anxious about that. The whole conversation, and some were like "we could figure this out." We're trying to bring them along at the appropriate time (WTMC4, 57:43).

Network connections (NET)	Yeah there's kind of a sense that if you miss it [planning meeting] that everyone will notice, and if you miss it you may not find out what everyone has been doing and how what they been doing might impact what you're doing. There's a certain amount of pressure, but people have a good time (LC1, 8:12).	It was a group of non-profits that founded a non-profit in a space that was, you know, a super high potential space, and a space that none of us individually could concentrate on alone. So, if we all gave a little bit of our time, we could pull it off. We were all bringing out networks together and there's some much power in that (WTMC1, 8:38).
Existence of collective environmental value (COL_VAL)	This area is a real value to the public. It's history, it's openness, it's resources—biological and historical components. The land itself is a real glue. It kind of sucks you in we say. We always say, "oh yea, you go out there and it just sucks you in. The resources, the creek, the riparian zone… it really is important, and it was important long before the collaboration started…(LC3 30:28).	My initial thought, I guess, was, "here's this beautiful 30,000 acre preserve that's really at some point in the future going to become, what I call an urban wilderness, completely surrounded" (WTMC3, 10:31).
Shared recognition of perceived threat to collective value (PER_THT)	Looking at broadly at this, over the last 10 years or longer, the predominant issue is water. And that is one of the glues that holds it [collaborative] together, is water, is Cienega Creek. What's the state doing? Who's using water, what's the quantity? What are the recharge factors? What are the models? So, water has been a really predominant theme in this watershed. (LC3, 8:43)	This is going to be a cutoff mountain park…and, so without kind of coming to the…hey there's a big problem here, I was like, okay, this is the way it's going to be. And so when the Conservancy then came about and started to push for this, I was like, "I'm all in" because we gotta do something to continue to protect [it]. (WTMC3, 11:07).

The CWP stakeholders have the advantage of homesteading within the management boundaries, perhaps giving more weight to the activities that occur there. The WTMC management location is primarily undeveloped, and while the organizing groups desire open space, it appears that there is a difference between the 'in my backyard' attitude present the LCNCA that is borne out in the level of cohesiveness

expressed by the CWP stakeholders and the WTMC group, whose livelihoods and land tenures are not strictly tied to the geographical space. The baroque language used by CWP folks compared to the WTMC's matter of fact-ness signals, perhaps, a deeper aesthetic and emotional attachment to place.

Contingency and Chance.

Pragmatists, especially John Dewey, cite the pervasive contingency in our universe as the requisite impetus to develop a "reflective intelligence."[398] This intelligence is both the humble acceptance that future conditions are indeterminant and an inclination to face this chance head-on. We cannot, as Bernstein puts it, "hope to master unforeseen and unexpected contingencies."[399] Like these other themes, this idea has threads that run throughout the pragmatic discourse. Indeed, it is this acknowledged contingency which colors the pragmatic epistemology. The knowledge gained through experience and experimentation—which is the only way we can acquire it—is fallible because the contexts in which the learning process occurs has many possible orientations. Scientific discovery is dotted with these instances where accepted theories are falsified based on advances in technology.

In the management context, this is borne out through an explicit planning process that incorporates responses to surprise and potential future scenarios (**Table 12**). It requires both time and imagination to develop management plans to effectively integrate.

[398] John Dewey, *Experience and Nature*, (NY: N.Y. Dover Publications, 1958), 43.
[399] Bernstein, "Pragmatism, Pluralism and the Healing of Wounds," 10.

Table 11. Contingency code and corresponding coded quotations.

CONTINGENCY	Las Cienegas National Conservation Area (CWP)	White Tank Mountains Conservancy (WTMC)
Importance of explicit planning process (PLAN)	The planning process could not be replicated today because it took too long, I think it took 6 years get it all nailed down (CWP4, 14:15).	I'm hoping what we develop is going to be part of the community of today and tomorrow. When I'm saying tomorrow, I'm talking 50 to 100 years, I mean, that's what I look as vision because that we need to be to be aware of what it is that we can do (WTMC5, 54:53).
Imagined future conditions (FUT)	Here are some plausible, not predictions, not guarantees, and not just wild ass guesses, these are some plausible possibilities. What would we do, what would be the right management response and the right preparation? If these things came to pass? What would we wish we had already done? What should we be thinking about ahead of time? (CWP1, 32:16).	We have an idea, and that's where we're really trying to be champions of conservation, and sensitive to…to inspire them to do something different. And so that's why we wanted to work with ASU to create something that they can see and touch and feel and even couple it with proformas, land use planning, repositioning of lots to protecting corridors. We're trying to create models that they can look at and we can use those as a tool for conversation (WTM4, 29:53).
Ability to address unexpected outcomes (SUPR)	He really, you know, looks at the data, and listens to the concerns that other people have about how its being managed, how the pasture rotation should be, how should we adjust to unexpected things like wildfires (CWP2, 47:18).	It's a problem, and I'm not really sure how we can address that [undesirable development] (WTMC4, 32:29).

While scenario planning is not part of the adaptive management mandate, it has been an increasingly useful tool to move management teams into an anticipatory rather than re-actionary mode.[400] Indeed, this was the goal established by the plurality of CWP

[400] Garry D. Peterson, Graeme S. Cumming, and Stephen R. Carpenter, "Scenario Planning: A Tool for Conservation in an Uncertain World," *Conservation Biology* 17, no. 2 (2003): 358-66.

stakeholders and has both served as an integral part of the adaptive process, but also, according to interviews, a process through which ties inside a critical community can be strengthened.

Detecting this theme in the WTMC case is straightforward. The planning process included multiple designs for wildlife corridors through the desert landscape, followed by an exercise examining what those corridors might look like if overlaid upon development master plans. A 3-D flyover video was also produced to simulate the developed area with integrated wildlife corridors. It is unclear what role, if any, the WTMC collaborative will serve after development occurs with regards to the corridors. Perhaps the collaborative inertia will be directed toward newly defined goals that pays attention to the contingency of future socio-ecological conditions. The evidence here suggests, though, that the WTMC are currently constrained by their unequal share of decision-making power to explicitly address surprises in their management plans.

Pluralistic.

Following Bernstein, the kind of pluralism in mind here is an "engaged pluralism."[401] There is a tendency for pluralism (and its colloquial, conceptual family members, relativism and subjectivism) to be weaponized, for it to be used as a token either for excusing the actions/beliefs of others or oneself in an uncritical way. Engaged pluralism is to express and act upon a "genuine willingness to listen and learn from others…"[402] Engaged pluralism is therefore a kind of ethical responsibility because it requires effort to place yourself in the shoes of others so that you might come to a greater understanding of the perspectives they hold. But there is also effort to guard against

[401] Bernstein, "Pragmatism, Pluralism and the Healing of Wounds," 15.
[402] Ibid., 15.

falling victim to the simultaneous temptation to always seek common ground. In some cases, no amount of sympathizing or empathizing will lead to shared values and surely there are cases in which this level of effort is unwarranted.

Through the propositioning of conflicting ideas, groups typically coalesce around common identities. It is, however, the normative task of these bonded groups to maintain channels of openness and a willingness to engage in dialogical encounters. This just means that we begin discussions with the view that the 'other' has a contributory posture and is not, at the outset, seeking to antagonize or denigrate your own position. Of course, that veil comes off quickly and the dialogical encounter is no longer the appropriate arena for mediation. Counter to common criticism, pluralism does not commit anyone to unchecked tolerance. It helps that we have access to a history of bad ideas and a surface level understanding of bad faith actors that we can reference during the dialogical exchanges. Pluralism is, above all, a respect for autonomy, including one's own.

After the formation of a group, there is already some glue which holds participants together and therefore more likely begets the dialogical attitude (and social learning, as discussed above). Assuredly, collaborators who seek common ends will

Table 12. Plurality theme and corresponding coded quotations.

PLURALISTIC	Las Cienegas National Conservation Area (CWP)	White Tank Mountains Conservancy (WTMC)
Conflict resolution mechanisms (CON_RES)	It [the collaboration] was not explicitly consensus based, but that's mostly what we tried to opt for. A kind of negotiated-consensus approach (CWP2, 12:43).	It has arisen [conflict] and it has resolved itself primarily through consensus-building. You know, always come back to this is our focus and within each of these focus areas, we ask ourselves what is the most important thing? If you're kinda looking at the organization of these types of groups, I think it was critical that we spent time really trying to set up the foundation of the organization. Here's how we're gong to organize, so we've got an executive board and then an advisory group. That was part of the initial discussions (WTMC3, 47:20).
Evidence of environmental ethic (BEG_ETH)	The general impression I got from a lot of the people [unintelligible] was keep it [the landscape] primitive, minimize the use (CWP4 37:14).	One of the things we've always talked about as a group, is that there's a lot of attention over the past, what, 20 years or so, on protecting the lions in the Serengeti, but yet we have lions right here we're neglecting. You know, I mean, once they're gone, they're gone, and they're really an icon of Arizona. From the heritage standpoint, they're iconic (WTMC3, 50:13).
Change in environmental ethic through collaborative process (CHG_ETH)	We may be far enough along in this one [collaboration] that we've already, and many of us have already done the embracing of somebody else's values. It's like I can understand why you care about this thing and then I can care about that also. You may end up having…very often a broadening of values. But there are just things that conflict (CWP1, 70:12).	Not found.
Recognition of diverse	Here's a place that's just gotten designated as a national	This whole thing has been about the protection of, the mountain and

environmental values by stakeholder(s) (VAL_DIV)	conservation area, but it's also part of that is because of its cultural value as a historic ranch site. Well, there's a big fat juicy question over whether the historic activity that people are so proud of as a heritage thing is actually compatible with a healthy ecosystem moving forward and whether it's compatible with the protection of all the endangered species on site. So that was probably the biggest motivator for developing the CAM [collaborative adaptive management] process in the first place…to address that potential conflict, that interpersonal conflict and potential resource conflict (CWP1, 70:46).	its natural habitat and all of this was here long before any of us and we ought to do our very best effort to not just preserve open space, but also be stewards of the land and the ecosystem. You know, there's all kinds of stuff out there that deserves to be out there. And, it enriches all of our lives anyways. A hike where you come across a deer is a lot more meaningful than when you don't (WTMC4, 61:04).

experience conflicting opinions on how to achieve those ends. Ultimately it is the collective decisions that are likely to dictate action, but the adaptive, iterative approach gives promise to those minority voices which are momentarily neglected. Codes in **Table 13** are attempts at capturing an environmental ethical pluralism on the one hand and the more general procedural expectations that arise from pluralism in a management context (i.e., conflict resolution mechanisms). The CWP is evidently homogenous to the extent to which conflict was not widely experienced (or at least did not occur in any memorable instances). Whereas consensus appeared to form quickly between CWP stakeholders (even in the early stages 20 years ago), more conflict has been reportedly experienced between WTMC collaborators. This rivalry within the WTMC process is possibly due to a greater diversity of ethical attitudes and objectives that are begat from those attitudes. While the CWP has somewhat solidified in its membership and participation, the WTMC is still stumbling through this process. As a last note, conflict does not carry the negative

connotation that it normally confers. Here, it is simply a description for competing perspectives.

Summary.

Although the themes and sub-codes were solely based on the pragmatic ethos, these excerpts display overlap between pragmatic characteristics and the features of a 'successful' adaptive co-management scheme. In comparing the two cases, the CWP has experienced little hardship while the WTMC is, in its infancy, finding it difficult to fully realize an adaptive collaborative approach. This could be cause by several factors such as lower social cohesion due to no livelihood attachment to the managed land, existing on the weaker end of a power imbalance, and/or hesitation in bringing in all relevant stakeholders (land developers, in this case). There is no guarantee, of course, that resolving these deficiencies would lead toward a successfully managed process. Further, this assumes that the stakeholders in the system are aware that these pieces (i.e. social cohesion and equitable distribution of power) are widely understood as necessary components toward long-term success.[403] Further, the objective which they have coalesced around is not completely suited for adaptive management. This is not to say that collaborators expressed misgivings toward integral pieces of adaptive management such as social learning, evaluation, and monitoring, but that there is no specific mechanism in planning documents that accounts for these pieces. There is however, a more layman's version necessarily at work that I believe still captures a pragmatic spirit. In my view, this learning-reflecting rhythm of adaptive management describes learning more generally. Collaborators must have had to learn, together, new sets of skills,

[403] Georgina Cundill, G. Thondhlana, L. Sisitka, S. Shackleton, M. Blore, "Land claims and the pursuit of co-management on four protected areas in South Africa," *Land Use Policy* 35, (2013), 171-178.

including social and deliberative skills. They must acquire the requisite knowledge about the landscape and the species at risk, along with the larger political dynamics in which all this must work. All these inputs, I'd argue, force groups of individuals to update their pre-conceptions about what is desirable, what is possible, and what is feasible. It breeds an openness in approach, and according to pragmatists, an empathy for values held by other relevant actors.

The current snapshot of the CWP benefits from having already experienced growing pains such as conflict and the existence of value pluralism. Assuredly these pieces persist throughout the course of collaboration, but it appears that once stakeholders overcame any substantial conflicts and rallied around objectives, the collaborative at once became social activity focused on process and a pursuit for legitimate ecological outcomes. Although not coded for here because it is, apparently, not crucial to the pragmatic method, the CWP benefited from strong leadership and expert facilitators that could address conflict, lay out the decisions, and provide system-wide knowledge to new collaborators. Interestingly, this relates to one of Dewey's core concerns about public action.[404] Namely, that only a few select actors are often left in charge to lead deliberation, to aid in coordination, to force decisions, and that sometimes this overreliance can backfire. Fortunately, the leaders in the CWP were well attuned to the adaptive co-management literature and understood their important roles in shepherding the stakeholders in the early, formative stages. Indeed, it appears that this awareness of the tenets of adaptive co-management have served the CWP well.[405]

[404] John Dewey, *The Public and its Problems*, (Chicago: Gateway Books, 1946): 208
[405] It should be noted, with emphasis, that each of these responses only represent a small and temporally constrained snapshot of the totality of the collaborative actors in each case setting. Perhaps unfairly in some

Future Directions

Thematic analysis of interview data is just one possible approach that can be deployed as a cluster to further solidify the arguments being made here. More earnest document analysis, participant observations, surveys, and even focus groups represent additional data gathering techniques. More cases that are geographically distinct would be valuable. It would be particularly fascinating to analyze management cases outside of the United States given the American origins of philosophical pragmatism. Additional conferences with experts in the qualitative analysis and environmental ethics could help with several processes here, including codebook development, coding techniques, and interpretation of codes. Lastly, one linkage that might be possible in the future, is with the stakeholder-determined success of management implementations and whether they agree with the pragmatic themes as described here.

Conclusion

The aim here was to provide an empirical grounding, an illustration of the so-far theoretical connection between an environmental pragmatism and adaptive co-management practice. The results of the interview process are intended to provide a

instances, each response might be interpreted as speaking for the group where, in fact, the selected person's view or opinion differs from the group at large. Of course, the opposite might be true as well. I have tried to stay true to the mandate set in the Methods section—to only select the best available, paradigmatic examples of the pragmatic ethos—where the interpretation of selected texts reflects my insight into the case derived from observation and immersion in each setting. As a stakeholder myself in the WTMC case, this immersion is biased toward the WTMC. This gives me the requisite confidence that I have fairly represented the group's collective thinking, if that phraseology is appropriate. The CWP interviewees were extremely forthcoming with information, detailing areas where their process has not been, for instance, as inclusive as it could have been. Their welcoming and openness, in addition to journal articles and other reporting materials, was a great help to conceptualize the 'feeling' of being a CWP stakeholder. I must also add that two planned trips to take prat in biological planning meetings and survey the landscape had to be canceled due to unforeseen circumstances. However, I do not get the impression that my interpretation of their offered quotations would change if those trips had taken place.

window into the thinking that occurs between stakeholders as they collaborate toward their environmental objectives. Interviews are a common methodology in management scholarship,[406] but to my knowledge, this is a first attempt to use thematic coding of interview data to operationalize a philosophical identity in environmental management case studies. Certainly, there are conceptual, methodological, and analytical deficiencies and ambiguities present, but nevertheless, this study serves as a first foray into a new kind of investigation in empirical or descriptive environmental ethics. It's one that perhaps can serve as a kind of model for experimental philosophers who are open to the utility of social science methods in informing their research. This is a relatively undefined field of inquiry that is only explained by its component pieces and corollary approaches in other areas of applied ethics.

Further, as no such study currently exists (to my knowledge) which explicitly develops and applies a non-anthropocentric method of environmental valuation, the evidence suggests that pragmatism maintains the methodological high-ground for the moment. As repeated in Chapter 4's conclusion, there are significant practical implications for crafting these sets of theories to be commensurate with one another, namely, the possibility of the pragmatic orientation to skirt around emergent social-ecological traps when employed with an adaptive co-management schema (or indeed, acting as the impetus for trialing adaptive co-management in new contexts) and engendering increased sensitivity to the value claims of other collaborators. Pragmatism can bring deliberative tools to bear in management contexts and where appropriate, serve

[406] See, for instance, Ryan Plummer, Julia Baird, Angela Dzyundzyak, Derek Armitage, Örjan Bodin, and Lisen Schultz, "Is Adaptive Co-management Delivering? Examining Relationships Between Collaboration, Learning and Outcomes in UNESCO Biosphere Reserves," *Ecological Economics* 140, (2017): 79–88.

as ethical grounding for pursuing coordinated management efforts. That is, the pragmatic perspective is that the failure of collective action, the failure to create critical communities, is not just cognitive, but normative.

Though there are seemingly many benefits, the results here do force pragmatists to ask how their perspective overlays onto non-democratic institutions as evidenced in the WTMC collaborative. There is internal democracy in the WTMC case, but it could be argued that the larger social system through which they must wade to achieve their ecological objectives, is undemocratic. The critique is, in my view, a valid one. In the WTMC, I have not detected the adaptive elements that normally compose a pragmatic epistemology. As I've stated here and elsewhere though, we do not know what new management objectives will be borne out of their momentarily haphazard process. Will lack of success (just hypothetically) change the way stakeholders and participants think about collaboration? About the importance of social learning mechanisms within adaptive management? Although not explicitly present now, does this reflect a 'pragmatic' attitude if learning, nevertheless, occurs? Can we determine where pragmatism begins and ends? These are tough questions for sure. Perhaps one appropriate response is to simply consider the pragmatic method an ideal, a goal for which pragmatists like myself must promote. It is easy enough to imagine how every activity in which we engage could be couched within such a perspective—that successes and failures of process confer lessons which we use to improve ourselves—and so as long as we have the ability to enter in critical communities, we might converge on a pseudo-pragmatic method.

6. CONCLUSION

This dissertation is an argument for a greater role for environmental ethics in policy and practice and an effort to lay the groundwork for a pragmatic reorientation. I organized this dissertation into three component parts—philosophical, methodological, and empirical—each of which furthered the dissertation's overall argument. The first part, Chapters 1 and 2, examined the impact environmental ethics has had in applied philosophy and public environmental affairs. In Chapter 1, I hypothesized that no signatures of language diffusion would be present when analyzing the discourses of academic environmental ethics and parts of the temporally-correlated *Congressional Record* of the United States Congress. This hypothesis was tested with the help of an increasingly common textual analysis method called topic modeling. While acknowledging that there are compelling drawbacks in this instantiation of topic modeling, the evidence seems to comport with the results of an earlier study motivated by similar questions (i.e., Stone, 2003). The topic modeling results provide evidence to the claim that the language indicative of disciplinary nomenclature in environmental ethics is not appearing in the *Congressional Record.*

Chapter 2 confronted both the philosophical reason why the topic modeling process turned up no language diffusion and the implications for a field of applied ethics whose directive is to be influential in policy areas and therefore find representation in places like the *Record*. In this chapter, I argued that while environmental ethics developed in a time of increasing global ecological consciousness, early theorists in the field did not shake their Western philosophical influences. Indeed, many of the first-generation environmental ethicists were professional philosophers with environmental

sensitivities. Consequently, uniformity, universalism, and foundationalism as a result of wide-spread Cartesianism are features in the early and enduring formulations of environmental ethical arguments. While these arguments are, admittedly, psychologically satisfying, practical applications quickly disclosed deficiencies. Environmental scientists and conservation biologists are aware that their work is rife with trade-offs (e.g., it can be difficult to come to a decision to control a species that is charismatic, but ecologically destructive). But this seemingly mundane fact cannot be easily transposed onto unwavering ethical arguments.

Take, for instance, biocentrism, a non-anthropocentric environmental ethic that supports 'teleological centers of a life,' a position that requires moral sensitivity to all life forms, from simple organisms to complex adult mammals.[407] Such a view may find little support among conservation refugees forcibly removed from ancestral lands to protect threatened species who must cope with the economic, cultural, and psychological impacts of eviction (Zahran et al., 2015). As with most complex ethical perspectives, there is at least one instance where the perspective will seem ill-equipped to provide moral bearings. Do biocentrists, who must value individual plants and animals equally to individual humans, oppose such human displacement? Let me be clear: I do not indict biocentrism here because it cannot adequately respond to at least one scenario, real or imagined. I happen to believe that biocentrism is one valid approach in an abundance of ethical perspectives that could be used to flesh out dilemmas. In the case of conservation refugees, however, a more human-sensitive approach, perhaps based on an indigenous

[407] Paul W. Taylor, *Respect for Nature: A Theory of Environmental Ethics,* (Princeton, N.J.: Princeton University Press, 1986).

rights framework that acknowledged both environmental and anthropocentric interests, could prove more just – and also more workable in practice.[408] This tool-kit approach I have just described is concurrent with a pragmatic environmental philosophy.

Based on the classical writings of Charles S. Peirce, William James, and John Dewey, the pragmatic philosophy is characterized most plainly as a deliberative 'method of science.'[409] It is a philosophy that is empirical, experimental, social, communal, educative, and pluralistic. The 2nd part of the dissertation began with Chapter 3. Here, I discussed at length the recent emergence of a management strategy developed to aid in the achievement of socio-ecological resilience called adaptive co-management (ACM). Like the pragmatic philosophical orientation, ACM relies on the principles of empiricism, experimentalism, socialism, communism, and pluralism to develop and grasp a resilient agenda.[410] Although ACM has been deployed with varying success, the correspondence between pragmatism and ACM provides the opportunity, I argued, to aid in the development of an explicit pragmatic methodology applied to environmental contexts. I considered this method synonymous with an environmental ethic, one not defined by adherence to any one ethical attitude, but one that is faithful to the pragmatic process. The output of the process, given that all relevant boxes have been checked, is the moral course of action. ACM functions similarly, except practitioners might substitute 'moral' with 'wise' or 'appropriate' or 'proper.' My argument is an attempt to unify this language. It is worth remembering that pragmatists and ACM proponents do not believe that their corresponding processes are infallible; to the contrary. Both camps are candid

[408] Indeed, these grounds are what activists have been
[409] Charles Sanders Peirce, "The Fixation of Belief," *Popular Science Monthly* 12, (1877): 2.
[410] Socialism and communism are not meant in the political sense here. It just means engaging in social and communal actions and relations respectively.

about the possibilities of poor judgment, or missing stakeholders, or little imagination, among a multitude of other potentially detracting processional features. Group reflection and reiteration acts as the corrective.

The third part of this dissertation is an empirical test. Chapter 5 engaged with two environmental management case studies in Arizona. The first case closely examined a nationally recognized, enduring collaborative adaptive management arrangement in the Las Cienegas National Conservation Area,[411] while the second case study tracked the development of an environmental management schema in western Phoenix, Arizona. One of the more fascinating aspects of this second case study was the early stage of the collaboration. This elementary state means that the adaptive aspects, if there will be any, have not yet materialized. Having established, in parts 1 and 2, the pragmatic consonance with ACM theory and implementations, stakeholders in both case studies were enlisted for semi-structed interviews. A codebook (Appendix B) based on the pragmatic ethos was developed. The questions (Appendix A) directed at stakeholders had dual aims. The first aim, which is not in the scope of this dissertation, was to achieve a level of comprehension needed in order to code the case elements itself. This first project—to develop a typology of successful collaborative management—is on-going work with Dr. Michael Schoon and Dr. Candice Carr Kelman's Col-lab in Arizona State University's School of Sustainability. The second and relevant aim had many facets but was mainly to demonstrate a correspondence between pragmatism in the ACM case studies by asking questions emblematic of socio-ecological inventories (e.g., about resources, about management processes, about stakeholders). This correspondence, in my estimation, has

[411] This is essentially the same as ACM. The stakeholders preferred to use CAM instead.

the effect of operationalizing a pragmatic philosophy, uncovering various tensions and sympathies. For instance, the pragmatic epistemology is similarly multi-scalar. That is, at the individual meaning-making level, the collaborative level, and the social context in which that collaboration exists, learning and reflecting is persistent. On the other hand, the democratic and/or deliberative arenas that pragmatism imposes are imperfect and sometimes unfeasible.

Certainly, there are weaknesses in each of the three tracks that deserve mention. The topic modeling undertaken in Chapter 1 is, even in the most generous terms, is deficient in at least three ways. The corpora were not balanced in terms of word counts and secondly, the *Congressional Record* corpora does not capture the full-sweep of policy documents where one might find earnest influence of environmental ethics. Conservation organizations often publish periodicals or have missions, visions, mandates, etc., available. Legislation that champions environmental protection like the National Park Service Organic Act of 1916 or the Clean Water Act of 1972 is also pertinent for topic analyses and other forms of computational text analysis. This methodological overhaul could provide a more compelling body of evidence than what is presented here.

Pragmatic discourse is closely related to that of deliberative democracy, so critiques that apply to one are seemingly applicable to both. The fact that pragmatism is surreptitiously present in many aspects of our everyday lives makes it difficult to give good reasons for preferring pragmatism over other philosophical positions in all cases. Actually, pragmatism has the quality of being potentially self-defeating and therefore could be charged with inconsistency, inadequacy, or any number of psychologically

dissatisfactory characteristics.[412] Relatedly, ACM, while gaining popularity, still has many detractors that suggest it has problems reeling in imbalances of power, giving preferences to expedient solutions and not necessarily the 'correct' one, and simply too costly to implement. Further, some want to know: how much adaptation is necessary? How much collaboration? Are there cases where it does not work? There are no easy answers here offered here—simply a commitment to resolving these questions.

Lastly, the case study analyses were lacking in a number of areas. Namely, I conducted only half of the original number of interviews sought. Employing an additional transcript editor and transcript coder would have added much needed reliability to the cases. With a single researcher involved in question development, sampling, interviews, and transcription and coding processes, my bias has the potential to influence each of these pieces, potentially skewing the data to achieve results that I desire. Yet, despite these caveats and reservations, taken as a whole, the study seems to provide compelling support that this an area worthy of continued exploration.

Environmental Ethics: Concerns for Future Generations

Continuing in this vein, I would be remiss to not offer some musings and a bit of informal reflection on the trends I foresee materializing in my generation of environmental ethicists and beyond. If this dissertation is a signal that there is an increasing appreciation for interdisciplinarity and methodological diversity in philosophy, then surely this is the direction the specified field of environmental ethics will trend. As an undergraduate in philosophy at Arizona State University, environmental ethics was

[412] The claim here would be that in some cases, such as between hate-groups and their victims, deliberation, communal hearings, and social learning are simply not appropriate. How pragmatism deals with bad faith actors is an obstacle I have not been able to clear. I think in these cases we need to rely on other moral intuitions to depose of incorrigible individuals from our deliberative groups.

delivered with a kind of exotericism and broader awareness of the socio-political contexts in which these environmental issues arose, a credit to Dr. Ben Minteer. In my view, the entire philosophy department was attempting to descend from the ivory-tower and routinely offered courses in sustainability ethics, experimental philosophy, and bioethics, policy, and law, perhaps part of a more wide-ranging move toward interdisciplinarity across the campus. Cultivating a linkage between what is commonly viewed as a highly conceptual pursuit (philosophy) and applied problems has been a personal goal here, inspired by some of these formative courses and engagement with mentors who were indelibly diverse in their approach. I happen to believe that ignoring places where this linkage could occur is a disservice to both philosophy and adjacent fields of study where it might have lasting influence.

Even in this optimistic reading, there are still numerous challenges that environmental ethicists will continue to encounter, if only because of this increasing trend toward interdisciplinarity. In the course of my research, I have suggested that philosophy—and environmental ethics specifically—cannot be passive spectators. In order to achieve and maintain relevance in the discussion of applied problems, we are going to have to insert ourselves. That means we must continue producing work that can overcome three kinds of barriers.

First, we must overcome the *perception* that philosophy is for academics who are not interested in applied work, more closely associated with a turned-up-nose and an intellectual pompousness. Secondly, we must produce work that can *convince* other academic communities of several things, chief among these, perhaps is the notion that environmental ethics is applicable and useful in thinking about and resolving

environmental problems, as well as enriching the normative discourse of sustainability, a fast-growing, interdisciplinary field spanning the sciences, arts, and the humanities.[413] Lastly, and perhaps most importantly for me, we must *persuade* the public that philosophical analysis has something to offer, that it is not metatheoretical nonsense with little purchase on inquiry and decision making. Pragmatists, beginning with William James and John Dewey and carried forth by Cornel West and Richard Rorty, have seemingly punctuated the discussions about philosophy's public role. Does our changing media landscape make their causes—and the goals of environmental ethics—more or less digestible? Do we need a new approach focused on social media? Should there be community engagement events that do not take place on a university campus? There are many questions ahead to consider.

Fortunately, there is a familial relationship between the kind of work that I have undertaken here and those of increasingly interdisciplinary departments and research centers (like my own, the Center for Biology and Society at Arizona State University) that do not force students into predetermined tracks of study and allow them to pursue questions of their own interest. This openness breeds and perpetuates a kind of intrinsic motivation for research and learning. It can also be unsettling to the degree that it demands a process of rapid, adaptive learning and creative exploration as a project moves forward. But there's a sense of independence that came with self-doubt and uncertainty, including a chance to see what we are capable of. Training and supporting future students

[413] On a personal note, I recently spoke about environmental ethics in a recent job talk for an academic position in sustainability and, to my surprise, received many comments about how some of the concepts I covered and questions I entertained had the potential to reform the framing of sustainability problems in a plurality of undergraduate, and even graduate, courses. (I ignorantly thought that we would have the same baseline knowledge on some of the morally charged sustainability issues.)

to walk this tight-rope of intellectual and methodological possibility is, in my view, the best way forward for environmental ethics.

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APPENDIX A

TOPIC MODELING RESULTS FOR *CONGRESSIONAL RECORD*

economy	defense	middle eastern conflict	procedural	social services	domestic issues
section	soviet	war	committee	committee	section
tax	treaty	iraq	page	congress	bill
subsection	amendment	saddam	senate	h.r.	amendment
february	senator	kuwait	hearings	energy	act
paragraph	defense	sanctions	subcommittee	services	amended
credit	nuclear	washington	department	water	trade
loan	union	military	amendment	public	code
budget	united	hussein	testimony	air	august
federal	military	january	held	states	drought
china	presiding	speaker	heard	rights	subsection
amount	chairman	gulf	act	child	paragraph
bank	soviets	force	national	house	housing
state	states	president	public	care	farmers
institution	yield	street	secretary	bill	thereof
paragraph	arms	world	house	labor	striking
energy	inf	iraqi	affairs	trade	farm
education	president	american	h.r.	insurance	inserting
year	control	oil	assistant	u.s.	paragraph
trade	gentleman	support	director	california	crop
jobs	senate	assn	appropriations	transportation	secretary

APPENDIX B

SEARCHING FOR PRAGMATISM INTERVIEW GUIDE

Network Questions

- Can you tell me about your background?
- How did you become involved in the project?
- Where would you say your interest in the project arose from?
- Who are the partners/stakeholders in the collaboration?
- How often are meetings held?
- Are the meetings with X partner/stakeholder productive for the achievement of the project goals?
- How long has the collaboration with X partner/stakeholder been occurring? Has it changed in form over time?
- What is the nature of the collaboration with X partner/stakeholder, (e.g. is it mandated by law, is it constrained by type of funding, or is it based on shared interest?)

Adaptive Co-Management (ACM) concerns

- What are the resources being managed and what are the main threats to them?
    - Have these threats changed since the establishment of the collaborative network?
- What are the biophysical characteristics of the area under collaborative management?
- Can you speak to some of the long- and short-term goals of the collaborative?
- Do you believe collaborative approaches, in general, facilitate a shift to resilience-based ecosystem stewardship?
- In your opinion, what are the limitations to the ACM style of management?
- Do you feel that the organization of your group aids in overcoming challenges and reaching consensus?
    - For instance, is data collection/organizing easier? Monitoring? Organizing?
- What challenges have you faced that you would uniquely attribute to the nature of collaboration?
- Has the group sought to include voices that have some relevant expertise?
- Has the group sought to include those that may be affected by your decisions?
    - Who might be missing from the discussion?

Conflict Resolution Mechanisms

- Do you feel that deliberation (e.g. discussion, give-and-take, debate) has helped or hindered the achievement of defined goals? Why?
- How have potential areas of contention been addressed, if any?
- In instances of disagreement, how was the disagreement resolved (voting procedure, discussion, other conflict resolution mechanism)?
- Has the presence of conflict within the group, if any, become a distraction?

Environmental Ethical/Pragmatic Concerns

- Could you briefly describe the plurality of values held by some of the key members in the collaboration?

    - For instance, do some members appear have more deeply held species conservation views compared other members, who may be more interested in recreation, or possibly community engagement?
- Is the protection of these species a part of the project's defined goals? Are some more threatened than others? More valuable in some way (and why)?
- Has working toward species protection conflicted with other defined goals? How have you developed a list of priorities that is sensitive to multiple stakeholders?
- Do you believe that the wildlife populations/individual animals themselves hold special value or are you concerned with the integrity of the ecosystem more broadly?
    - In general, do you value untouched, wild places over the developed landscape?

Outcomes

- Has the end of the ACM/collaborative approach been discussed?
- Do you think that the health of the ecosystem could be sustained if another management approach were to be substituted in?

APPENDIX C

CODING MANUAL

EXPERIENTIAL

Mnemonic	**SOC_LEARN**
Description	The openness of participants to share and draw on plurality of knowledge systems and resources, learning, in general, and social learning, in particular, is associated with effective local governance systems (Armitage et al. 2009).
Schema	Does the collaboration facilitate the development of venues in which collaborators and stakeholders can come together to share information and exchange ideas? Code if yes.

Mnemonic	**ADAPT**
Description	Experiential learning is a process of creating knowledge through the transformation of experience, learning-by-doing. Adaptive management relies on learning-by-doing process to test and explore integrated policy strategies (Armitage et al., 2008).
Schema	Do stakeholders identify an adaptive process in their management design? Code if yes.

Mnemonic	**HYPO**
Description	A collaborative that treats, even informally, policy proposals as possible hypotheses is a signal that collaborators are intending to pursue an evaluative phase, post policy implementation. This would be the beginning phase of a complete experiential attentiveness and integrate to a hypothesis-deductive model of adaptive management (Armitage et al., 2008).
Schema	Do interviewees refer to policies for intervention as hypotheses? Code if yes.

FALLIBLE

Mnemonic	**MON**
Description	A period of monitoring and data-gathering should occur after a policy is decidedly implemented. Careful monitoring of outcomes advances scientific understanding and helps in the adjustment of policies as part of an iterative learning process (Williams et al., 2007).
Schema	Is there evidence that the collaboration relies on monitoring mechanisms (formal or informal) to inform future management activities?

	Code if yes.

Mnemonic	**EVAL**
Description	Evaluation is the second linear phase of the adaptive, learning process. Learning within the context of adaptive management derives from evaluation of previous management actions, the results of which are used to inform subsequent actions. After monitoring—the data collecting process—evaluation of the data should occur (Williams et al., 2007).
Schema	Is there evidence that the collaboration evaluates information gathered through a monitoring process? Code if yes.

CRITICAL COMMUNITIES

Mnemonic	**COHESIVE**
Description	Participating in collaboration has the effect of developing a shared understanding in places where it may have not yet existed. A sense of community can pre-date the emergence of a collaboration however (Koontz, 2006).
Schema	Do the stakeholders in the collaboration acknowledge a shared identity and understanding? Code if yes.

Mnemonic	**DELIB**
Description	"In order to ensure diverse players do not co-opt the process, an extensive amount of deliberation and consultation from a wide range of participants on specific strategies and objectives is usually necessary. Involvement in designing the process and having input into the product will more likely result in buy-in from all participants" (Reilly, 2008).
Schema	Is there evidence of a consensus-building process in negotiations among stakeholders, e.g., the stakeholders come together to discuss the issues and try to come up with mutually acceptable solutions? Code if yes.

Mnemonic	**NET**
Description	The importance of networks, in particular pre-existing networks, partnerships, collaborative efforts, or conflict appears foundational to the establishment of a robust collaboration. (Olsson et al. 2006, Ansell and Gash 2008, Plummer et al. 2012).

Schema	Are there continued efforts to broaden the base of stakeholders and/or wield social connections to further collaborative goals? Code if yes.

Mnemonic	**COL_VAL**
Description	A shared, collective purpose is indelible to successful collaborations (Reilly, 2008).
Schema	Does the collaboration have a baseline understanding/purpose/vision/goal toward which management activities can be directed? Code if yes.

Mnemonic	**PER_THREAT**
Description	There are many reasons to collaborate. In general, environmental collaboration spawns from some perceived threat (or prescient problem) to which management actions would be ineffective if greater amounts of human capital were not deployed. Carlson and Berkes (2005) simply states that co-management (cooperative or collaborative management) is a logical approach to overcome resource issues through the use of building and leveraging partnerships.
Schema	Although there may exist multiple reasons for a collaboration, here we are interested in whether the collaboration came about as a result of a perceived ecological threat by organizing members. Is there evidence that stakeholders acknowledge that perceived ecological threats as a primary reason for engaging in collaboration? Code if yes.

UNCERTAINTY AND CONTINGENCY

Mnemonic	**PLAN**
Description	Management plans should be adapted to new understanding of uncertainty rather than striving for optimization based on past records (Berkes et al., 2003).
Schema	Do management activities incorporate a planning process designed to reduce future levels of uncertainty?

	Code if yes.

Mnemonic	**FUT**
Description	Imagining and planning for future scenarios is also a way to reduce uncertainty and be able to quickly respond future conditions. Scenarios will be more informative and useful if they can incorporate multiple perspectives. Scenario building that includes joint deliberation about what is known and what is not known provides an ideal space about questioning assumptions made by different disciplines and different perspectives (Berkes, 2009).
Schema	Is there a scenario building component or some other method employed to make management activities sensitive to (even imagined) future conditions? Code if yes.

Mnemonic	**SUPR**
Description	Adaptive collaborative management by its very nature can reduce the impact of surprise, and indeed, may allow managers to view surprise as opportunity.
Schema	Is the collaboration sensitive to surprise? Code if yes.

PLURALISTIC

Mnemonic	**CON_RES**
Description	The persistence of conflict in deliberative arenas is not necessarily a sign of disfunction. Indeed, the sorting of competing claims and attention to the autonomy of other collaborative members is one of the functions of deliberation.
Schema	Is there evidence that stakeholders acknowledge conflict resolution mechanisms as an indelible component of collaboration? Code if yes.

Mnemonic	**BEG_ETHIC**
Description	It is critical to understand the values that stakeholders enter into environmental collaborations with. Often, the interests they maintain become conflated with their group identity (i.e. nature preservers, environmentalists, hunters, developers, etc.) and the range of

	management alternatives they are likely to promote and/or agree with are constrained to this group identity.
Schema	On interpretation, is there evidence that there was environmental ethical alignment employed/held by stakeholder prior to involvement in the collaboration? What, if any, environmental ethic was held as the collaboration formed (e.g. before deliberation took place)? Code if yes.

Mnemonic	**CHNG_ETHIC**
Description	A change in ethical attitudes (e.g. widening of acceptable values, shirking of incompatible worldviews, etc.) is an indicator that exposure, deliberation, and contact with other perspectives has the potential to challenge assumptions and otherwise foundational ethical positions.
Schema	Is there evidence that ethical positions, regardless of what they were initially, changed as a result of collaborative activities (e.g. planning meetings, deliberative arenas, town halls, other social events)? Code if yes.

Mnemonic	**VAL_DIV**
Description	
Schema	Is there evidence and/or recognition by stakeholders that other collaborators maintain a (mental or physical) list of individualized priorities? E.g. A stakeholder that is concerned with clean water while others care for wildlife. Code if yes.

APPENDIX D

IRB APPROVAL

EXEMPTION GRANTED

Michael Schoon
Sustainability, School of
480/965-0919
Michael.Schoon@asu.edu

Dear Michael Schoon:

On 3/24/2017 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Collaborative Governance for Improving Biodiversity Outcomes
Investigator:	Michael Schoon
IRB ID:	STUDY00005941
Funding:	
None Grant Title:	
None Grant ID:	
Documents Reviewed:	None • Consent Form.pdf, Category: Consent Form; • HRP-503a.docx, Category: IRB Protocol; • 050115 Recruitment script.pdf, Category: Recruitment Materials; • Rojas Interview Guide IRB.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 3/24/2017.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Christopher Rojas
Christopher Rojas

EXEMPTION GRANTED

Ben Minteer
Life Sciences, School of (SOLS)
480/965-4632
Ben.Minteer@asu.edu

Dear Ben Minteer:

On 11/29/2018 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Exploring pragmatic origins of adaptive co-management
Investigator:	Ben Minteer
IRB ID:	STUDY00009276
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	• ACM Email Recruitment.docx, Category: Recruitment Materials; • HRP-503a-ACM-ROJAS.docx, Category: IRB Protocol; • ACM Question Set.docx, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions); • Consent form-ACM Archi.docx, Category: Consent Form;

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 11/29/2018.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).

Sincerely,

IRB Administrator

cc: Christopher Rojas
Christopher Rojas
Ben Minteer