Does It Matter Whether Ecosystems Are Real?

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ABSTRACT

The question whether ecosystems are real has significant implications for what we perceive to be our moral duties towards them. In this paper I examine two environmental thinkers who reject the reality of ecosystems, though for widely different reasons: Bryan Norton's (2005) rejection book is based on his philosophical allegiance to a pragmatic anti-essentialism, whereas Allan Fitzsimmons (1999) simply finds the prevalent definitions for the term 'ecosystem' to be circular, confused or empirically baseless. I argue for the claim that Fitzsimmons' approach is preferable, and in fact rightfully leaves open the theoretical possibility that ecosystems are real.

1. Are Ecosystems Real?

For the purposes of this paper, I take the primordial sense of "real" to be: has an existence outside of mind, independent of being thought about. Many things fail this definition, such as when one says that a conspiracy is not real (it's all in your head), that Sherlock Holmes is not real (he exists only in the book), and that the edge of the earth is not real (it's simply an invention of fearful seafarers). A subsidiary sense of "real" is: has an existence independent of other things that are also outside the mind, to which it is not reducible. Many other things fail this definition, such as when one suggests that paintings are not real (they are ultimately just assemblages of globs of paint on a canvas), emotions are not real (they are ultimately just biochemical processes), nor are corporations real (they are simply groups of people). The strongest sense of "real" is then to say that something both exists outside the mind and is irreducible to other things. In this sense one can say, to an approximation, that most real things are just atoms: atoms exist outside the mind, and most things are simply atomic conglomerations.

One can resist the conclusion that something is just a conglomeration of atoms, however, if it is an emergent entity—that is, something which has an existence above and beyond the objects (namely atoms) that make it up. It is sometimes said that (great) paintings are objects that are emergent in that they are more than just the paint that makes them up. Social groups, too, are sometimes said to emerge, where they acquire an identity that is more than the people that comprise them. And this is something that is occasionally said about ecosystems. For instance,

the ecologist Eugene Odum maintains that "the old folk wisdom about 'the forest being more than just a collection of trees' is [. . .] the first working principle for ecology."[1] He analyzes what he means by "emergence" as the unpredictability of an object's properties given its components, using as a rudimentary example of this phenomenon the emergent properties of water given the combination of oxygen and hydrogen atoms.[2] In this sense, Odum cites as an example of an emergent ecosystem the coral reef at Enewetak Atoll in the Pacific Ocean which he studied along with his brother Harold Odum in 1954, a reef that maintains a high rate of primary productivity despite the low nutrient content of the surrounding ocean.[3] So one might argue that ecosystems are real in the strong sense, in that they are both independent of people's minds (i.e., independent of being thought about) and (so the ecologist Eugene Odum seems to believe) independent of (in the sense of irreducible to) other sorts of mind-independent objects. Of course, Odum's analysis of emergence is not unassailable—it is just an illustration of how one might be a realist in the strong sense.

    For some writers on ecology, however, saying that ecosystems are real is problematic. For instance, this is the view of Bryan Norton in his (2005). Norton's vantage-point has nothing to do with ecosystems, *per se*; rather, it is a product of a general, philosophical skepticism about the powers of human knowers. He calls the view he finds objectionable "essentialism," though it is simply the primordial sense of "realism" we described above. Essentialism, he asserts,

> is the view that the categories of human thought answer to real, preexisting 'kinds' or categories. [. . .] [By assigning] to nature a 'real' structure that exists prior to experience or language, [essentialism is] able to support . . . the view that at least on some deep, metaphysical level, *the* structure of the world is available for discovery.[4]

Speaking as a "pragmatist," he believes that

> the way forward [is] to embrace experience as the measure of all things and forever abandon the failed Cartesian dream of describing a human-independent reality as it is, corresponding to our assertions about it.[5]

Norton advances various reasons for his anti-essentialism. To begin with, he views it as a philosophic consequence, in a Deweyan spirit, of the Darwinian realization that natural, biological categories "are not fixed but changing."[6] By extending Darwin's insight to all forms of linguistic categorizations, Norton suggests that John Dewey showed how

> essentialism had become untenable after Darwin. Without essentialism, general words like *cat* and *tyrannosaurus* cannot be taken to *denote* or *refer to* a fixed and

given kind unified by some "essence." [. . .] [T]he idea of a rational, unchanging reality was inevitably undermined.[7]

Norton also contends that the passage to anti-essentialism is a feature of the later philosophy of the positivist Rudolf Carnap. As Norton reads Carnap,

after a career of chasing the impossible dream of a single, picture-like language that depicted reality as it really was, Carnap finally—in his late fifties and early sixties—recognized the impossibility of such a unique structure.[8]

Carnap was, Norton believes, finally "freed of Cartesian enslavement to the belief that reality is imposed upon us by the world out there," and finally convinced after a long philosophic career that

the categories we use to study nature are not 'given' in prelinguistic reality, [but rather] language itself must give structure to the world as we encounter it and reason about it.[9]

Though Norton does not specify the scope of his anti-essentialism, he is clear in his (2005) that all the key ecological concepts—such as environmental sustainability, sustainable development, ecological integrity, ecological health, and so on—must be so understood. As a case in point, it is his view that there are no ecosystems "out there," waiting to be discovered by ecologists in some "mind-independent reality." For Norton, in the primordial sense of "real," ecosystems are not real.

One might regard this as a somewhat negative position to adopt, a position that would likely startle an ecologist such as Odum. However, Norton regards this post-modern position as highly liberating and fundamental to a public policy that hopes to solve environmental problems. With language freed from the burden of describing some mind-independent reality, Norton believes

we can think of language as a creative tool for characterizing and talking about problems and solutions, [. . .] a tool that communities can use to communicate and deliberate, [. . .] [and that] itself [gives] structure to the world as we encounter it and reason about it.[10]

For him,

> the assertions we make about nature reflect [. . .] a socialized reality in which experience and communication are inevitably intertwined. [. . .] [T]hey reflect the "structure" we impose upon reality when we use language to describe it.[11]

Armed with the ability to "create reality" in our choice of language, we are in a position to seek those "linguistic forms [that] will maximize communication and sharing of experience."[12] Indeed, Norton regards as the purpose of his (2005) book

> to ask what language, what descriptive models, and what representations will encourage better communication and more cooperation in the discussion and formation of environmental policy.[13]

In this sense he describes his approach as "conventionalist" and "pragmatic," one that deploys a liberalized view of language and communication in service of addressing environmental concerns.

Another writer who rejects a realist interpretation of ecosystems is Allan Fitzsimmons in his (1999). The basis for his rejection is less philosophical than Norton's—he simply points to the fact that there is a great deal of imprecision in how scientists and policymakers go about delineating the boundaries of systems. He suggests that

> a common trait among scholarly books presenting collections of ecosystem studies is the lack of any geographic consistency among the ecosystems serving as units of study,[14]

and goes so far as to devote an entire chapter (chapter 2 of his 1999) to illustrate how national ecosystem maps of the United States substantially vary depending on which governmental, non-governmental agency, or ecologist one cites. He attributes this imprecision to the lack of

> theoretical or methodological requirements imposed by ecology or any other branch of science regarding the size, shape, or location of any portion of the landscape that is to bear the ecosystem label.[15]

But he does not think this lack of requirements is due to any laziness on the part of ecologists. Rather, from Arthur Tansley, the originator of the ecosystem concept, to the ecologists of the present day, ecosystems have been traditionally been viewed as transient and arbitrarily bounded entities.[16] Given this indeterminateness in the identification of ecosystems, Fitzsimmons draws the conclusion that

ecosystems are but mental constructs, a convenient geographic shorthand that analysts use to describe some particular slice of the landscape rather than examples of objective reality.[17]

In our terminology, we can say that, for Fitzsimmons, ecosystems are not real in the primordial sense of "real," just as they are not real in this sense for Norton.

Now there is clearly room for a realist to contest both Norton's and Fitzsimmons' arguments. Norton is arguably wedded to a controversial anti-realism (for him, an "anti-essentialism") based on a singular reading of the history of philosophy (in terms of a movement away from Cartesianism and towards pragmatism), as well as a dubious application of Darwinian insights to linguistic categorizations. And Fitzsimmons may be jumping the gun in assuming that real objects must have determinate boundaries and invariable constitutions: surely something can be real but mappable in different, even incompatible ways. (Note however that if we are trying to ascertain whether something is real in the first place, such an indeterminacy in mapping is an argument against its reality since if the object weren't real, we'd expect there to be some dispute about its boundaries—our opinions about its boundaries would not be guided or adjudicated by the presence of the real boundaries possessed by the object.) However, let's put aside their individual reasons for rejecting the reality of ecosystems and focus instead on what they believe their anti-realist positions imply as regards public policy pertaining to environmental (ecosystem) management. As it turns out, comparing the views of Norton and Fitzsimmons has interesting implications for how we answer the titular question, "Does it Matter Whether Ecosystems are Real?"

2. Environmental Public Policy

Fitzsimmons' view is that since ecosystems are not real, this leaves ecologists, policymakers and everyone else the freedom to delimit as they please what to view as ecosystems. It also leaves them the freedom to fabricate as they like a host of related concepts, such as those listed above—environmental sustainability, sustainable development, ecological integrity and ecological health. What Fitzsimmons does is analyze a large variety of published discussions of such environmental concepts, and finds the definitions of these concepts found in these discussions to be hopelessly vague, and sometimes even circular.[18] Norton himself gets tagged in the critique, having circularly defined sustainability and ecosystem health.[19] None of this would be a problem, even for Fitzsimmons (as many useful areas of study contain vague, and even circular, definitions), were it not the case that, on his view, the setting of environmental policy (at least in the United States, circa 1999, when Fitzsimmons wrote his book) has been excessively

influenced by the "new paradigmists" according to whom "protecting ecosystem health has become the highest good and that to do otherwise is immoral."[20] It is Fitzsimmons' view that this influence motivates a form of environmental management that abrogates private property rights,[21] and does so wrongfully since things like ecosystem health, integrity and sustainability only have value if ecosystems are real (which of course they aren't, according to Fitzsimmons).

As Fitzsimmons realizes, new paradigmists are doubtfully discouraged by academic arguments regarding the non-reality of ecosystems. As he suggests, "sustainable development," along with its kindred notions, "has less to do with ecology than it has to do with power. It is fundamentally a 'political concept.'"[22] And when we return to Norton's views of the topic, we find this to be exactly his view on the matter. Norton considers the question why he adopts the terms "sustainable" and "sustainable development" in discussing the aims of environmental policy, and he is frank that he chooses these terms

> not because of the strength or clarity of their current definitions-in-use. [. . .] [The] goal, rather, is to propose [. . .] a definition that is useful in a democratic process of deliberation about what to do. The advantages of the term *sustainability* are of two kinds, political and practical. Politically, this term has been accepted in global forums discussing global problems and policy. Some governments have committed themselves to sustainable policies and to achieve development that is sustainable. So [. . .] there is no doubt that sustainability will be a useful term in public discourse[.][23]

For Norton, it is the usefulness of the terms "sustainable," "ecosystem," and the rest—their pragmatic value—that motivates their introduction into discourse about the environment. Of course, such an attitude is completely in harmony with Norton's overarching philosophical orientation described above—i.e., his anti-essentialism (anti-realism), combined with his liberal attitude concerning the choice of language as guided by the need to foster cooperation and communication amongst communities, here in service of solving environmental problems. The issue of the "reality" of the objects purportedly referred to by introduced terms is, accordingly, an irrelevant matter for him, having freed ourselves from the "failed Cartesian dream of describing a human-independent reality." Instead, the crucial issue when we stipulate, specifically, a definition for the term "sustainable" is that

> we endow a community with the ability to choose what is important to monitor and what is important to protect. [. . .] The persuasiveness, in public discussion, of any given definition [. . .] will depend upon the plausibility of the arguments, provided by a community group or individual, that a given indicator should be

monitored, and certain processes protected, because those process are involved in generating an important social value.[24]

It is here that Fitzsimmons and Norton part ways. Up till now they have shared—though for different reasons—an anti-realism about ecosystems. They also share what Fitzsimmons calls a "people centeredness" in assessing land use management policy—a focus on producing "outputs useful to humans,"[25] that is, outputs with pragmatic or social value, as opposed to the bio- or eco-centeredness of new paradigmists who attach ultimate intrinsic value to biological or ecological entities. But apart from these points of convergence, Norton and Fitzsimmons diverge sharply on the question of how pragmatic or social values relate to scientific, ecological inquiry. Fitzsimmons bemoans the fact that

> within ecosystem ecology there is a movement away from an understanding of science as a relatively value-free pursuit of knowledge based on theory, confirmed observation, and verifiable experimentation and to a world wherein work that is distinctly value laden [. . .] is deemed scientific.[26]

At this stage Fitzsimmons pointedly cites Norton, quoting a passage in which Norton and Robert Ulanowicz assert that "conservation biology is a normative science [. . .] guided most basically by a commitment to important social values."[27] Fitzsimmons does not hesitate to express caution about such an approach, lest it blur "the line between science and advocacy."[28] It is a caution with which Norton is familiar, as he recounts at one point being advised by the ecologist David Policansky that we should "do our best to segregate factual reports from evaluative prescriptions" since (to paraphrase Policansky) we should first get our facts straight before we make up our own minds about what to value.[29] To be sure, the attitude that scientists should keep their facts separate from their values is, as Norton recognizes, quite common (see 34–37 where he cites a number of expressions of this attitude). In fact, he candidly suggests that his (2005) book is nothing less than a "detailed response to [this] attitude."[30]

So the situation we are left with, in the hands of Norton and Fitzsimmons, is this. On Fitzsimmons' view, if talk about ecosystems and the related notions of ecosystem health, integrity and sustainability is to be meaningful, we need to have precise, non-circular definitions for these notions, and there needs to be empirical support for the claim that the referents for these notions actually exist in the world. Only after having accomplished these tasks does it make sense to ascribe value to ecosystems and direct public policy towards their preservation. By contrast, Norton maintains that we should, right from the beginning, move to preserve ecosystems, given that communities have made it clear to policymakers that doing so serves various pragmatic, social needs. For instance, sustainability is important for Norton because

> we must endow communities with the ability to choose what is important to monitor and what is important to protect. Choosing what to sustain is prior to choosing how to measure its sustenance.[31]

As a case in point, Norton considers Federal wetlands policy which, in the past, was motivated by the thought that swampy areas are worthless and should be drained, but then,

> as ecological information came in, [. . .] it became obvious that wetlands perform many important, sometimes essential functions in supporting social values: flood control, nutrient removal, wildlife habitat, and many others.[32]

In other words, it suddenly became important to sustain wetlands—or to put the point more exactly, considering Norton's anti-essentialism according to which it does not make sense to say that wetlands exist in the world, independently of our minds—it became important to talk (and act) as though there are wetlands needing preservation, because doing so has distinct social benefits for human communities.

We need to determine, then, who has properly framed the procedure by which environmental public policy should be developed. As Fitzsimmons has it, should scientists first settle the empirical question of whether ecosystems exist, and then leave it to the public and policymakers to address the issue whether ecosystems are the sorts of things that deserve preservation? Or, following Norton, do we begin by determining what sorts of things are valued by communities, and on that basis frame public policy using the language of "ecosystems," "sustainability," and so on, that has the effect of upholding these community values? To start in addressing this issue, let us consider the reasons why, according to Norton, in order to do the science that underlies environmental public policy one must keep firmly in mind the social values that are at stake.

3. Norton's Infusion of Values into Facts

Norton provides three reasons why scientific inquiry into environmental issues should embrace a consideration of social values. The first reason, less developed by him, is that a "serial approach to science and policy," according to which "the process of gathering scientific data and building models is supposed to be completed in isolation from policy discussion and formation,"[33] is an impossibility: "real science," he says,

is not done in value-neutral contexts, and especially practitioners of mission-oriented sciences such as conservation biology and conservation ecology cannot seal themselves off from political issues and social values.[34]

But surely it is too strong to suggest that people are completely unable to set aside their values whenever they make decisions. It may be a struggle, but people often reflect on how their valuational attachments might influence their decision making, and sometimes make conscious efforts to limit this influence. Saying that they will necessarily fail at this task is a significant psychological hypothesis that needs empirical backing. It may be, though, that Norton's point is different—it is that any sort of thinking requires the use of assumptions to which one is "attached" in an irrational manner (on pain of a justificatory regress). The matter then turns on the nature of these assumptions, and one might suggest that proponents of the serial view have no objection to the use of assumptions that express commonly-held epistemic values (such as maintaining logical consistency, maximizing one's access to relevant empirical evidence, and so on), even if they are politically or socially mandated. In other words, even if gathering scientific data and building models must occur in the context of policy discussion and formation, it could still be the case that the policy is exclusively epistemically motivated, if epistemic values are the main focus.

So let us turn the second reason why Norton believes environmental scientists should affirm the relevance of social values to their research. He suggests that,

> even if a value-neutral science were possible, it would not be desirable, because value-neutral science has no way of telling what is important information, what dynamics to monitor, or what indicators indicate something important.[35]

So far Norton's position sounds quite reasonable. Environmental policy has as one of its goals the solutions of problems that have been publicly identified—here one might think of the common concern for sustainable waste management which has become pressing because of the overloading of our landfills. As such, if policymakers are going to turn to scientists for solutions to these problems, it is to be hoped that scientists have an idea about what these problems are and what would be socially favorable solutions to them. For example, if environmental engineers study ways of solving landfill problem by considering how high they could build a mound of trash adjacent to City Hall, ignoring completely the social value attached to keeping untreated waste outside city limits, then we could rightly criticize them for not paying attention to these social values in their scientific deliberations. Let us then fully endorse this reading of Norton's objection to the serial view. So understood, the serial view is

damaging in that it discourages us from even considering whether and how scientific study and modeling should be guided by policy problems, goals, and objectives. The serial view assumes a one-way flow of information from scientists to the public. But [as Norton argues] [. . .] action-oriented, adaptive management requires a multidirectional flow of information among scientists, policymakers, and the public.[36]

But is this all Norton means when he suggests that scientists need to attend to social values in their scientific research? Is it simply that scientists, if they are tasked by policymakers to study and present possible solutions to environmental problems, need to be aware of what these problems are and what would be socially valued solutions to them? It hardly seems the case that we need a detour through Norton's reconstruction of the history of philosophy, as a movement towards a pragmatic anti-essentialism, in order to justify counseling scientists that, if they want to solve public problems, they should get straight what these problems are and what would be worthwhile solutions to them.

As it happens, Norton has a third suggestion for why scientists need to incorporate social values into their research, which we find in his discussion of what he calls "bridge terms,"

terms that have empirical, operational, and measurable descriptive content and therefore have a connection to the descriptive discourse and the literature of science, but [that] also connect to social values and our evaluative discourse by embodying or evoking important social values.[37]

An excellent example of a bridge term, provided by Norton, is "obese."[38] When used in medical science, the term "obesity" can be given a precise, empirically-based definition, and on the basis of that definition various correlations can be discovered linking obesity with a host of medical ailments. Still, one cannot pretend that in describing someone as obese one is also not making an evaluative judgment: to say someone is obese is also to say he needs to lose weight, to get more exercise, to live more "healthily." And now the connection with environmental science is clear, for the battery of environmental concepts that Norton focusses on—sustainability, sustainable development, ecological integrity, ecological health, and so on—also share the feature of combining descriptive discourse with normative aims. In saying that a forestry practice is unsustainable, we additionally say that it should be stopped; in suggesting that our goal is the preserve the health of an ecosystem, we imply that we are pursuing a worthwhile goal. From here we can give sense to Norton and Ulanowicz's assertion, quoted above, that "conservation biology is a normative science," for some of the concepts of conservation biology clearly have this feature of linking a description with an evaluation. Moreover, we can further see the

relevance of Norton's pragmatic, anti-essentialist, linguistic philosophy to his assessment of environmental policymaking. He wishes for scientists to recognize, even affirm the normative dimensions of their descriptive discourse, even though engaging in such a task is problematic since normative categories from a strictly physicalist viewpoint have a questionable ontological status. Understood normatively, concepts like health, sustainability and integrity seem to have little relevance to the physicalistic categories that scientists typically use—strictly speaking we can't measure or observe things like health, sustainability or integrity—and in fact it isn't a far stretch to say that such normative categories are utterly mind-dependent and so, given the primordial sense of "real," refer to unreal things. It is crucial then, if scientific talk about these things is to be accepted, that we do away with the philosophical tradition that postulates a mind-independent reality and that further sees scientific advance as the task of correctly describing this world.

It helps even further if we put in place of this tradition an alternative tradition that is open-minded about the linguistic categories that we choose to use, a tradition that (as Norton has it) recommends the adoption of categories for the sole pragmatic goal of serving community interests. Having so renovated this philosophical backdrop, Norton can now make the suggestion that scientists should not only be aware of the prevailing social values that bear on their work, but that they can and even should even infuse these values into their scientific categorizations. There is, from his philosophical standpoint, nothing that makes such an expansion of scientific discourse unreasonable.

How then might Fitzsimmons, and others who reject the infusion of evaluative judgments into scientific investigation, respond to Norton's position? There are at least three sorts of replies here.

4. Problems with Norton's Infusion of Values into Facts

To begin with, there is plenty room to question Norton's general philosophical attitude. He provides no compelling reasons for either his assertion that people are unable to arrive at justified conclusions about a mind-independent world, or for his even more startling assertion that there is no justification for a belief in a mind-independent world "out there," one with its own set of pre-existing, fixed categories. In the end, his argument on behalf of these assertions seems to boil down to an idiosyncratic reconstruction of the history of philosophy, and even if it's the case that philosophers should buy into this history, I doubt most scientists, laypeople or policymakers have much interest in, much less a stake in this reconstructed history. Notably, we would expect the new paradigmists to be especially wary of Norton's anti-essentialism. The new paradigmists are painfully aware of the resistance they meet when they suggest that the health of a particular ecosystem should outweigh someone's property rights. It is a resistance they counter by suggesting that ecosystems, despite appearances, exist in a mind-independent world and are

real in the same sense that you and I are real, from which it follows that they are just as morally considerable as you and I. As such, the battle Fitzsimmons is engaged in with the new paradigmists concerns whether ecosystems in fact possess this degree of mind-independent reality, and it is arguably a feature of Fitzsimmons' position that, if the new paradigmists were able to make their case by (at least) having a consistent and empirically supported definition for what constitutes an ecosystem, then he leaves it as an option to become a new paradigmist as well. Yet none of this debate makes much sense to Norton, since on his view there is no (knowable) mind-independent world about which to even argue. Much to the surprise of Fitzsimmons and the new paradigmists, their controversy on whether ecosystems are real is, if Norton is right, actually a debate about who is right as regards how best to serve the prevailing set of community values. The new paradigmists, under the assumption that their view is the minority view (given the strong tradition of property rights in the US), believe that they need to push for the mind-independent, moral considerability of ecosystems if they are to convincingly argue that ecosystems deserve strong protection. However, this is a strategy and point of debate that Norton's pragmatic anti-essentialism pre-emptively rules as illegitimate. The point is that Norton could be more charitable in discussing the sorts of ontological issues dividing Fitzsimmons and the new paradigmists.

Secondly, one needs to be cautious in endowing scientists with the power to make value judgments an intrinsic part of their factual investigations, in light of the culture of scientific expertise that typifies our modern, technological society. Norton cites a number of scientists who explicitly refrain from the practice of mixing values with facts—the concerns expressed by Policansky above are typical. I believe such demurrals are to be praised, and not criticized as being short-sighted, given the astounding technological and scientific advances that characterize modern life. Given the high degree of expertise needed to understand these advances, the views of the non-expert can easily be dismissed as simply uninformed. Norton asks that discussions about environmental policy be "multidirectional" involving a sharing of information amongst scientists, policymakers, and the public. But think about the relative influence on this discussion by scientists as compared to laypeople, for example, when it comes to a topic such as the technological feasibility of wetlands banking.[39] What could a layperson possibly say to a professional ecologist on this topic that would be of any practical significance? Or consider once more the question of obesity with respect to its genetic determinants, its effects on the endocrine system, the presence of pathophysiological causes, and so on—what sort of constructive dialogue is going to occur between a layperson and a medical expert when it comes to the scientific fine details of this condition? It is because of this imbalance in both power and knowledge that the expert needs to be especially careful not to import value considerations into her factual pronouncements: sometimes laypeople just don't have the capacity to distinguish the factual from the evaluative. As such, when I hear Policansky, Fitzsimmons, and others, counseling that

they see the need to separate the factual from the evaluative, for me that is a hopeful sign, as it should be to any non-expert. It means that as a non-expert I won't be inundated with technical details hosting concealed norms. It means that when it finally comes to an open discussion of values with the technical, scientific details suitably framed, I will actually have a chance to say something productive. One would think, after decades of laypeople being implicitly fed normative judgments concealed in factual descriptions—think of the variety of implicit sexist, racist and homophobic norms that have been passed off as "good science"—that the separation of facts from values would finally be, for us, a practice with incontrovertible merit.

Nevertheless, let's suppose that in a particular community there is a synchronicity in the value judgments of scientists, policymakers and laypeople, and a basic agreement occurs regarding what actions to take in addressing environmental problems. This leads to a third problem with Norton's approach ultimately stemming from his non-essentialist, pluralist philosophical orientation—i.e., his basically non-committal attitude regarding what specific steps communities should take in any decision scenario. This non-committal attitude is implicit in what Norton calls "community-procedural values" according to which the fundamental goal of a community is to cooperatively arrive at a decision through a process that is "fair and open."[40] In response to the concern that, as Norton puts it, the rules for decision making "are all 'procedural' and imply nothing about what is valued", he responds,

> in a democratic process, substance arises from process and that sustainability commitments must, if they are to guide communities toward effective cooperative action, be perceived as results of a fair and open process.[41]

The problem in emphasizing procedural fairness to such a degree is that it has the potential to license results that, even though they are arrived at in a procedurally fair manner, are unfortunate in other ways—unfortunate even for the environment. As Norton acknowledges,

> we must face a choice. We must decide whether we are first and foremost environmentalists or first and foremost democrats. [. . .] For my part, given these alternatives, I choose democracy.[42]

This choice he supports even if we "accept the undeniable evidence that some democracies are environmentally destructive, at least in the short run."[43] My sense is that Norton, with his keenness for pluralism, procedural fairness, and democratic ideals, recognizes the hazard of permitting a free-for-all in values. We thus find him repelling this hazard by tacitly advocating a form of teleology whereby, miraculously, democratically governed communities find themselves converging on a unique (and sensible) set of value judgments. For example, he discusses the type

of values that "emerge on a community scale," which he calls "community-identity values," and suggests that they will be of the sort to "create cohesiveness within human communities" and bind "individuals and communities to their natural habitat."[44] When faced with the question whether a community will establish a policy that reduces the economic welfare of future generations, he rejoinders that "it will be a very unusual community that intentionally chooses to reduce the levels of individual welfare over time."[45] When communities consider the potential risk for a nuclear accident in their decision making, Norton asserts that "most communities will adopt safeguards against inflicting dangerous and preventable risks on future people."[46] In other words, procedural fairness is leading communities to a particular set of "correct" value judgments, the correctness of which is not due to the fairness of the decision making—otherwise, any result arrived at fairly would be correct—but is rather explained by some prior, unspoken set of substantive values that Norton endorses, but won't openly commit to.

Norton is thus left with a problem, one faced by any value pluralist: how does one censure those values to which one is opposed, especially in a community which has a policy of supporting whichever values are produced by means of a procedurally fair, democratic process? The quick answer for Norton is that he shouldn't censure them (nor should he resort to a form of teleology that will naturally weed out undesirable values), for if he is truly an anti-essentialist then there is no "mind-independent world" of "true" values to which we must adhere, and if he is truly a pluralist there is not even a preferred set of mind-dependent values to which people ought to be committed. A more nuanced answer for him is to abandon his unrestrained pluralism and anti-essentialism, and allow an incursion into his philosophical mind-set of a small set of substantive, fundamental values (values to which he is likely committed anyway). Speaking of environmentalism, this small set could focus on attaching intrinsic value to living entities (which one would naturally suppose to exist in a mind-independent world). All living things share in this value, though we can leave aside a detailed assessment of the quantum of value and the sorts of obligations this value imposes on moral agents—at the very least, there will be a duty to support an environment able to "sustain" these living things. The next question is, what sorts of things do we include in the class of "living things," and this is where the debate between Fitzsimmons and the new paradigmists comes into play, for their debate concerns the question, not just whether ecosystems are living, but whether they are real to begin with. If they are real, though non-living, yet also are fundamentally needed to ensure the sustainability of a variety of living things, then this would impose on policymakers and moral agents generally the obligation to preserve them. On the other hand, if ecosystems are both real and living, then there will be a fairly clear, *prima facie* obligation to preserve them directly.

The point is that attaching intrinsic value (which may itself be mind-dependent) to living things in a mind-independent world should not be thought of as an oppressive gesture. For

instance, in responding to the views of Laura Westra, a classic new paradigmist (and also one of Fitzsimmons' targets), Norton asserts that her principled defense of ecological integrity

> violates an essential precondition of open democracy by holding her views to be "non-negotiable" and above challenge. [S]he disconnects reason from the political process and is led to embrace coercion in favour of her principles over those of others who may disagree.[47]

Here, Norton seems to think that any challenge to the result of a democratic decision process is unfair, and that any attempt to reverse this result non-democratically is an unfair form of coercion. But surely whether this is true depends on what this result is: I suspect that, if a procedurally fair decision process resulted in society's choice to lay the environment to complete waste, Norton, if he had the power to coerce an alternate decision, would do so, and feel justified in doing so. Moreover, his pleading impotence in such a case—citing his philosophical commitment to a pluralism (much less an anti-essentialism) about moral principles—would surely be an irresponsible abdication of his moral duty. Fitzsimmons, by comparison, despite his railings against Westra and other new paradigmists, never comes across as quite so ideological: he simply wants the new paradigmists to provide clear, consistent and empirically grounded definitions for their terms, and once provided with them he might even join their ranks, and try to convince property-owners to do the same.

5. Summary of the Argument

Both Norton and Fitzsimmons are anti-realists about ecosystems, though for very different reasons. Norton's anti-realism is motivated by an idiosyncratic philosophical commitment to a pragmatic anti-essentialism, one that sees natural categories as the product of a social consensus on how to use language with the ultimate goal of enhancing public communication and cooperation. Conversely, Fitzsimmons' anti-realism is motivated by his concern that the empirical boundaries of ecosystems, as they are drawn by scientists and policymakers, are indeterminate and arbitrary, and so in all likelihood are simply convenient mental constructions. To an extent, then, their views converge: both see ecosystems as human intellectual fabrications aimed at serving pragmatic, social values. But whereas Norton embraces this constructivism as enlightened and liberating, Fitzsimmons regards it as regressive and anti-scientific. That is, whereas Norton would encourage scientists and policymakers to freely construct ecosystems with an eye to servicing the policy needs of human communities, Fitzsimmons recommends that we try to tighten up the empirical analysis of ecosystems, making their boundaries more determinate and less subject to subjective manipulation. The question I propose to address, then,

is this: in developing an environmental public policy, should we follow Fitzsimmons and encourage scientists to first settle the empirical question of whether ecosystems exist (and if so, what their boundaries are), and then leave it to the public and policymakers to determine whether ecosystems are worth preserving in the face of competing moral and public duties, or should we follow Norton, first identifying what sorts of things communities value, and then framing a public policy that selectively introduces expressions such as "ecosystem health" and "sustainability" with the goal of upholding this chosen set of community values?

The latter half of the paper answers this question by siding with Fitzsimmons. As I argue, there are three key problems that afflict the broad value pluralism that results from Norton's pragmatic anti-essentialism, a pluralism that infuses normative content into scientific (here, ecological) concepts (most especially in the case of what Norton calls "bridge terms"). I criticize Norton's approach on three grounds. First, it pre-emptively cuts off a certain line of support for certain kinds of ethical perspectives that, for all their foibles, deserve a better hearing. Here I have in mind the ethical perspective advocated by the new paradigmists who view ecosystems as existing mind-independently (and so count as "real," as we are using this term here) and as having a moral considerability comparable to that possessed by human beings (which explains why this view is so harshly derided by some human beings). Basically, new paradigmism has no ground to stand on at all if it is denied the ability to say that ecosystems have (as morally considerable) a real, mind-independent existence—yet it is a dialectical position that Norton's anti-essentialism permanently renders illegitimate. Secondly, the incorporation of normative features into scientific discourse, such as through the vehicle of bridge terms, raises the hazard of scientists exerting inordinate influence over public policy decisions. This is because laypeople lack the expertise to challenge the work of scientists as regards the framing of scientific concepts, and if these concepts incorporate normative features, laypeople will correlatively lack the expertise to question the normatively significant judgments of scientists. (Indeed, one would expect such a concern to move Norton with his emphasis on democratic decision making). Third, Norton's value pluralism, constrained only by the principle of democratic procedural fairness, runs the risk of being turned into an ethical relativism, one that could lead to disastrous results for the environment. This is hardly a promising result for someone apparently supportive of environmental health and sustainability.

By comparison, Fitzsimmons' anti-realism does not suffer from the three flaws described above. To be sure, he is concerned with the imprecision with which ecosystems are often defined, their lack of determinate, fixed boundaries. But this is not an irremediable flaw: distinct and clear empirical criteria for ecosystems could be found, and such criteria may point to the mind-independent reality of ecosystems, thus buoying the new paradigmist, who now at least has a fair chance to defend her view. Further, Fitzsimmons' approach is clearly one that shuns the applicability of non-epistemic values to scientific concepts (which, if we accept the presence of

epistemic values, does not imply that for Fitzsimmons scientific research is value-free). Of course, it might be the case nevertheless that non-epistemic values find their way into scientific theorizing. But at least the layperson can be assured that scientists keep as their goal the separation of epistemic from non-epistemic values and strive to ensure the epistemic purity of their work. This is much different from Norton's approach that seeks no remedy for the intrusion of non-epistemic values, and perhaps even endorses this intrusion. Finally, there is no commitment on Fitzsimmons' behalf to value pluralism, and so no obstacle to his choosing and advocating the best ethical values there are in considering how the environment should be treated. More to the point, Fitzsimmons does not see his perspective work as having any ethical implications—he just wants to get it straight whether ecosystems exist, and if so, what is their extent and basic constitution. Once that issue is sorted out, the ethical analysis can then productively begin.

So to answer the titular question, it does matter for Fitzsimmons whether ecosystems are real as regards the moral imperative to preserve them, just as it matters to the new paradigmists. Conversely, for Norton, it doesn't matter whether ecosystems are real (actually, for him, it doesn't matter whether anything is real in the sense of "real" we are working with here). Real or not, it is Norton's view that the moral imperative to preserve ecosystems stems solely from the occurrence of contingent, democratic, procedurally fair, community decisions. In this paper, I have argued against Norton's position and for Fitzsimmons' view: let's get clear about whether ecosystems exist and what their boundaries are before we formulate public policy about them.

Endnotes

1. Odum 1977, 1289; see also Odum and Barrett 2005, 8.

2. Odum and Barrett 2005, 7.

3. First described in Odum and Odum 1955, 319; see Odum and Barrett 2005, 7–8.

4. Norton 2005, 78 (Norton's italics).

5. Norton 2005, 79.

6. Norton 2005, 77.

7. Norton 2005, 78 (Norton's italics).

8. Norton 2005, 555.

9. Norton 2005, 554.

10. *Ibid*.

11. *Ibid*.

12. Norton 2005, 556.

13. *Ibid*.

14. Fitzsimmons 1999, 24.

15. *Ibid*.

16. Fitzsimmons 1999, 25–26.

17. Fitzsimmons 1999, 24.

18. Fitzsimmons 1999, 142–154.

19. Fitzsimmons 1999, 150.

20. Fitzsimmons 1999, 7.

21. Fitzsimmons 1999, 232–238.

22. Fitzsimmons 1999, 149.

23. Fitzsimmons 1999, 451 (Fitzsimmons' italics).

24. Norton 2005, 364–365.

25. Fitzsimmons 1999, 3.

26. Fitzsimmons 1999, 142.

27. Norton and Ulanowicz 1996, 424 (quoted in Fitzsimmons 1999, 142).

28. Fitzsimmons 1999, 142.

29. Norton 2005, 445.

30. Norton 2005, 446.

31. Norton 2005, 364.

32. Norton 2005, 32.

33. Norton 2005, 138–139.

34. Norton 2005, 446.

35. *Ibid*.

36. Norton 2005, 143.

37. Norton 2005, 38.

38. Norton 2005, 38–39.

39. Discussed in Norton 2005, 30–42.

40. Norton 2005, 366.

41. Norton 2005, 367.

42. Norton 2005, 251.

43. *Ibid*.

44. Norton 2005, 371.

45. Norton 2005, 370.

46. Norton 2005, 371.

47. Norton 2005, 252.

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