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WHOLE-NATURE: INTEGRATING SCIENCE AND ECO-PHENOMENOLOGY

By

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Thesis

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Whole-Nature: Integrating Science and Eco-Phenomenology

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A review of the literature in environmental philosophy reveals a certain tension between what we might call science-based and experience-based approaches to environmental ethics. The main trend of thought here follows seminal figures like Aldo Leopold and Holmes Rolston III by generally looking to the sciences for disclosing value in nature, particularly ecology and evolutionary biology. However others, such as David Abram and Jack Turner, worry that scientifically disclosed nature is in itself too distancing, objectifying, and abstract to engender any real care for nature and instead emphasize direct, embodied experience with actual wild places, hence the label “eco-phenomenology.” The former “top-down” approach starts with the mind, knowledge, and scientific concepts while the latter “bottom-up” approach starts with the body and its immediate sensory participation with concrete nature. Although I make several points on the virtues and shortcomings of both approaches my general suggestion is this: a science-based and experience-based environmental ethic are not competing but are complementary and mutually enriching, that is, the two can and should be put together. Both camps fail to see that a scientific or phenomenological perspective is by itself inherently limited and incomplete, only disclosing part of nature and thereby missing its full importance. I show how an integrated approach is able to overcome such limitations by disclosing “whole-nature.”

## Introduction

Most of us thrown into contemporary reality will find, upon reflection, that our relation to nature is indeed a tenuous one. The term “tenuous” has multiple significations, three of which will help us to enter and frame the present inquiry. In its most literal and etymological sense tenuous means thin or fine in form, e.g. a tenuous thread or strand. We might say today the threads or connections woven into nature through human engagement are thin, loose, and weak, their frayed state not the fault of the individual, but instead, resulting from a gradual unraveling across the epochs, from a separation of nature and culture, this unraveling speeding up and culminating in the modern, technological paradigm of today. In one way then this project is an attempt to see how the average person today might begin to reweave this lost context of engagement with nature. I will show that mending this relationship takes place, at least in part, at the level of direct, embodied *experience* with one’s local bioregion. In a second sense tenuous can mean vague, sketchy, or lacking in clarity. Here I wish to call attention to the rather hazy, nebulous understanding many people have of nature. Without basic scientific literacy one lacks the cognitive apparatus needed to illuminate and articulate what otherwise remains opaque and fuzzy about the natural world. So, like experience, we will see that scientific *knowledge* also plays an integral part in appropriating nature and enriching our relation to it. Lastly, tenuous may be used to describe something of slight importance or significance, and, evidently, this is how many people relate to nature today. This third definition speaks to our *value* of nature and I think it is here that experience and knowledge converge, i.e. in lacking both the individual finds little value

in nature. What follows then, broadly and simply put, is an inquiry into the links between human experience, knowledge, and value of nature.

It is the philosopher's job to shed light on experiential and cognitive ways of appropriating nature, to sharpen their meaning, to draw out their benefits and make visible any obstacles blocking them, all so that the average person today may better put them towards *becoming open* to nature. Being open simply means letting some aspect of reality show itself intelligibly, bringing it near through regular engagement, coming to feel at home in a certain domain. We become open to the game of chess, for example, by learning the rules and practicing the moves, or to the English language by learning to speak, read, and write, eventually opening ourselves to Shakespeare or the great novel. Becoming open to nature is no different. Together, knowledge and experience open us to nature's full depths, or, to what I'm calling "whole-nature." Here the body is trained to become aware, sensitive, and wide open to receive the land's phenomenological richness while the mind and scientific insight open us onto the greater ecosystem, the planet, and the universe itself, illuminating nature's underlying fabric. By appropriating whole-nature we substitute detachment and ignorance for intimacy and understanding; we bring nature near and, ultimately, come to feel more at home in the natural world. This carries with it a certain care or value for nature, whereby opening up to the fullness of nature we find that more *of* the natural world matters to us. This *dilated self* is the target; by elucidating experience and knowledge the philosopher shows us how we may get there.

Environmental philosophers are generally interested in human experience, knowledge, and value of nature, and a review of the literature reveals a certain tension between what we might call science-based and experience-based environmental ethics.

The main trend of thought here follows seminal figures like Aldo Leopold and Holmes Rolston III by generally looking to the sciences for disclosing value in nature, particularly ecology and evolutionary biology. However others, such as David Abram and Jack Turner, worry that scientifically disclosed nature is in itself too distancing, objectifying, and abstract to engender any real care for nature and instead emphasize direct, embodied experience with actual wild places, hence the label “eco-phenomenology.” The former “top-down” approach starts with the mind, knowledge, and scientific concepts while the latter “bottom-up” approach starts with the body and its immediate sensory participation with concrete nature. Although I will make several points regarding the specific virtues and shortcomings of both approaches my general suggestion is this: a science-based and experience-based environmental ethic are not competing but are complementary and mutually enriching, that is, the two can and should be put together. Both camps fail to see that a scientific or phenomenological perspective is by itself inherently limited and incomplete, only disclosing part of nature and thereby missing its full importance.

The reader can see that I’ve casted a rather wide net in blending ontology, epistemology, and ethics. I hope the overlap and ultimate convergence are clear enough, but let me make them explicit here. Our main goal is to shed light on human experience and knowledge of nature so that the average person today may begin to address the above tripartite tenuousness and become open to nature. Environmental philosophers disagree on whether embodied experience or scientific knowledge is primary in disclosing nature’s value. By reviewing and critiquing the relevant literature we learn from other thinkers and sharpen our understanding of how experience and knowledge disclose nature differently. Making the move to integrate eco-phenomenology and science mirrors the

move to integrate experience and knowledge at the individual level of appropriating whole-nature—from both integrations we come to more fully recognize nature’s importance. Two diametrically opposed conceptions of “nature” result from the phenomenological and scientific perspectives, which on the one hand pulls the work of eco-phenomenologists and environmental philosophers drawing from the sciences in different directions, and on the other, leaves the average person with very different directives on how to relate to nature and find value therein. We will see how “whole-nature” gives us some middle ground on both fronts.

The paper is divided into three parts. In part one I set up the tension between eco-phenomenologists and environmental philosophers drawing from the sciences by framing this debate as a contemporary instantiation of the more general, historic tension between the phenomenological tradition and scientific naturalism. In part two I compare how the phenomenological and scientific perspectives disclose nature differently, where I characterize, in a provisional and preliminary way, the former as engaging, intimate, and value-laden yet limited in depth and scope and the latter as penetrating in depth and scope yet withdrawn, abstract, and neutral. Whereas part one serves to set apart eco-phenomenology from science, and part two direct experience from abstract scientific knowledge, part three serves to put these together. Here we sketch and cash out what the whole-nature perspective *actually looks like*, showing how the penetrating and expansive vision of science can be had without sacrificing intimacy and engagement. In the latter half of part three I evaluate the positions of those experience-based and science-based environmental philosophers presented in part one, showing how the two camps may be brought together, how there is room for rapprochement, where in the course of this

discussion we see what it means for the individual to appropriate whole-nature today. (It should be noted that by “appropriate” I mean to take in, to internalize, to make the knowledge one’s own through regular engagement.)

## **Part 1: Phenomenology and Science on Nature**

### 1.1: The Phenomenological Tradition’s Opposition to Scientific Naturalism

Before we look at the specific, current tension between eco-phenomenologists and environmental philosophers drawing from the sciences we must first explain the general tension between phenomenology and science. Like science, phenomenology sets out to investigate reality, however, instead of turning outward to some external, objective realm phenomenology looks at reality as it shows up *within* subjective experience, *for* some experiencer, that is, at how things appear or show themselves in experience—these appearances are the “phenomena.” Whereas science and traditional ontology direct their attention at objects and processes existing “out there,” only focusing on the objective side of reality and indeed presupposing its existence, phenomenology shifts the attention to how objects show themselves to the experiencing subject, focusing on the object’s givenness or mode of presentation. In this way phenomenology is opposed to any form of extreme objectivism—scientific or otherwise—that leaves out an object’s manner of appearance and only focuses on *what* appears, not on *how* it appears.<sup>1</sup> Edmund Husserl, the founder of the phenomenological tradition, calls this tendency to always be directed outward, to only see objects and not their modes of appearance, the “natural attitude.”<sup>2</sup> For Husserl science proceeds under the natural attitude by taking for granted objective reality’s constitution in and for subjects. Husserl sought to counter the scientific



approach with a radical shift in viewpoint, a new way of seeing, one that brackets or suspends the natural attitude's outward gaze and looks only to what is immediately given in experience, i.e. to the phenomena. He sums up this commitment of sticking to the phenomena with the phrase "back to the things themselves," warning us to, "not fall into the attitude of Objective science: keep to the pure phenomenon!"<sup>3</sup> This methodological starting point is the exact opposite of a scientific reduction that seeks to totally strip reality of its experiential dimension. Any naïve scientific realism that posits a single, privileged reality which is observer or mind independent is therefore seen as absurd since, for phenomenologists, reality is always reality *for* some experiencer—there is no reality behind the experience, no reality in-itself, no scientific "view from nowhere."

Husserl, especially in his later writings, suggests that the scientific perspective is only made possible on the basis of one's ordinary, everyday experience of the world. He calls this the pregiven "life-world," or, "the world in which we are always already living and which furnishes the ground for all cognitive performance and all scientific determination."<sup>4</sup> Prior to any scientific theorizing or conceptualization, indeed prior to any reflection at all, the objects studied by the various sciences *first* show up within the context of our day-to-day practical experience. Since normal, everyday experience first opens the scientist onto a certain domain of objects it therefore acts as the very condition of the possibility of theoretical reflection. As Husserl says, "If higher, theoretical cognition is to begin at all, objects belonging to the sphere in question must be intuited. Natural objects, for example, must be experienced before any theorizing about them can occur."<sup>5</sup> Husserl's return to the life-world then is a return to original world disclosure, to the way the world first shows up for us. He sees the project of phenomenology to be one

of ultimate grounding, of providing the foundation for the sciences by rooting them in our more basic, primordial openness to the world. Importantly, Husserl does not reject the scientific method or its results rather he wishes to illuminate and pay dues to the phenomenological ground state of reality that makes possible any science at all. This sort of phenomenological grounding in the bottom-layers of reality does not dissolve the top-layers but in a way humbles them; it exposes any totalizing or exhaustive claims made on reality as prejudice and false. As Merleau-Ponty puts it, “The perceived world is the always presupposed foundation of all rationality, all value and all existence. This thesis does not destroy rationality or the absolute. It only tries to bring them down to earth.”<sup>6</sup> For phenomenologists then scientifically disclosed reality is not primary but remains derivative or secondary to everyday reality. The scientific picture of the world arises only on the basis of its *abstraction* out of the everyday world.

Heidegger offers us the most insightful account of this process of abstraction and reviewing it here sets up the eco-phenomenological critique of scientifically disclosed nature as overly detached, distancing, and abstract. For Heidegger the world first shows up through our shared, everyday practical involvements with a totality of ready-to-hand equipment and it is only through further and further abstraction out of this primordial context, that is, through a kind of progressive withdrawal or “de-worlding,” that we eventually reach the theoretical attitude of science that posits a world of present-at-hand objects. To use one of Heidegger’s favorite examples, we see that a hammer first discloses itself as equipment in the immediate context of the workshop, for some specific task, in the very act of hammering. This kind of situated, practical concern with the ready-to-hand is that mode of being which lies *closest* to Dasein. However if the hammer

were to suddenly become unusable it would for the first time stand out from its referential context as a separate entity with some definite aspect, say, heaviness. While this sort of practical deliberation is one step removed from Dasein's original absorption with the ready-to-hand it has not yet switched over to theoretical reflection, the furthest removed, where the hammer gets completely isolated and cut off from its original context of engagement and reference relations, i.e. from the workshop, the specific task at hand, etc. At this furthest level of abstraction the hammer is seen as a mere present-at-hand object with properties, i.e. as a thing made of wood and steel, with a certain mass, density, and so on. Importantly, this scientific mode of knowing the hammer is only reached by overlooking or *leaving out* its worldly, equipmental character.

Heidegger therefore sees detached, scientific theorizing as a derivative and deficient mode of knowing the world since it "has the character of depriving the world of its worldhood in a definite way."<sup>7</sup> The objective "Nature" studied by the hard sciences is seen by Heidegger as a narrow, "limiting case" of reality, where by "Nature" Heidegger means the categorical aggregate of pure present-at-hand substances totally cut off from their worldly, referential contexts.<sup>8</sup> Again, phenomenology here is not rejecting the work of the positive sciences but is instead throwing light on the condition of their possibility, which for Heidegger is Dasein's basic state of Being-in-the-world. The problem is not so much the detached, abstract results of the hard sciences but the tendency to take these results as ontologically primary, as somehow *more real* than the entities encountered in normal, everyday experience (tables, chairs, people, etc.). Heidegger sees the scientist here as going "ontologically astray" in reducing the world around him to a swarming buzz of subatomic particles, starting with this theoretical abstraction and taking it to

represent the way the world *really* is. To start with or privilege scientific reality is to effectively reverse or invert the ontological primacy of the world as it first shows up for us in prereflective, absorbed practical involvement. Importantly, Heidegger sees the abstract scientific picture of the world not as false but as limited and impoverished, capturing a mere sliver of the world. Only when scientific abstractions come to eclipse or pass over entirely the immediate everyday world do they become problematic, that is, when the phenomenologically disclosed world that we are most intimately and directly familiar with gets supplanted by some unrecognizable abstraction. Indeed, this is precisely what eco-phenomenologists worry is happening with our relation to nature.

## 1.2: Eco-phenomenology vs. Science-based Environmental Ethics

In reviewing the current tension between eco-phenomenologists and environmental philosophers drawing from ecology and biology our goal in this section is to set apart an experience-based (bottom-up) approach from a science-based (top-down) approach to environmental ethics. In particular we must highlight each camp's opposing stance on three interrelated questions: (1) What is the proper human relation to nature? (2) How do we get people to value nature? (3) What sort of value is this?

The two most well-known and influential environmental philosophers that see science as disclosing value in nature are Aldo Leopold and Holmes Rolston III. Ecology and evolutionary biology are central to both thinkers' work, where for them knowledge of these sciences helps to expand or stretch our sphere of moral consideration beyond the individual level of particular plants and animals to include whole species and ecosystems. Both thinkers even go so far as to say that without these sciences we are unable to

recognize or articulate much of nature's value. As Leopold says in the foreword to *A Sand County Almanac*, "Like winds and sunsets, wild things were taken for granted until progress began to do away with them... These wild things, I admit, had little human value until mechanization assured us of a good breakfast, and until science disclosed the drama of where they come from and how they live."<sup>9</sup>

It is with the community concept that Leopold is able to make the move from ecology to ethics. Ecology, in explaining the relationships of organisms to each other and to their environments, reveals nature's component parts as they hang *together* in a larger collective system or community. Leopold thinks that once equipped with this disclosive tool the individual human can see himself for the first time as an interdependent part of the larger biotic collective. But how exactly does Leopold get us from the concept of an ecological community to the concept of a moral community? For Leopold a person's consideration of what counts morally only extends to the boundaries of the community he identifies with. It follows that one must first *see* himself as part of the biotic community before he finds it valuable, where for Leopold this seeing is achieved in one's becoming ecologically literate. Since ethics hinges on the concept of a moral community, and since ecology reveals this community to be collective nature, Leopold's "land ethic" demands that we in a sense see the moral and ecological communities as coextensive, that we extend out the boundaries of the moral sphere to touch or meet up with the boundaries of the biosphere. "The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land."<sup>10</sup> Importantly, for Leopold it is ecological literacy that gets people to adopt the land ethic. In revealing nature as the larger moral community to which human beings belong ecological literacy

*automatically* triggers within the individual a certain love and respect for the community he finds himself already morally bound up with. By the very definition of a “moral community” one cannot see himself as a member and yet *not* care for the well-being of the other members and indeed of the community as a whole. For Leopold the very act of seeing oneself as belonging to the biotic community, i.e. becoming ecologically literate, means holding the community and its fellow-members in ethical regard.

Like Leopold, Rolston also sees the scientific disclosure of nature through ecology and biology to be at once a descriptive *and* normative affair. “What is ethically puzzling and exciting in the marriage and mutual transformation of ecological description and evaluation is that here an *ought* is not so much *derived* from an *is* as discovered simultaneously with it...it is difficult to say when natural facts leave off and where natural values appear.”<sup>11</sup> Whereas Leopold saw the primary normative function of ecology to be its disclosure of *humans* as fellow-members of the biotic community Rolston thinks the biological sciences complete all the normative work from the start, *before* and without any reference to humans, where scientific discovery tells us at once what nature is and what it ought to be. Just by explaining and describing the biological world Rolston thinks science “simultaneously” uncovers natural facts and values already existing in the system, and so these values need not be mixed up with or related to humans at all. He identifies three kinds of natural values existing in the biological world: intrinsic, instrumental, and systemic. For Rolston ecosystems have systemic value since they are productive in the straightforward sense of producing life, of increasing natural kinds, of allowing kinds to evolve and diversify. The “products” of an ecosystem’s productive process are intrinsic values had by individual organisms that get transformed

into instrumental values for other organisms. The mule deer's intrinsic value, for example, gets transformed into instrumental value *for* the mountain lion, and both tie back to the systemic value of the ecosystem. Rolston sees the biological world as operating through this ongoing, fluid exchange of natural values. Particularly important for our purposes is Rolston's insistence that these natural values have both objective and intrinsic existence; objective in that these values really are out there in nature and intrinsic in the sense that they exist in-themselves, not requiring any reference to conscious creatures. That value may exist without a "valuer" is indeed counterintuitive, however, Rolston claims that not *all* forms of value depend on the correlation between a valuing subject and valued object. We might say that his notion of natural value then is *nonrelational* in that it exists by itself, without relation to human beings. Rolston, it seems, is a realist on natural values.

We can already see how for Rolston meaning and value are to be found in nature's "otherness" or "nonhumanness." But how does Rolston invoke the biological sciences to articulate nature's nonhuman meaning and value? He specifically looks to evolution, species, and DNA to make his case. Rolston considers the DNA of a particular species to be a sort of historical achievement, an accumulation of the valuable lessons learned from that species' evolutionary past. Since the historical lessons a species acquires through natural selection are captured and written in its DNA, the DNA molecule embodies a recipe for success, so to speak, that projects the species forward and ensures its future as an extant natural kind. So, for Rolston, DNA is valuable precisely because it is the accumulation of valuable evolutionary lessons that allow natural kinds to continue existing. In this way Rolston sees DNA as a "project" in that it projects or

throws natural history forward by directing the behavior of individual organisms towards evolutionary success, which ultimately perpetuates the species' biological and historical identity. For Rolston species are *real* things in that they exist as living historical forms flowing dynamically across generations. By existing as unique natural kinds that have achieved their identities over time species are intrinsically valuable. Conserving biodiversity then is a top priority for Rolston, and likewise the protection of wilderness areas since the more complex and healthy an ecosystem the more biodiversity it supports. So, like species, Rolston also considers ecosystems to be *real* things in that they exert pressure on the individual organisms and species beneath them, that is, they produce natural kinds by allowing species to evolve and diversify.

By so heavily making reference to scientific concepts like evolution, DNA, species, biodiversity, and ecosystems it's hard to see how one could find meaning and value in nature *without* knowledge of these concepts on Rolston's account. If nature's nonhuman meaning and value remained hidden until ecology and biology discovered them it follows that the same is true for the individual until he learns the science. Nature just doesn't show itself as meaningful or important until framed and articulated in scientific terms and concepts. Seeing nature through the lens of ecology and biology is therefore the starting point for Rolstonian environmental ethics. His argument that we have moral obligations to species and whole ecosystems doesn't even get off the ground without a rather sophisticated understanding of DNA, species, evolution, etc. So, importantly, it is *scientific knowledge* that gets people to value nature for Rolston. He thinks such knowledge can and should be used to follow nature in the "axiological" sense of "viewing it as an object of our orienting interest and value."<sup>12</sup> He sees this way of



following nature as similar to following sports or art in that it is of consuming and satisfying interest—we get sucked into following scientifically disclosed nature. For Rolston we ought to “study” and “contemplate” nature in the way scientists and naturalists do in order to follow the nonhuman meanings and values discovered therein.<sup>13</sup> Following nature as an “object” of study requires a certain distance, and indeed Rolston wants us to maintain this distance. He says, “We must follow nature to gain this meaning—in the sense of leaving it alone, letting it go its way.”<sup>14</sup>

Yet starting with scientific knowledge of objectified nature is seen by eco-phenomenologists as backwards. Appealing to DNA, species, or other scientific concepts is to start with abstractions and the detached human intellect instead of the individual’s direct, embodied experience with actual wild places—it is top-down rather than bottom-up. Jack Turner most forcefully criticizes the abstractness of the science-based approach in his aptly titled book *The Abstract Wild*. Here Turner specifically targets conservation biology for, among other things, supplanting our personal experience of wild places with abstract information *about* these places, which for him “disembeds our relations to nature from their proper context.”<sup>15</sup> As Turner says regarding conservation biology, “We accept abstract information in place of personal experience and communication. This removes us from the true wild and severs our recognition of its value.”<sup>16</sup> Notice that science here blocks or “severs” nature’s value, the exact opposite role that Leopold and Rolston confer to science. Perhaps Turner is exaggerating a bit since he does not reject science and intrinsic arguments outright but wishes to show them as *secondary* to the task of cultivating close, intimate relationships with wild places.<sup>17</sup> Indeed, he admits he is reacting to the “increasingly imperial role” played by the “biological sciences” in

environmentalism “since the days of Leopold.”<sup>18</sup> Although these approaches help some, for Turner it’s “better to live in the presence of the wild—feel it, smell it, see it—and do something real that succeeds.”<sup>19</sup>

Turner’s basic problem with intrinsic arguments is that they place the individual human too far outside of nature, distorting the proper human/nature relation. As he says, “In our effort to go beyond mere anthropocentric defenses of nature, to emphasize its intrinsic value and right to exist independently of us, we forget the reciprocity between the wild in nature and the wild in us, between knowledge of the wild and knowledge of the self that was so central to all primitive cultures.”<sup>20</sup> Instead of relating to nature at a distance and keeping humans out of wild nature Turner sees the wild as a “project of the self” where time spent in large, pristine wilderness areas helps us recover our “several-million-year-old intimacy with the natural world.”<sup>21</sup> Value arises precisely in this sort of direct, lived experience; it is never “out there” already in nature, waiting to be discovered. For Turner we get people to value nature through encouraging relationship and emotional identification, not by throwing scientific concepts and abstract philosophical arguments at them. He says, “We only value what we know and love, and we no longer know or love the wild”, and later, “Mere concepts and abstractions will not do, because love is beyond concepts and abstractions. And yet the problem is one of love.”<sup>22</sup> Clearly one cannot “love” nature when it is reduced to nonrelational intrinsic values since this cuts out from under us the very ground that produces love, namely, close contact and relationship with concrete individuals, as in for example loving a friend or pet. As Turner puts it, “We must become so intimate with wild animals, with plants and places, that we answer to their destruction from the gut. Like when we discover the

landlady strangling our cat.”<sup>23</sup> The widespread lack of intimacy with wild nature is seen by Turner as the root cause of the current environmental crisis, to which he thinks conservation biology and intrinsic arguments are incapable of addressing. He says, “Unfortunately, instead of striking at causes, modern theoretical disciplines such as conservation biology strive to control symptoms...I predict it will fail for the same reasons other disciplines fail: it does not strike at the causes of its chosen malady but remains therapeutic.”<sup>24</sup> For the solution to be truly radical Turner thinks our approach must start from the bottom up, that is, at the level of our direct, first-hand experience.

In this way eco-phenomenology shares with other radical ecology movements, however, it seeks to be most radical by aiming at *the* bottom layer of the human/nature relation, at our most basic and primordial experience of the natural world.<sup>25</sup> Perhaps no one is better at bringing to life this preconceptual, pretheoretical ground state of experienced-nature than David Abram. Abram sees humanity’s current estrangement from the natural world primarily as a “perceptual problem,” as an inability to tap into our most basic, bodily intelligence that connects us to the sensuous dimension of nature.<sup>26</sup> He argues that our perceptual systems have become narrowed, dulled, and myopic in that they are now more tuned to technologies and the written word than they are to nature—this amounts to a collective “forgetting” or “eclipsing” of the earth. Abram therefore calls for renewed sensitivity and attunement to the body’s perceptual embeddedness in the “more-than-human life-world.” Borrowing the notion of a pregiven “life-world” from Husserl, Abram seeks to draw attention to the way nature *first* shows up to the living, breathing animal body. This means returning to the world of immediate, sensory experience, or, as Abram puts it, to “reality as it engages us before being analyzed by our

theories and our science...[to] the world as we organically experience it in its enigmatic multiplicity and open-endedness, prior to conceptually freezing it into a static space of 'facts'.”<sup>27</sup> At this most basic, primordial level we never find ourselves as detached subjects standing over and against neutral, inert objects. Instead, the body opens itself onto a fluid, spontaneous realm of natural phenomena actively engaging it in the present. The more-than-human life-world just is this intertwined field of perceiving bodies and perceived nature, the “matrix of earthly life in which we ourselves are embedded.”<sup>28</sup> Abram makes a point to contrast this with the scientifically disclosed biosphere. He says, “Yet this is not the biosphere as it is conceived by an abstract and objectifying science, not that complex assemblage of planetary mechanisms presumably being mapped and measured by our remote-sensing satellites; it is, rather, the biosphere as it is experienced and *lived from within* by the intelligent body—by the attentive human animal who is entirely a part of the world that he, or she, experiences.”<sup>29</sup>

For Abram experiencing nature in this way requires a fundamental shift or retraining of the body’s sensory participations, which he sees as a necessary ingredient in getting people to value nature. By directing our sensory involvements away from exclusively human artifacts towards natural forms, patterns, and rhythms Abram thinks we come to “remember” our place in the more-than-human life-world; that is, we remember the earth. When we awaken to and notice for the first time our body’s sensory participations with the more-than-human life-world, nature comes alive and announces itself anew. As Abram says, “The recuperation of the incarnate, sensorial dimension of experience brings with it a recuperation of the living landscape in which we are corporeally embedded.”<sup>30</sup> This approach of disclosing “value” in nature couldn’t be any

further from philosophical argumentation based on scientific concepts—it calls for active, lived engagement, something you *do* with the body, often prior to any discursive thought at all. We might say that it doesn't get any more “bottom-up” than this in that Abram's approach to environmental ethics is simply to encourage a heightened sensitivity and awareness to nature's primordial disclosedness. Like Turner, he thinks philosophical concepts or principles tend to get in the way of disclosing value in nature, and therefore must remain secondary to experience and relationship. As he says, “It may be that the new ‘environmental ethic’ toward which so many environmental philosophers aspire will come into existence not primarily through the logical elucidation of new philosophical principles and legislative strictures, but through a renewed attentiveness to this perceptual dimension that underlies all our logics, through a rejuvenation of our carnal, sensorial empathy with the living land that sustains us.”<sup>31</sup>

We may sum up by briefly answering the questions posed at the beginning of the section. For eco-phenomenologists the proper human relation to nature is close contact and bodily participation, in a word, experience. Experience engenders value, where this value arises through concrete, lived relationships. Environmental philosophers drawing from the sciences argue that scientific knowledge discloses value in nature, where this value exists objectively and intrinsically in the biological world. For them, learning ecology and evolutionary biology is necessary for improving the human/nature relation. Like the more general tension between phenomenology and scientific naturalism these two approaches are really battling for *primacy*. To be sure, it's not as if Abram is anti-science or Rolston anti-experience, rather, that both see either experience or knowledge as more of a priority, of greater importance in disclosing nature and its value. What's at

stake is we have two competing environmental ethics with very different directives for the average person on how to relate to nature. But before we attempt to reconcile and integrate the two camps, which is the latter task of part three, we must first illustrate and make concrete how engaged, embodied experience contrasts with the kind of detached, abstract scientific knowing criticized by eco-phenomenologists. We can think of these as two different “perspectives” on nature—the phenomenological, experience-based perspective and the scientific, knowledge-based perspective—and I will use this as a sort of umbrella term going forward to signify different ways of encountering nature, different ways of being about nature and taking up with it.

## **Part 2: The Scientific & Phenomenological Perspectives on Nature**

The purpose of part two is to draw out through concrete example several characteristic features of the phenomenological and scientific perspectives on nature. This is best achieved by taking one specific bioregion and showing how each perspective, when taken up by actual human beings, discloses nature differently. We will look at Montana’s Front region to contrast instances of embodied, engaged knowing with the more abstract, detached knowing that eco-phenomenologists see as problematic. Since eco-phenomenologists criticize the distance of the scientific perspective and champion the intimacy of the phenomenological perspective our initial, preliminary characterization of the two perspectives will be as such. This provisional account will be reconsidered in the first section of part three when we discuss how the two perspectives work together, whereas for now we are simply trying to set them apart.

To help illustrate the phenomenological perspective we will look at specific examples involving the indigenous Blackfeet and their relationship with the Front. While our discussion in part two associates the Blackfeet with phenomenology and contemporary biologists, ecologists, and geologists with science, we must realize up front that neither group can be located on one side or the other of the false phenomenological/scientific binary, and that phenomenological and scientific intelligence is something all human beings possess, as we will see in part three. So, although the Blackfeet can, in some instances, help illuminate what we're calling the "phenomenological perspective on nature," the reader must realize, of course, that I am not suggesting a one-to-one correspondence between Blackfeet epistemology and the phenomenological perspective, as if Blackfeet knowing is *only* phenomenological, lacking the characteristic features of scientific intelligence.

In choosing the Blackfeet's relation to the Front to illustrate the phenomenological perspective our goal is to show how human beings may take up with nature through bodily engagement situated in world and context. Here we are trying to illustrate the rich, tightly woven strands of engagement that form when human groups clear and hold open their world onto one and the same bioregion. It should be emphasized again that we are not reducing Blackfeet "ways of taking up with nature" to mere "bodily experience" as if tribal knowledge and science are absent from this relationship, or as if one could ignore the manifold cultural, social, and religious aspects layered into this relationship. As we will see in section 2.1, it is impossible to isolate or decontextualize some separate, phenomenological layer of experienced-nature from the rest of the Blackfeet world, i.e. from the web of social relations and tribal practices that

open up a context of engagement with nature in the first place. I therefore make the following remarks with some apprehension knowing that our discussion will inevitably fail to do justice to this greater context. The reader should keep in mind that this is not a work in Native American studies, where the material cited here on the Blackfeet is limited, presented in such a way as to stick to our philosophical task of elucidating the phenomenological perspective on nature.

### 2.1: Disclosing the Front: Bodily Engagement vs. Scientific Knowing

Before citing any of the scientific literature on the Front we must first note the more general difference between the method or *way* science discloses nature compared to that of the Blackfeet. Science of course proceeds by accumulating data through empirical observation, where hypotheses gain confirmation by surviving repeatable experiments that are carefully designed and controlled. Here the scientist assumes the role of pure observer of nature, which necessitates a critical distance between the natural objects under investigation and the detached subject. Indeed, like Husserl's "natural attitude," the emphasis is placed on objects as the primary reality while the subject is deliberately removed or left out. For the Blackfeet however the emphasis is placed on direct experience and relationship, where one does not assume the role of passive observer but discloses the land through active, lived engagement, through what Peat and Bastien call the process of "coming-to-knowing."<sup>32</sup> This ongoing *process* or *activity* of coming-to-know the Front is realized in one's own direct practice and experience, that is, in the very act of tracking an animal, gathering medicinal plants, or fleshing a buffalo hide. Bastien, who is Canadian Blackfoot, notes that this kind of "experiential knowing" is a matter of



“embodying or being the knowledge, making knowledge part of our body.”<sup>33</sup> Coming-to-knowing then is the exact opposite of passively accumulating scientific data or facts “in the head”—one does not “have” knowledge but in a very real way *is* the knowledge since the knowledge is embodied in skills and practices. As Peat says of the Blackfeet, “*Knowledge* and *knowing* had more to do with a discriminating perception of the mind and the senses than with the accumulation of facts.”<sup>34</sup>

This kind of experiential knowing, of coming-to-know the land through bodily engagement and perceptual training, is evident in the Blackfeet’s relation to the flora of the region. It is well documented in the early ethnographic literature that the Blackfeet historically made use of hundreds of native plants for food, medicine, and religious purposes. Walter McClintock, for example, catalogues dozens of wild plants that the Blackfeet were able to identify in specific locations, at certain times of the year, all for various purposes.<sup>35</sup> He describes the Blackfeet women as “industrious collectors of medicinal herbs and medicinal plants” that were “constantly on the look out, pointing out the different varieties, telling their Indian names, and explaining their different uses.”<sup>36</sup> Such a sophisticated understanding of the region’s flora arises out of years of direct perceptual engagement, of becoming attuned to the cycles of the seasons and coming-to-know the plants in a most visceral, intimate way, i.e. through gross, bodily contact. Blackfeet living on the Front today describe engaging in such on-site practices since childhood and acknowledge the sort of perceptual training and time involved. For example, Rosalyn Lapier explains that, “My grandmother taught us how to identify and use plants based on sight, smell, texture and, of course, long years of experience.”<sup>37</sup> We find a similar mention to this primarily sensuous, participatory mode of engaging the

region's plants in Craig et al. where one tribal member is quoted as saying, "When we got in the summertime about now, we'd go up into the mountains over on that side to gather roots, and my mother took care of that...She knew what they looked like, she knew by their smell, and after a while we knew what to look for."<sup>38</sup>

To take another example, albeit historical, we see this same sort of perceptual practice and skill involved in Blackfeet buffalo hunting. Like the Blackfeet women noted above young Blackfeet boys, at least prior to the disappearance of the buffalo in 1883, would come-to-know bison through direct experience since childhood. Ewers notes that boys of "ten years or older" would participate in the hunt. He says, "They imitated the hunting techniques of their elders, riding in close and shooting the calves with bow and arrow. In this way they gained experience in buffalo hunting, so that by the time they reached their middle teens they had sufficient confidence and skill to chase adult buffalo with the men."<sup>39</sup> Before the introduction of the horse and gun to Blackfeet life the degree of perceptual skill and sensory attunement involved in hunting buffalo seems even greater. Carlson describes several "on foot" methods used by the various Plains tribes, but perhaps the method that illustrates our point the best is that of driving bison over cliffs or steep cut-banks.<sup>40</sup> Barsh and Marlor argue that the particular skills involved in driving bison were most likely acquired by observing and imitating the behavior of wolves—not passive, distancing "observation" but observing in the sense of close, intimate watchfulness through direct experience. They say, "Instead of collecting data on bison, Blackfoot *performed* wolves. They tried to look like wolves and to move like wolves. They *became* wolves...without studying bison 'objectively' at arms length. They absorbed wolf knowledge, effectively but nonverbally."<sup>41</sup> Barsh and Marlor go on

to highlight the preconceptual, “nonverbal” dimension of driving bison by describing it as “an individual skill that is learned through experience, nonverbally and unconsciously, like the ability to play the violin or to become a champion at ice hockey.”<sup>42</sup> They claim that certain individuals must have had “bison affinity” in naturally being more sensitive and attuned to the animals. “Some children may have an exceptional visual, auditory, or olfactory acuity, rendering them more sensitive to the sights, sounds, or smells detected by animals and consequently better able to appreciate animal behavior... Individual Blackfoot probably possessed bison affinity of this nature.”<sup>43</sup>

From both examples we see an extremely refined and nuanced perceptual intelligence at work, one that occurs prior to and often independent of any explicit, verbal awareness. It’s not that language, concepts, and other “higher” human faculties are absent in the Blackfeet’s relation to nature but that such faculties play a derivative or secondary role in *first* opening an individual Blackfeet onto the land. We saw that for Blackfeet children this is primarily a matter of gross, bodily contact, i.e. hands-on interaction with site-specific plants and animals. This bottom-up process of coming-to-knowing opens up a phenomenological base layer of experienced nature that seems to be largely preconceptual and prelinguistic. Although we will cash out the exact nature of this “base layer” in part three, for now we might invoke Michael Polanyi’s notion of “tacit knowledge” in that both examples exhibit a kind of experiential knowing that would be difficult or impossible to articulate with language and concepts alone, like riding a bike or playing a musical instrument. Just as insightful is Hubert Dreyfus’ notion of “absorbed coping,” where Dreyfus builds off Heidegger and Merleau-Ponty in claiming that human beings, first and most of all, find themselves not as detached,

thinking subjects set apart from a world of discrete “objects” but as absorbed or immersed in everyday skills and practices. For Dreyfus this is our primary mode of being in the world, where things do not announce themselves to our explicit, discursive awareness but instead remain transparent in use, as does the hammer in the act of hammering, or the door handle in entering the room. In mastering a certain domain of experience (whether it be driving a car, tying one’s shoes, or driving bison) the intelligent body is able to successfully and fluidly cope with its immediate environment without conceptual or discursive thought arising at all. Here we are calling attention to a more basic form of intentionality that takes place prior to subject/object thematizing—simply one’s “bodying forth” into the world, or what Merleau-Ponty calls “motor intentionality.”

With Polanyi and Dreyfus’ accounts in mind we see that the primordial, phenomenological disclosure of say, wild serviceberries, takes place through absorbed sensory involvement within a context of shared, everyday practices. This is not a matter of studying the plant objectively, at a distance, and making it an object of our explicit concern. Further, one does not explain or *tell* someone else how to properly locate, identify, and prepare serviceberries rather this is simply something you *do* together since childhood, something already implicitly understood from one’s own direct experience of growing up in close contact with the land. The knowledge of the plant is embodied in skills and practices; it is not the apprehension of scientific facts *about* the plant, not some detached, abstract mental representation existing “in the head.” As Peat says, “Within the Native world there is no such thing as abstract knowledge...knowledge is learned and is inseparable from the land and from the people who live on it.”<sup>44</sup> So, in the case of the Blackfeet, it is simply phenomenologically inaccurate to speak of the serviceberry shrub

as an “object” of knowledge, as some separate, distinct entity from the “subject” taking up with it—this is precisely what Peat and Bastien mean by embodying or *becoming* the knowledge. At this level of absorbed involvement the serviceberry shrub remains close and transparent; there is no gap or distance between “subject” and “object” as the plant does not yet stand out as an object.

Compare this tacit, bodily dimension of experiencing the region’s flora to the explicit, highly conceptual nature of disclosing it through ecology and biology. In the summer of 2005 plant ecologists Stephen Cooper and Gregory Kudray conducted a study for the Montana Natural Heritage Program that plotted and mapped the distribution of plant species in the three main ecological zones of the region—high elevation (consisting mainly of douglas-fir stands and fescue grasslands), mid elevation (mainly limber pine woodlands), and low elevation (mixed-grass prairie).<sup>45</sup> The report basically reads as one big taxonomic list of the different plant species on the Front and includes sophisticated imagery of their distribution, where this map is to be used for future conservation planning. Biological description in this case neatly categorizes and sorts out each plant species into clearly defined groups, where the goal is to bring to our explicit awareness the precise, accurate location of each species. Here science articulates nature, literally takes it apart at its joints, by uncovering and making visible certain biological categories existing in nature, bringing them to the fore and making them stand out *as* objects to our explicit, scientific concern. Articulating nature in this way allows scientists to divide and carve reality up, to accurately discriminate and draw lines of demarcation in the natural world. The result is that the serviceberry shrub is no longer encountered transparently in absorbed practice but stands out as an object, as an individual belonging to the Saskatoon

species. Indeed, the entire species itself becomes an object, its own kind of thing, with a clearly defined place amongst other species-things—the Saskatoon serviceberry, or *Amelanchier alnifolia*, is one of about twenty species belonging to the *Amelanchier* genus. But the line drawing, labeling, and neat categorization of natural objects doesn't stop there since the *Amelanchier* genus is part of the Rose family, belonging to the order of flowering plants, and so on up the taxonomic ladder. Like any sort of biological taxonomy Cooper and Kudray's report effectively fragments nature into separate biotic objects, leaving us with a mere laundry list of species-things on the Front.

The explicit, objectifying results of scientific articulation of this sort, although disclosing nature with great precision and discriminatory power, show themselves not to the living, breathing body in absorbed practice but to the detached human intellect, to the thinking subject. It is a very cerebral activity indeed to see serviceberries as the species-thing *Amelanchier alnifolia*: we apply language and verbal consciousness in deciphering the Latin name, we use concepts and ideas in recalling facts about the species, we tell stories about the species' evolutionary past, all while conjuring up some mental image or idea of the set of all individual serviceberry shrubs sharing the same DNA. Yet none of this shows up within the phenomenological horizon, to the intelligent body engaging the plant in the sensorial present. The sights, smells, and textures of particular serviceberry shrubs experienced by the Blackfeet get supplanted with abstract ideas *about* serviceberry shrubs in general when disclosing *Amelanchier alnifolia*. No longer does the individual relate to the carnal, sensuous depths of site-specific plants but holds in his mind's eye some abstract, mental representation of the species as a whole. Here one does not take up with real, concrete serviceberry shrubs but with the *idea* of the set or collection of all

individual serviceberry shrubs. The problem of course is that we never encounter sets of individual organisms in nature. There is no species-thing *Amelanchier alnifolia* out there on the Front that we can take up with our bodies, there is only *this* mature stand of serviceberry shrubs along the river or *that* younger patch over there. The very notion of a “species” existing as a *real* natural object in nature that somehow exists over and above the individual organisms comprising it is therefore rendered mysterious and dubious from the phenomenological perspective—we never experience species in nature, plain and simple. To see behind or beyond individual serviceberry shrubs and put into view the species-thing *Amelanchier alnifolia* requires stepping back from the here and now, out of what’s immediately given in experience, and thinking with scientific concepts and abstractions. In all of these ways the primary mode of access to *Amelanchier alnifolia* seems strangely extra-sensory and *disembodied*.

Our discussion so far suggests that the phenomenological and scientific perspectives, when adopted by actual human beings on the Front, work to uncover and open up different dimensions or layers of nature. Through direct, bottom-up experience stretched across generations the Blackfeet have accessed and opened themselves onto the primordial, sensuous depths of the land. What gets revealed to the scientist, on the other hand, is an order and organization of biological categories (species) that lack concrete existence in the here and now, accessible only to the abstract intellect. It’s clear that both scientists and Blackfeet are disclosing aspects of the Front that would have otherwise remained hidden and closed—these things simply don’t show up within the average person’s experience. For example, when looking out across the mixed-grass prairie of the plains most of us probably encounter some sort of monotonous, blanket organism

called “prairie” or “grass.” Yet to the seasoned Blackfeet what shows up is patches of sweet grass that may be dried and burned for incense, some bluejoint grass, and maybe some slough grass in the marshy areas, called *Itapatanis* or “cut-your-finger” since its leaf blades and emerging shoots are very sharp.<sup>46</sup> To the biologist the same exact landscape may reveal various niches and species, ideas about soil composition and nutrient recycling, and a general picture of each grass’ place in the larger biotic web.

The point is that both groups appear to be lighting up and disclosing different aspects of nature. One and the same patch of slough grass, for example, can be seen either *as* a sharp, hearty plant of light green color preferred by bison (and hence its association with the buffalo in ceremonial use) or *as* the species-thing *Beckmannia syzigachne* with such and such scientific properties. Since becoming open to either layer requires great experience and knowledge, i.e. having a finely tuned perceptual system or a scientifically literate mind, it is perhaps helpful to think of each group as masters or experts in uncovering their respective domains. This is not unlike the grandmaster’s relation to the chessboard or a London taxi driver to the city’s streets in that there seems to exist a layer of reality that they (experts) are most sensitive and attuned to. After all, as we saw, becoming open to the real depth and richness of the region’s flora demands a lifetime of close, sensory engagement—literally being *in touch* with every type of root, leaf, stalk, flower, grass, bud, and bark on the high plains and mountain ecosystems. It is often through the perceptual acuity of a Blackfeet elder (probably one’s grandmother) that this richness comes into relief and is made intelligible. Therefore, like any other kind of expert or master, we may say that that these women simply encounter flora on the Front with far greater nuance and intensity than most.



## 2.2: Disclosing the Front: The Importance of World and Context

By so heavily emphasizing the body, perception, and absorbed sensory practice one might assume from our discussion so far that the Blackfeet's openness to the Front is *only* or purely embodied intelligence, through and through. While yes, there does seem to exist a purely sensuous layer of reality known only to the intelligent body—which eco-phenomenologists put *too* much focus on I think, and which, again, will be further cashed out in part three—this does not mean the Blackfeet's *entire* phenomenological openness to nature takes place *only* through non-thematizing motor intentionality. The reader must realize that behind our so far narrow, one-dimensional look at individual Blackfeet's bodily comportments towards nature there lies a whole world. For the rest of part two we will move towards filling in at least some of this greater context in order to show how nature for the Blackfeet exists as a focal, centering force that gathers and orients their world, while juxtaposing this against the neutral, “de-worlded” results of science. Having already considered the region's flora above, let us now use the Front's megafauna and geology for our illustrative examples and comparisons. By the end of this section we will have shown that, when revealed within the context of the Blackfeet world, nature on the Front is (1) concrete, (2) close/intimate, (3) holistic (announcing a whole world), (4) significant, yet (5) limited in depth and scope, while subtracting out or stripping away this context for the sake of science reveals nature as (1) abstract, (2) distancing/detached (3) fragmentary (capturing a mere sliver of the world), (4) neutral, yet (5) penetrating in depth and scope.

We may begin filling in some of the Blackfeet world by first briefly looking at their oral, place-based language and the special role it plays in opening up and articulating nature on the Front. Importantly, this does not lead us astray from our task of illustrating two different ways nature may show up or be encountered since language, as we will now see, plays such a powerful role in shaping this encounter, especially for the Blackfeet. One thing to notice right away is how heavily situated the Blackfeet language is in concrete, immediate reality. In fact, the notion of some separate, abstract reality existing outside of the here and now is entirely absent from the Blackfeet lexicon. As Bastien says, there is “no directly equivalent term for ‘reality’ [in Blackfeet]; only *Aanoo Itapaitapiiyopi*, or, *here, here we are living (physically)*.”<sup>47</sup> This directedness towards the concrete, living present also shows through with the language’s great emphasis on verbs, where this active and animate form of speech best reflects the phenomenological reality of experiencing a (natural) world in constant change, motion, and transformation.<sup>48</sup> Even nouns and proper names are subject to change, being tied of course to some actual, situation-specific event or experience. Indeed, far from being arbitrary, we see so many Blackfeet words for particular plants and animals opening directly onto an organism’s phenomenological givenness, that is, onto the peculiar sights, sounds, and textures that one experiences in the organism’s presence. For example, the Blackfeet word for osprey is *Patseksisacom* or “mistake thunder” because of the peculiar rushing, booming noise associated with its loud and powerful wing thrusts.<sup>49</sup> To take another example, we see that for the weasel there are actually two distinct words; *Ootai* for its brown, summer phase and *Aapaa* for its white, winter phase, where the latter

translates literally as “white-flint,” referring obviously to the animal’s white color in winter but also to its being fast and deadly like a flint arrowhead.

The point is that the Blackfeet language is destined for relationship with concrete, immediate nature on the Front in a way that scientific discourse is not. It’s fair to say that with the former the stage is set for a much closer, more phenomenologically rich encounter with the land. Indeed, we might even call the Blackfeet language a truly “bottom-up” form of discourse in that it springs directly from the Front’s phenomenological givenness, functioning as a kind of “internal articulation” of the land as it first shows up within experience, as Abram would put it.<sup>50</sup> Compare this to the abstract, distancing nature of scientific discourse—which we first saw above with Cooper and Kudray’s vegetation report and will now see again with ecological accounts of bear activity on the Front—and you get a good sense of just how far the scientific perspective is removed from immediate, concrete nature showing up in the sensorial present. For example, we’ve already seen how scientific terms like *Amelanchier alnifolia* abandon nature’s immediate givenness by evoking concepts or ideas that lack any real concrete existence in the here and now. The Blackfeet language however does not lead one to step back from nature in this way and relate to it at a distance since the focus remains on *these* serviceberries here in *this* landscape. The word opens directly onto something tangible and real in the immediate environment, onto something it is possible to have a close, personal relationship with through regular engagement.

But let us now leave behind the role of language in our discussion, continuing however to highlight the distance and abstractness of the scientific perspective by looking at bear ecology on the Front. From 1980 to 1987 black and grizzly bears were studied on

the Front to compare basic ecological patterns such as roaming ranges, feeding habits, den locations and emergence dates, and so on.<sup>51</sup> One important method used was the trapping and collaring of bears for the purposes of radio-monitoring their locations and activities, where for example den location and “dates of emergence and den entrance were determined by radio-monitoring bears at den sites.”<sup>52</sup> This was carried out through weekly flyovers of aircrafts equipped with remote-sensing antennas that tracked the bears’ radiolocations, where these data points were then compiled to create sophisticated maps showing the ecological distribution of each species. Another method used was the collecting and analyzing of scat, where “267 black bear and 1,094 grizzly bear scats were frozen and later analyzed to compare bear food habits.”<sup>53</sup> The results give us the exact percentages of food types (roots, insects, mammals, etc.) that make up each species’ diet during the different seasons. Various charts and tables are used to represent these percentages, where we see for example shrubs comprising a slightly larger percentage of grizzly bear diet than black bear diet in the fall, and that in all seasons insects are more important for black bears while mammals are more important for grizzlies.

Right away we see that such methods of learning about bears require a certain distance and detachment from the animals on the part of the scientist. Uncovering all this data *about* bears is had by the scientist assuming the role of pure observer, that is, by stepping back and removing himself from the equation of reality so to disclose the animals as pure *objects* with such and such measurable, quantifiable properties. Any relationship or personal history of engagement the scientist has with the bears gets stripped away and overlooked for the sake of uncovering neutral, objective facts about bears themselves. Since here nature is taken as something separate and external that

exists “out there” in-itself, totally free from “our world” and subjective human experience, what results is a certain epistemological distance or gap between the scientist as knowing subject and nature as known object. But importantly this gap is also literal in the case of bear ecology given the physical distance between scientists and actual animals. It’s not as if science in this case uncovered the bears’ diets and foraging habits by someone living on the land in the animals’ presence watching their feeding habits in real-time, rather, scat was collected after the fact and brought back to the lab for testing. Likewise, the radio-monitoring of bears by reading off their locations from a helicopter or computer screen via some remote-sensing device necessitates a crucial distance between scientist and nature, between observer and reality.

Although we’re not being totally fair to the scientific perspective here since after all it is top predators being studied, making the distance more extreme and exaggerated, this is still a good example since the intimacy and closeness of the phenomenological perspective is so striking in comparison. Instead of being reduced to some neutral, “de-worlded” object that one can relate to at a distance bears show up within the Blackfoot world as part of everyday life, as powerful presences demanding one’s attention and engaging one’s body in a most direct, unmediated way. Here we see similar knowledge of grizzly bears in terms of their range, location, and diet yet this knowledge is had from direct, bottom-up experience and close, personal encounters with individual bears; so close in fact that one must worry about not being eaten by them! For example, when camped near Cutbank Canyon in the spring of 1896 Siksikakoan, McClintock’s Blackfoot guide, alerts him to the presence of a particularly aggressive bear in the area, saying “We are now camped within the range of a grizzly bear, who has been famous for many years

among the Blackfeet for his size and daring.”<sup>54</sup> This particular bear was encountered in the same exact location—“whenever our people camp near the big fir tree in the canyon”—during the spring months when the Blackfeet would enter the mountains to dig camass roots and cut new lodge-pole pines.<sup>55</sup> Given the overlap of seasonal ranges and food sources between Blackfeet and grizzlies, e.g. digging roots in the mountains during spring or taking serviceberries from the foothills during fall, regular human/bear interaction is simply inevitable. Indeed, McClintock tells us of several people harassed or killed by grizzlies during his time spent with the Blackfeet.

As eco-phenomenologists see it, when encountering predators face-to-face as their potential foodstuff, one’s relation to nature can’t get any closer or more intimate than this. James Hatley even goes as far as saying that in these situations the whole boundary between self and other breaks down, where we no longer experience the bear as something separate and exterior but instead as being interwoven and intertwined with our own bodies. As Hatley says, “The stalking bear’s gaze reminds me that my flesh is not only my own but also a mode of becoming a bear...In the uncanny I am placed so utterly outside of myself, to the point that *I am an other* and/or the other is so utterly inside me that no *space remains where I can be merely myself*.”<sup>56</sup> This extreme closeness and intimacy that manifests in the presence of wild predators is also picked up by Turner. For him, we experience nature in a most direct, unmediated way when crossing paths with say a mountain lion or grizzly bear. As he says, “Predators are perhaps our most accessible experience of the wild. To come upon a grizzly track is to experience the wild in a most intimate, carnal way, an experience that is marked by gross alterations in attention, perception, body language, body chemistry, and emotion.”<sup>57</sup> These very

personal and intimate experiential markers simply have no place in bear ecology, the scientist being too many steps removed from the actual animals on the ground.

We should also point out that Blackfeet take up with concrete, individual bears on the Front whereas science in this case seeks to tell us something about bears in general. For the Blackfeet the focus is on local, particular bears that are bound up with human affairs, like the one who killed Motokis while he was hunting or the one notorious grizzly of Cutbank Canyon, even given a proper name, *Akochkitope* or “Medicine Grizzly.” Bear ecology however does not care about humans’ personal relations with individual bears. Instead, the scientist puts into view large-scale meta-patterns (roaming ranges, diet composition, etc.) regarding bears collectively or the species as a whole, patterns that aren’t always visible in the here and now, within the phenomenological horizon, but show up through scientific abstraction and deliberation. Eventually science gives us a neat, transplantable story of the hypothetical, generic grizzly bear—a large mammal typically weighing between 300 and 800 pounds, which hibernates for five to seven months out of the year, native to the North American continent, and so on. This abstraction from place and abandonment of phenomenological groundedness allows one to passively learn about bears in books or lectures, from the top-down, without ever coming face-to-face with a real, individual bear.

Here we also see an added element of control at work. Whether monitoring a species’ range through radio-location or learning this data from the resultant scientific paper, one is afforded, on both ends of the investigation, a certain degree of control over how the animals are to be encountered. Clearly, the encounter is on the scientist’s terms, who knows precisely when and where the bears will be, not needing to take in this

information in real-time, from on the ground, but conveniently through reports later. For the Blackfeet, however, the bears are very much left alone and get encountered spontaneously in open, fluid situations as opposed to being set under strict, predetermined controls. So, to sum up, whereas the Blackfeet take up with concrete, individual bears *within* the world as they engage in specific on-site practices like digging camas root or cutting lodge-pole pines, scientists, on the other hand, encounter bears more generally and abstractly, often entirely free from world and context, with the ground rules for the encounter already being set.

From our examples so far we see that nature for the Blackfeet shows up within the context of their particular cultural/historical world clearing; it is not some neutral revealing of a decontextualized object. The meaning of a particular plant or animal is not self-contained or discoverable in isolation but comes to the fore as a node situated in a wider, interconnected web of human involvements and practices. Consider just a few aspects of the worldly context surrounding serviceberries: shared techniques for gathering the berries such as striking ripened bushes with sticks while laid blankets catch the falling fruit, using the berries regularly in stews for feasts at important ceremonies like Sundance or the opening of a sacred medicine bundle, customs at mealtimes like the holding aloft of a berry in the right hand, praying in unison, and planting the berry in the ground before eating, using the straight, heavy shoots of serviceberry wood for making arrows, and, one more, the strict use of serviceberry sticks for lighting tobacco pipes in the lodge of the sacred woman during Sundance.<sup>58</sup> From this we see that the plant's meaning is inseparable from the goings-on of daily life, always being tied to the larger, context-dependent concerns and projects of the culture—one gathers serviceberries *for* a very



specific purpose, say an upcoming Sundance, *in order to* provide food for the ceremonial feast, *for the sake* of tradition and one's family and friends. Science, on the other hand, does not claim to tell you what to *do* with serviceberries, how to take up with them, what they are *for*, it only tells you what the plant *is* in-itself, objectively and neutrally. The wider referential context gets narrowed and severed completely as science deliberately "de-worlds" the plant, leaving us with a mere speck or sliver of the thing's original, context-dependent meaning.

Unlike the passive, neutral objects disclosed by science that sit there idly for our detached "mere staring," when made intelligible through world and context, nature has a certain gathering or centering force. With the Blackfeet, a traditionally nomadic subsistence group, we're talking about a people *literally* gathered and oriented by the land's seasonal flows and changes. For example, Kehoe notes that bands would typically move camp about fifteen to twenty times in a single year, following the seasonal round of peak plant and bison harvests.<sup>59</sup> Winter camps would always be in some sheltered river valley near the mountains, then come late spring bands began their lockstep with bison herds out on the plains, the scattered bands all reconvening midsummer for Sundance when the buffalo themselves gathered in great numbers, then in fall going their separate ways, as did the buffalo, back towards the foothills where large quantities of ripened serviceberries could be collected for winter use. Here bison and serviceberries are not merely food; they are powerful points of focus that bring people together and orient the world about them. It's no coincidence that during the several weeks it took for bands to come together for Sundance the serviceberries were just becoming ripe, being ready for harvest come the start of the great "circle encampment" (usually in August). In the case

of the buffalo, here's an animal around which the entire life of the people revolved, where humans came together in the thousands for Sundance during the time when bison *also* congregated in huge numbers. In this way we mean serviceberries or buffalo "gather" the people, that is, by focusing and orienting the daily goings-on of Blackfeet life, drawing in one's attention and involvement with something of great importance, something at the center of life and world.

Alongside plants and animals, the mountains themselves have the same gathering or centering force. For the Blackfeet, the north to south running Front range is none other than "the Backbone of the World," providing a fixed, centering point of orientation in space around which the world is organized. Like the pyramids of ancient Egypt or the cathedrals of Medieval Europe here the backbone constitutes the literal center of the universe, breaking the homogeneity of space and fixing a sacred center from which reality and the entire cosmos emanates.<sup>60</sup> A place like Chief Mountain for example is not just another landmark or neutral backdrop idly standing there in space, rather, it is the very hub or world-axis around which Blackfeet orient themselves and their world. Here the mountains are places of great and powerful significance; they have a certain world-orienting force. In his interviews with individual Blackfeet Craig notes, "They described the mountains as 'part of the homeland', a place of 'great significance', 'very sacred', and 'the backbone of the World'. As one man conveyed, 'They're in our ceremonies, they're in our stories, they're in our language. They have everything to do with Blackfeet religion or [being] Blackfeet'".<sup>61</sup> The point is that the mountains, like serviceberries and bison, hold together people and world by providing central points of focus for the culture to press into. What science does is level nature and strip it of its gathering or centering

power, the mountains no longer being the world-axis or “Backbone of the World” but instead just one small piece of an enormous Rocky Mountain range on one continent of the planet. The land is no longer charged or significant, drawing in attention and engagement with a focal thing, but just sits there in the background of “our world,” neutrally and objectively. When scientifically disclosed the land simply does not *matter* as much as it is no longer bound up with human relationship, meaning, context, or world.

But there is an advantage to science’s “de-worlding” of the mountains, namely, the disclosure of hidden or underlying aspects of nature that do not show up within the phenomenological horizon. Geology tells us the fold-and-thrust belt of Northwest Montana is the result of the Pacific plate sliding underneath the North American plate creating “folds” on the Earth’s surface, much like a rug being pushed and bunched up. Here the scientific perspective achieves great depth and scope by illuminating the underlying process of subduction and, with the theory of plate tectonics, opening our understanding of nature onto larger global patterns and processes. Unlike the (historical) Blackfeet, the geologist’s understanding is able to penetrate or see behind the surface appearance of the mountains—he thinks *back* 55 to 80 million years to the orogenic event that gave rise to the fold-and-thrust belt, seeing *into* the stratum of various rock materials on the Earth’s upper layers all the way through to the hot inner core, even envisioning the mountains, which were so fixed and centering for the Blackfeet, to actually be moving at an extremely slow rate of one to two centimeters per year.<sup>62</sup> This is precisely the “scientific view from nowhere” that, despite its shining a light on nature’s underlying fabric, is only had with the utter leveling or flattening of the mountains’ centering, world-orienting importance. Chief Mountain for instance, which stands as a kind of beacon for

the Blackfeet with its dramatic vertical rise and isolated position on the vast plains, is reduced to just another peak with no real centering significance. It no longer stands as an important point of focus, with world-gathering force, but is *just there*, as one object amongst countless others—not the backbone *of* the world but as object merely *in* the world, like an inert marble in a room or a book sitting idly on a shelf. So, while although seeing the mountains through a geological lens gives us a penetrating perspective, lifting the fog and eradicating ignorance by showing us nature’s inner workings, this seems to be had with the abandonment of world and context, the leveling of meaning and significance, and the loss of phenomenological groundedness in place.

### 2.3: The Bigger Picture and Taking Stock

Our discussion so far shows Blackfeet and scientists opening themselves onto very different dimensions or layers of nature, the basic distinction being between nature-as-experienced and nature-in-itself. We saw that the former is grounded in body, world, and context while the latter is accessed through detached knowledge and the “scientific view from nowhere.” Here there are a few bigger picture issues regarding humans’ understanding of reality, the larger universe, and their place in the cosmos that fall out of each perspective and that are worthy of our consideration. For the Blackfeet we saw that reality is concrete and grounded in place, emanating from central points of focus—the view is *from* some specific worldly context, accessed through bottom-up engagement, it is not “from nowhere.” Science, on the other hand, transcends concrete place and the bounds of the phenomenological horizon in trying to give us a story of everything. It views the universe in its entirety, not from any significant centering points but from the

purely neutral realm of Euclidean space, covering all micro and macro levels and making visible the connections between objects and events at the different levels. For example, geology and evolutionary biology let us see *back* whereas ecology lets us see out and *across*, physics and chemistry of course letting us see *into* reality. At the end of the day though it is physics that wins out, which reduces reality to a mere collection of substances with properties reached via the method of inter-level mechanistic explanation. Here reality is seen as mere matter-energy set within a framework of universal laws, where these mathematical laws make up the true core or structure of reality-in-itself. To access these laws, i.e. to become open to reality's ground state, the physicist must abandon his body and senses and encounter nature in the language of mathematics, in effect transcending the limits of his biological form on this planet—an ontological stance or move that would make Plato very proud indeed!

But as we saw for the Blackfeet there is no “reality-in-itself,” no separate or external Platonic realm that is somehow *more real* than the world-as-experienced. In fact, as was noted in the first part of chapter one, the reverse looks more to be the case; the ground state of reality being *experienced* reality as it first shows up through bodily engagement and absorbed, everyday skills and practices. At this most basic, primordial level we see the Blackfeet orienting themselves in space and time based off of their phenomenological groundedness in place, using Earth and sky and the all-important four directions to map the universe and position themselves in the cosmos. For example, leading up to Sundance the bands separate into four groups then march separately from the North, East, South, and West for four days, stopping each day, before coming together to form the “circle encampment,” where those giving the Sundance always take

the North side.<sup>63</sup> We also find many rituals following or imitating the sun's daily course through the sky, where one smokes a sacred pipe for example first facing the East, in the direction of the rising Sun, then South, West, and North.<sup>64</sup> Even just looking at the painted tipis of the Blackfeet we see reality's terrestrial origins being honored and not abandoned, a thick stripe encircling the base symbolizing the Earth's ground, often with white circles in the stripe representing the puff-balls or "dusty stars" encountered on the plains' floor, with triangles atop the stripe to represent the mountains.<sup>65</sup> The point is that, unlike science's "view from nowhere," the Blackfeet open themselves onto reality from the perspective of the living breathing body and its situatedness in some actual, concrete landscape in the here and now. The result is that the universe is much smaller and closer, oriented around some cosmic center like Chief Mountain or the "center-pole" of the Sun Lodge. Notice that here reality is inseparable from place and human context, the exact opposite of science's naïve picture of there being a single, privileged reality existing in-itself "out there" apart from human beings.

Just as there is no separate, abstract reality for the Blackfeet the same can be said about "nature." We must realize that "nature" or "wilderness" as the *other*, that is, as some separate sphere or realm set apart from "our world" (human culture, artifacts, and civilization), is very much a European invention. As our examples show, there is no distinction between "our world" and the "natural world" for the Blackfeet since nature and culture are always interwoven, part of *one and the same world-fabric*. The Front is not some pristine, untouched wilderness area antithetical to human life and society, a place to "visit" but not remain, but is instead a "cultural landscape." In Heideggerian terms we might say that Blackfeet and Front are *codisclosed*, two interdependent and

interconnected aspects of same unitary phenomenon Being-in-the-world. As the open space or clearing in which the Front becomes intelligible and “steps into Being,” the Blackfeet are as much a part of the Front as the Front is a part of them. This inescapable symmetry and non-separation of humans and nature shows through with the Blackfeet seeing the Front as part of themselves, where the land *just is* one’s own body and flesh. As Peat notes, “The Blackfoot say that to walk on the land is to walk on your own flesh,” and later, “The land is the body of The People, and the land is contained within the body of each Blackfoot man, woman, and child.”<sup>66</sup> The point is that from the phenomenological perspective nature is woven into self and world; it is not encountered as some external “other” in-itself, as is the case with ecology or biology.

Our provisional illustration of the phenomenological and scientific perspectives leaves us with an ostensible trade off. It appears that the engaged body situated in world and context encounters nature on the Front as concrete, close, and meaningful yet only by sacrificing the penetrating perspective and discriminatory power of science. Conversely, maintaining this disclosive power of science seems to be had only by rendering nature on the Front abstract, distancing, and neutral, where the scientist assumes the role of detached observer. But must we accept the trade-off here? Can’t the two be integrated in such a way as to retain the benefits of both while jettisoning their shortcomings? And if so, what does this say about the sure one-sidedness of experience-based and science-based environmental philosophies? Is there a way to integrate the two camps as well?

### **Part 3: Integrating Science and Eco-phenomenology**

In this third and final part we see how the two perspectives may be put together to open us onto “whole-nature.” The goal is to show how this integrated approach more fully discloses nature’s importance. In the first section we clarify what we mean by “science,” showing which of its aspects are vulnerable to phenomenological critique and which are not. We see how experience and knowledge operate together in specific cases of scientific practice and frontloaded scientific knowledge, where this discussion illustrates for us exactly how the two perspectives merge and work together, showing us what the whole-nature perspective *actually looks like*. Next we consider the virtues and shortcomings of science-based and experience-based environmental ethics, showing each approach as inherently limited and incomplete. In the third section we see how the camps may be brought together, how there is room for rapprochement, while considering what it means for the average person today to appropriate whole-nature.

### 3.1: Integrating the Scientific and Phenomenological Perspectives

So far our use of the term “science” has been vague, imprecise, and indeed disingenuous. We’ve talked as though science is diametrically opposed to experience, that the two are mutually exclusive, where turning on one blocks out the other, resulting in a trade-off. Moving forward however we will see the line between top-down knowledge and bottom-up experience start to blur. While yes, there does seem to exist separate layers or dimensions of reality that each perspective exclusively opens onto, i.e. the base, phenomenological layer accessed through bodily engagement and the theoretical, conceptual layer accessed through scientific knowledge, we must realize there is no sharp, rigid boundary demarcating these two ontological categories or stances.



Indeed, both really operate under the single, common world-disclosing activity of human beings, it not being clear where experience ends and knowledge takes over in this pursuit.

But before cashing this out in more detail we must first clean up and specify what we mean by “science.” In its broadest sense science is simply the noticing of patterns and regularities in nature, common to all human beings *qua* human beings.<sup>67</sup> For the Blackfeet we saw this with their knowledge of peak plant and bison harvests (the seasonal round being timed to match these specific patterns) and with their being privy to the regular behaviors and localities of animals on the Front, such as the grizzly bear. The same could be said regarding their knowledge of the healing properties of specific plants, which is had by observing the regular and repeated effects that result from a plant’s administered use, or even more generally, with their knowledge of the Sun as the great “Source of Life,” as that which allows plants and animals to live and grow.<sup>68</sup> Modern science is just an extension and extreme refinement of this pattern noticing activity, honing the connections between causes and effects with greater and greater precision. For example, modern science makes explicit and precise the Sun’s life-giving force by explaining this phenomenon in terms of photosynthesis, calories, metabolism, and ATP transfers between organisms. To bless serviceberries in recognition of the vital life-force contained therein while tracing this animating force back the Sun is no less a “scientific” move or procedure than is explaining this energy exchange at the chemical, biological, and ecological levels. The difference here is superficial since underneath both operates *one and the same human (scientific) intelligence* noticing a regular transfer of energy between Sun, serviceberry, and human. We must realize then that science is not confined

to Western Modernity, that the Blackfeet disclosure of nature on the Front is indeed a form of “science,” albeit a rudimentary one.<sup>69</sup>

Notice how much science here looks like what we’ve been calling “experience” for the Blackfeet, or rather, experiential knowing or the process of “coming-to-knowing.” As we saw, the Blackfeet come-to-know a plant’s medicinal properties or an animal’s migration patterns through close engagement and intimate “observation” stretched over time, where nature’s regularities show up through *direct experience*. After all, how else would the Blackfeet open themselves onto these regularities if not experientially, from the bottom-up? What is scientific “pattern noticing” but refined experience? Even with our most extreme and refined measurement of nature today—the search for the Higgs Boson subatomic particle at CERN’s large hadron collider—it seems that *doing* science involves great experience. Here the physicist relies on his training in reading and interpreting particle accelerator data, his familiarity with the Standard Model, and generally years of practice with the relevant mathematical formulas and equations. The point is that the skilled physicist is able to navigate through the various theoretical models and tackle specific problems much in the same way the seasoned Blackfeet is able to masterfully navigate and take up with the land, i.e. through much experience. I doubt either group would really be able to pin down whether it is their “experience” or their “knowledge” opening them onto the Higgs Boson or the Front, respectively, since at the level of one’s basic, world-disclosing activity this superficial dichotomy does not make sense. Here both groups are simply doing what humans do, that is, uncovering reality and holding it open in the light of human understanding. Experience and knowledge are

not “diametrically opposed” in this pursuit, rather, the two come together under a single, distinctively human, scientific mode of being in the world.

By understanding science as a *process* or *activity*, and by looking at actual human beings *doing* science, we see our provisional charge of detachment and distance, on the part of scientists, to be mistaken. Saying vegetation and bear ecologists’ work is “passive,” withdrawn, or worse, “mere staring,” fails to do justice to the deep level of engagement and close, intimate involvement working scientists have with the material they study. Indeed, those scientists *most* engaged, who devote the most focus and attention to the “objects” under investigation, are the best and most influential, their long hours of intense observation and passionate research yielding new discoveries and breakthroughs. Geneticist Barbara McClintock’s work on maize is an excellent example of this, her deep involvement and close attention to each and every plant she studied affording her, what she calls, a “feeling for the organism.” She explains, “I start with the seedling and I don’t want to leave it. I don’t feel I really know the story if I don’t watch the plant all the way along. So I know every plant in the field. I know them intimately, and I find it a great pleasure to know them.”<sup>70</sup> Or consider primatologist Barbara Smuts’ words reflecting on her fieldwork with baboons, saying that she “learned from personal experience” after “many months of immersion in their society,” where, “Doing good science, it turned out, consisted mostly of spending every possible moment with the animals, watching them with the utmost concentration,” noting that “I learned much through observation, but the deepest lessons came when I found myself sharing the being of a baboon.”<sup>71</sup> To know individual plants “intimately,” watching them “all the way along,” or to be “immersed” in baboon society, “sharing in their being,” is to relate to

nature in a most direct and personal way; it is certainly not passive or distancing. Indeed, scientific practice for both women appears to be just the opposite of how we initially portrayed it; it is experiential, bottom-up, close, personal, and based on intimate relationship; it is absorbing and engaging, the material focusing and gathering the scientist's attention and worldly projects; it is meaningful, contextual activity that *matters* a great deal, e.g. the scientific community (context) awarded McClintock a Nobel Prize for her discovery of genetic transposition (significance), where this work allowed humans for the first time to make sense of how chromosomes exchange genetic information (significance), which in turn paved the way for her contemporaries Watson and Crick (context) to discover DNA's double-helix structure (tremendous significance).

Joseph Rouse offers an insightful account of science that is helpful here, one that corrects, among other things, phenomenology's relegation of science as a secondary or derivative form of disclosure. By understanding science primarily as *scientific practice*, as the ongoing activities of actual scientists and their worldly situatedness, Rouse is able to give us a "deflationary and nonreifying account of scientific knowledge," where scientific knowledge is not understood in some abstract, second-level manner of detached subject/object representation, but as manifesting at the level of scientific practice itself.<sup>72</sup> We saw this with Blackfeet knowledge of plants being embodied in skills and practices, with McClintock's "feeling for the organism," and with Smuts' "sharing the being of a baboon." Clearly these are not detached subjects "having" knowledge but they, the practices, and the worldly contexts *just are* the knowledge, the open space of intelligibility where the life-force of serviceberries, genetic transposition, or the complexities of baboon society come to the fore and get revealed. Scientific practice

here does not proceed by stepping back or switching over to a derivative mode of knowing as the scientist's activity *already* belongs, from the start, to the plant or animal's original, scientifically disclosed meaning. In the case of McClintock, who uncovered genetic transposition *for the first time*, it was her intense research activity and intimate involvement with maize that opened up new dimensions of nature, allowing her to, as Evelyn Fox Keller says, "see further and deeper into the mysteries of genetics than her colleagues."<sup>73</sup> Such cutting-edge, groundbreaking work is not "secondary" but presses into and opens up new possibilities for human understanding; it occurs at the cusp of our world-clearing activity and pushes the boundaries of our knowledge.

So far in this section we have focused on science's *human* element by looking to actual human beings conducting scientific research. This is one sense of science, the one *doing* the disclosing, but it is not *what* gets disclosed, i.e. the results. In the purest sense the "results" of science are its well-established laws and theories.<sup>74</sup> In this sense science enjoys a certain autonomy by floating free from human context, the laws and theories not depending on the disclosive practices of individual scientists or on the worldly contexts in which they were discovered. What grants the laws autonomy is their being universal, applying the same everywhere, where seemingly disparate events and phenomena from across the globe all subsume under the same ubiquitous and omnipresent laws. Although the historical Blackfeet were open to the Front's patterns and regularities they did not know that such regularities resulted from reality being lawful at the core, all the way out, where the consistencies they observed *stayed consistent* from being set within a framework of universal laws. With no way of realizing the underlying laws that form the skeleton or substructure of observable nature the historical Blackfeet saw their world as

one of flux and transformation, mystery and magic, where luck and superstition took center stage and “medicine” or supernatural power was all important.

What science in this second sense does is to allow contemporary Blackfeet to eradicate this ignorance, and to do so with compelling authority. It explains *why* the Sun rises and sets every day by invoking the law of gravity, *why* serviceberries provide sustenance by way of photosynthesis and ATP transfers, therefore providing accurate and compelling answers to those why-seeking questions that remained shrouded in mystery for the historical Blackfeet. In this way science lifts the fog and turns on the light by showing us that reality is not magical or mysterious, subject to irregular change or supernatural influence, but that it is ordered and lawful. Appropriating science in the second sense is therefore important because it lets one see that nature *is* knowable, that it *can* be explained all (most of) the way down, where it is only because of reality’s regular and lawful structure that such knowledge is even possible at all. Here science illuminates the underlying fabric that supports and holds together *all* worlds, the laws of physics being the same for Europeans and Blackfeet alike, and if they existed, for Martians as well. This penetrating and expansive perspective is incredibly significant as it allows humans, for the first time, to understand how the universe *hangs together*. We see that everything everywhere is embedded in a common framework of universal laws, where this underlying fabric or substructure stretches across the whole universe, touching all of reality and holding it together in one piece.

But here is where science becomes vulnerable to the various phenomenological critiques laid out in parts one and two, where dismissing or amending these charges, as we did for science as a human practice, is not so easy. Since the laws and theories enjoy

a kind of autonomous, free-floating existence in transcending context and place by aiming at universality, and since accessing these laws means encountering nature in the language of mathematics, in theoretical space, there is just no getting around the abstractness, loss of context, and lack of bodily engagement already baked into the cake of this pure, heady sense of science. Further, given that the laws and theories have *already* been disclosed for us, just sitting there as polished, well-established facts in books and lectures, we see that for those individuals without any referential context or accompanying practice there is a definite risk of passive mere-staring, the material not being charged, meaningful, or engaging as it is *just there*. Unlike science as a human practice, where knowledge manifests through relationship, here it seems that knowledge of the laws and theories may take the form of inner subjects, on the one side, representing some external, objective realm “Nature” on the other, i.e. the nature that exists whether any humans are around taking up with it or not, that is just “out there” totally separate from “our world.” The worry is that nature in this pure, “de-worlded” sense does not draw the average person into concrete relationship or engagement, it no longer being encountered as a focal thing situated in world and context but as some neutral, far off abstraction that has little to do with one’s present, everyday concerns.

While it’s easy to throw these charges at science’s purest results, its established laws and theories, what about the results coming out of ecology and biology? When learning ecology and biology from books and lectures after the fact, as opposed to actually *doing* the initial practice or research, does this create distance, passivity, and a loss of engagement? Such charges seem warranted only when the untutored individual is *first* learning the science, while over time, once appropriated and internalized, these

problems may fall away and actually reverse. To learn about the Front's flora from Cooper and Kudray's vegetation report, say in a classroom, is to first encounter the plants abstractly and at a distance, the mind putting into view the various species, zones, and distributions as opposed to the engaged body taking up with concrete, individual plants through absorbed practice. At this level it seems perfectly fine to say the student encounters biological "objects," where what shows up to his explicit, scientific concern are decontextualized bits of nature (facts, categories, etc.) that have been carved up and articulated through scientific description, that just sit there compiled in a mere list. Of course this doesn't afford a close, transparent relation to serviceberries as the student lacks entirely the context, absorbed practice, and intimate sensory involvement that sets up and allows individual Blackfeet to encounter nature *not* in subject/object terms. Therefore, when first made visible we should expect serviceberries to stand out and confront our hypothetical botanist as the species-thing *Amelanchier alnifolia*, as an object related to at a distance and very much "in the head."

Further, it seems that here humans are in fact opening up distinct aspects or layers of nature through radically different "top-down" and "bottom-up" approaches, where it is all too easy to pass over the base, phenomenological layer entirely. This is the level of unmediated bodily experience, of pure motor intentionality, where *prior* to any conceptual or discursive thought about plants one's body is *already* absorbed in their sights, smells, and textures, the perceptual system being coupled and paired with each plant's phenomenological givenness. Here the living, sensuous landscape announces its rhythms and textures only to the intelligent body in the here and now, where it seems knowledge from ecology or biology may at times "block," "sever," or "eclipse" this layer



by having us turn off the senses, shift attention away from these plants here, and light up scientific concepts like species and DNA with the mind. Notice how opening up one layer appears to close off the other, where in one moment we can either experience serviceberries *as* concrete, sensuous individuals or we can step back, switch to a different mode of presentation, and know serviceberries *as* the species-thing *Amelanchier alnifolia*, generally and abstractly. This is the switch or changeover in understanding that phenomenologists like Heidegger and Dreyfus talk about, and I think in certain instances, like *first* learning ecology or biology, that it does occur and does pose a genuine risk of pushing us too far outside of concrete, immediate nature.

But scientific knowledge can over time be appropriated to the point that it brings nature near, where eventually we see a blend or fusion of experience and knowledge, as we did with scientific practice. Although distancing and objectifying at first, scientific knowledge can be taken in and absorbed to the point that it no longer wedges a gap between subject and object, standing out to explicit awareness, but instead implicitly operates in the background of one's concern, opening the individual directly onto nature. Taking in scientific concepts and making them transparent, moving them to the background to implicitly inform how nature shows up, is a change or maneuver not unlike that experienced by the expert musician, where the notes, scales, and rules that once stood out so forcefully and awkwardly eventually become transparent and drop away, still there, however not conspicuous, guiding the musician's hand from behind or underneath his overt, subject/object awareness. By mastering concepts like DNA, species, and niches one can similarly come to reverse and drop away their initial objectifying and distancing tendencies, where this background knowledge allows

professional ecologists and biologists to *immerse* themselves in nature, not to stand over and against it. Just as mastering the notes and scales brings music near, opening up harmonies and melodies that were at first distant and closed off, the same is true for scientific knowledge, where learning photosynthesis, for example, however abstract and distancing at first, eventually extends our vision by allowing us to see *into* serviceberries, that is, directly into the chloroplasts where light energy is being converted into chemical energy. In this way learning science informs and enriches how nature shows up by “frontloading” more finely articulated objects for us to encounter, letting us experience aspects of nature that would have otherwise remained fuzzy and opaque.

Becoming biologically or ecologically literate then does seem to set one up for a relationship with nature that can be intimate and engaging, where frontloaded knowledge does not interfere with experience but enhances it, letting us see *more of* nature. This is the same mutual cooperation of experience and knowledge that we saw operating with McClintock and with physicists at CERN, where here, knowledge for the professional botanist is always married to experience in the field, the two being inseparable as they inform and enrich each other. To say *Amelanchier alnifolia* is “top-layer” and individual serviceberries are “bottom-layer” doesn’t seem quite right for the botanist since his experience of plants in the field does not split off, opening onto either “heady” or “sensuous” dimensions of the plant, but instead experience borrows from knowledge, and vice versa, allowing for a fuller, more sophisticated disclosure of serviceberries. There is no switch or changeover in understanding for the botanist leading him to step back as an inner subject and relate to serviceberries as distant “objects” since his expert knowledge lets him see further and deeper into *these plants here*, lighting up and bringing near

hidden aspects of the plant that were unknowable to the historical Blackfeet (DNA, photosynthesis, etc.), doing so through a single, unified disclosive act.

The geologist too, when looking out across the Rocky Mountain Front range, sees *more of* the mountains before him, his frontloaded knowledge letting him experience these taller, jagged peaks as more geologically recent than those smooth, rolling hills over there, where this enhanced vision penetrates *into* Earth's layers, extending *out* from the continental divide following drainages to the Pacific, Atlantic, and Hudson Bay. Seeing the Front as the "Crown of the Continent," as a kind of hydrological apex, or seeing into the Earth's "hot" inner core is a disclosive act where clearly experience and knowledge merge and play off of each other. It is because of this unity, this marriage of experience and knowledge allowing scientists to immerse themselves in nature, that we followed Rouse in pointing out that human disclosedness just is human disclosedness—there is no sharp, rigid epistemic boundary splitting off humans' openness to nature into distinct "top-down" and "bottom-up" ways of knowing, no separate ontological categories of "nature-in-itself" and "experienced-nature." So, to sum up, just because knowledge from ecology and biology may be heady and distancing at first, this does not mean it must *stay* this way. By appropriating the knowledge and supplementing it with on-site practice and regular engagement we bring nature near while becoming intimately and personally involved with it, not as some "other" in subject/object terms, but as something internalized, absorbed, and made part of one's worldview. In this way we're able to keep science's penetrating perspective, compelling accuracy, and discriminatory power without sacrificing closeness and engagement.

### 3.2: Evaluating Science-based and Experience-based Approaches

The task now is to see how both camps fare in directing the average person today on how to relate to nature and find value therein. From the previous section it's clear that eco-phenomenologists go too far in relegating science and scientific knowledge to secondary or derivative status, claiming that it even "blocks" or "eclipses" our recognition of nature's value. But as we saw above, this just isn't the case given how frontloaded scientific knowledge, if anything, only *adds* to one's experience of nature, allowing *more* of nature to show up (chloroplasts, tectonic plates, universal laws, etc.). Instead of portraying scientific knowledge as a negative, as taking away from experience, we should see it as equipping us with a *greater perspective*, one that enhances and extends our vision of nature, taking us beyond its surface-level appearance, opening up new, added dimensions to know and care about (species, DNA, ecosystems, etc.). Without such knowledge the individual's appropriation of nature only goes as far as the phenomenological horizon, which is inherently limited, only opening up part or half nature, i.e. the experiential part, where the goal should be to appropriate nature experientially *and* cognitively, together, opening up whole-nature.

Abram and Turner, while certainly not "anti-science," do strike me as ultimately missing the importance of science, only directing the average person so far as to engage with nature's base, phenomenological layer, as if sensory participation alone is enough. They talk as if cognitive appropriation is always of secondary importance, that it is optional, at best an added bonus, at worst a preclusion of intimacy and engagement. But given the fruits of scientific practice and frontloaded scientific knowledge it's clear that this just isn't the case. Science *can* be put towards developing a close, personal relationship with nature, one that opens the individual *directly* onto a myriad of natural

objects and processes that the phenomenological perspective simply cannot access. Here science is the only tool we have for bringing near such things as species, DNA, and ecosystems, thereby allowing individuals today to find value in nature in ways that the historical Blackfeet never could. In this way I agree with Leopold and Rolston in that scientific knowledge can help to expand the bounds of moral consideration, where this expanded biocentric or ecocentric moral vision is simply not possible without science. As Rolston says, emphasizing the science/value connection here, and mirroring Leopold's move from ecology to ethics, "Ecology discovers simultaneously (1) what is taking place in ecosystems and (2) what *biotic community* means as an organizational mode enveloping organisms. Crossing over from science to ethics, we can discover (3) the values in such a community system and (4) our duties toward it."<sup>75</sup>

But are Leopold and Rolston correct to think scientific knowledge "automatically" or "simultaneously" shows us nature's importance, or worse, that it is *necessary* in this regard? Remember, Rolston posits a notion of "codiscovery" where science is thought to somehow uncover natural facts and values "simultaneously," values that are, mysteriously, already there in nature before humans discover them, while Leopold thinks ecological literacy "automatically" extends the bounds of one's moral consideration. Although ecology and biology *can* help us find value in nature in ways that would be impossible without these sciences, Leopold and Rolston are mistaken to think learning the science *automatically* triggers respect, care, or admiration in the individual for the environment.<sup>76</sup> Of course such knowledge can and *should* be put in the service of appreciating things like species, DNA, and ecosystems by giving us a more penetrating and sophisticated understanding; however, the results themselves are totally

neutral, not doing any normative work for us, at times even having the opposite intended effect in being distancing and abstract for the untutored, where it takes much appropriation to bring nature near as something close, charged, and meaningful, as something we care about through being bound up in relationship with.

Although Leopold was right to emphasize the relationship component here by encouraging us to see ourselves as bound up with the rest of nature, as fellow members of the biotic/moral community, I do not think his prescribed method for achieving this (ecological literacy) fully gets us there, on its own, as it only takes one so far. For example, for someone who *only* knows bear ecology, maybe even quite a bit, but hasn't engaged in actual ecological exchanges with real, concrete bears, as we saw with the Blackfeet, I don't see how this person and bear are bound up in any morally significant way as "fellow members." I mean it's one thing to light up ecological connections with the mind from a safe distance, yet another thing entirely to dwell in wild places and *feel* one's entanglement with other living beings, e.g. being edible to bears, that is, feeling one's body as a "mode of becoming a bear," as Hatley puts it. In no way does the former strike me as "automatically" triggering care for the animals since, on the one hand, closeness and relationship haven't been established (this takes time, it's not "automatic"), and on the other, it's entirely up to the individual on what to *do* with the neutral facts confronting him about bears—from the same exact data, let's say the distribution maps in the above-cited report, one can either respect bears on the Front, letting them be, or just as well take the knowledge gained from this report and put it towards locating, hunting down, and finally killing that "trophy" grizzly.

What Leopold and Rolston fail to see then is that the results of science are entirely neutral and objective, only telling us what *is* the case and not what to *do* with what is the case, how it matters, why we should care. Yet this is not to say that scientifically disclosed objects lack value or importance, rather, we are saying that it is not science *doing* the valuing here since this always comes from some outside directive, from the concerns of the larger culture, that is, from the worldly context in which the research takes place and shows up at all. For example, although science can tell us precisely how few genetically pure bison are left in Yellowstone it is not the neutral, objective data sounding the alarm here telling us why we should care (regardless of how low the numbers are) but instead, all the normative concern results from bison *already mattering* to us—we want to preserve the last wild, genetically pure bison herd as concepts like “wildness,” “naturalness,” and “historic continuity” matter to us; we care about visibly maintaining certain elements of our Wild West and frontier past, the public being partial to Yellowstone and bison as iconic symbols of the American West; we perhaps want a steady revenue stream for the Park Service from visitors seeking these kinds of nostalgic experiences; or lastly, even at a basic psychological or emotional level, the public tends to care more about the fate of large, furry mammals resembling teddy-bears than that of plants, reptiles, or insects. In this way we see that any value attached to scientifically disclosed objects always comes from a wider extra-scientific context as the narrow, limiting set of descriptive facts *about* an object cannot by themselves, from within, speak to the thing’s significance in purely scientific terms.

By this I mean to say that science *does* de-world, that it *is* neutral, only capturing a narrow sliver of something’s original, human-dependent meaning. We saw this with

the referential context of serviceberries being narrowed down and left out completely, and with the utter leveling or flattening of the mountains' world-gathering importance. The problem for Rolston and Leopold is that no matter how many facts one learns about *Amelanchier alnifolia* these neutral and objective results, by themselves, will not speak to the plant's significance since they are isolated and cut off from the very context and ground in which "value" makes sense at all, i.e. *our* world, the everyday world. This wider context in which scientific discovery is situated as local uncoverings provides the background telling us *why* the uncovered thing matters, *how* we are to take up with it, what it is *for*. In this way the world/culture is prior to scientific results, as the general clearing in which the results show up at all, *already* guiding and directing us on what to *do* with the results. For example, the same scientific discovery of the Sun's life-giving energy, in different worlds, tells one to either bless the fruit at Sundance or, let's say, to build solar farms turning this energy into a resource and commodity. The point is that humans, our world, and the larger culture attach significance to nature—this is what's *doing* the valuing, not the results themselves.

Given that science alone cannot speak to nature's importance we must question how effective a science-based approach can be in getting people to value nature. By only directing us so far as to become ecologically literate, assuming this automatically and fully shows us nature's importance, even going as far to say ecological literacy is *necessary* for recognizing value in nature, we see that Leopold and Rolston are guilty of illegitimately privileging the (modern) scientific perspective. The mistake is to start with a narrow, decontextualized sliver of biological and ecological facts and totalize these results, blocking out all other revealings, declaring these results to be the only game in



town, so to speak, that show us nature's importance. But this is backwards since the results presuppose world and context and are totally neutral; the results *need* the wider background culture to tell us why they matter, not the other way around. Thinking that science is even capable, by itself, of disclosing value in nature is problematic enough let alone declaring it to be *necessary* in this regard. For instance, what would Leopold and Rolston say about the historical Blackfeet, that they simply missed the boat? Were all those generations for whom serviceberries stood at the center of life and world actually missing the plant's *real value* in lacking knowledge of species, ecosystems, and DNA? Such questions highlight the problem (and indeed the irony) in trying to totalize and privilege something like *Amelanchier alnifolia* since in reality *less* shows up and *less* matters when compared to encountering the plant as a focal thing situated in world and context. If anything, I would say the scientist without the context of engagement misses more of the plant, his knowledge of *Amelanchier alnifolia*, however extensive, only capturing a sliver of the plant's original, context-dependent meaning and significance.

It is the *kind* of value the science-based approach purports to uncover which I think gets us into trouble, value that supposedly exists objectively and intrinsically in nature as opposed to manifesting through human relationship. While Leopold was on the right track here I think Rolston, by invoking "nonrelational" values and insisting on nature's "otherness," places the individual too far outside of nature. Although his recommendation to follow nature in an axiological sense has many welcome features—it is after all scientific appropriation—it ultimately falls short in having us consciously *maintain* the gap or distance between humans and nature, where value is "out there" as something to be taken in by inner subjects. But as we saw, the goal should be to drop

away explicit subject/object intentionality and bring nature near, appropriating scientific knowledge to the point of absorption, opening directly onto nature, where if anything like “value” arises at all it is because of closeness and relationship, not because of nature’s otherness. By assuming and indeed perpetuating modernity’s self/world, human/nature dichotomies Rolston leaves us with a very heady, abstract notion of nature and natural value that are to be related to at a distance, pointing us in the direction of a more detached, abstract encounter with nature-in-itself, not whole-nature. Unfortunately, this is not the sort of value that I think gets the average person to see nature’s importance, where telling a story about DNA as a historical achievement or exalting species to a higher ontological and moral status than concrete individuals, although insightful, appeals to scientific concepts and abstractions from the top-down, passing over human context and relationship and thereby failing to speak to how nature matters *for us*.

Although Abram gets some of this right, he too ultimately fails to recognize the importance of world and context, his notion of “relationship” and “participation” focusing too narrowly and exclusively on pure bodily intelligence, not capturing “relationship” in the richer, multi-layered sense of reference relations announcing a whole world. That he does not distinguish between the *mere noticing* of inner sensory experience and the *engagement* of the senses through shared, worldly practices is problematic. For example, there is an important difference between merely noticing the phenomenological givenness of serviceberries (sweet flavor, white flowers, heavy wood, etc.) and having one’s attention and worldly involvements be gathered by the plant as a focal, centering force (collecting the berries for Sundance, sharing in the ceremonial feast, etc.). What makes serviceberries *matter* in the latter case is the worldly context

already surrounding the plant for the Blackfeet, where for those outside this context, like a tourist visiting the Front for the first time, I think sensory participation only takes this person so far when relating to serviceberries—he can touch, smell, and taste the plants all he wants but will never know *why* he is touching, what the tasting is *for*, what to *do* with all these serviceberries besides snack on them and take a few pictures.

So, like the narrow results of science, here we see a similar problem for Abram in that it is the worldly context *behind* the thin layer of sensory experience (which he takes as primary) that determines how meaningful, close, and engaging one's encounter with nature is. Without any distinction between context-dependent and context-free sensory participation Abram can only direct us so far as to encourage a heightened sensitivity to nature's base, phenomenological layer. This however is not enough as it leaves the door open for detached, context-free staring without any engagement or significance. Just stepping outdoors and turning on the different sensory modalities is not enough, the key ingredient being absorbed practice informed by the culture. It is for this reason that we needed section 2.2, that is, to show us the importance of world and context, where I'm afraid eco-phenomenologists, especially Abram, are too one-dimensional in focusing exclusively on embodied experience.

Here is where scientific knowledge, i.e. learning science, can help us “enter” nature more readily than experience, especially when the points of entry for bodily engagement opened up by the culture are not charged or meaningful. For example, for those individuals not thrown into the Blackfeet world, not culturally set up to have their senses gathered by the Front as a focal thing, but instead to merely notice “sweet flavors” or “tall mountains,” not sacred foods at Sundance or the “Backbone,” science *is* a way to

directly participate with the Front, with its flora and geology, to make contact with the land, albeit of a more cognitive sort. Eco-phenomenologists do not see the bridge or avenue opened up by knowledge of photosynthesis and subduction connecting humans with serviceberries and mountains, respectively, where it does not matter so much if this relationship is through books, at a physical distance, and “in the head,” as strands of engagement are still being woven into nature. Here scientific literacy *creates* a context of engagement that didn’t exist before, one that would have emerged more slowly and difficultly, if at all, via embodied experience given the challenges facing people today. Indeed, we find that science is needed to access most nature that we can’t even directly interact with through our bodies, science being the *only* way to take up with such things as microorganisms in the soil, species and DNA, virtually all ocean life, not to mention the laws of physics or the entire extraterrestrial universe for that matter. The problem for the experience-based approach is that it provides no point of entry to make contact with nature at the micro and macro levels, missing whole-nature, where even when bodily participation is possible, as with serviceberries or mountains, there is a risk of detached, free-floating staring given the absence of context for most people today.

Yet we don’t want to diminish the role of embodied appropriation by declaring science as primary, as the end-all be-all when it comes to relating to nature, as if there is no hope for engaged, bottom-up sensory participation today, and as if this weren’t integral to opening up nature’s full depths. The Front *does* have a feel, a phenomenological richness, a certain rhythm and timing that announces itself only to the intelligent body in the here and now. Entering this layer, while perhaps more difficult today, is just as important as cognitively appropriating scientific concepts like

photosynthesis or subduction, I would say. Eco-phenomenologists are right to point out that this is something which cannot be accessed through books, with scientific concepts from the top down, where it is all too easy to pass over this layer entirely. While yes, science is a way to participate with nature, often letting us take up with *more* of it, giving us a greater perspective, a more comprehensive view, we must be sure to balance this penetrating and expansive vision with the local and concrete, that is, with bodily immersion in the immediate landscape. As Abram says of the danger here,

Our reflective intellects inhabit a global field of information, pondering the latest scenario for the origin of the universe as we absently fork food into our mouths, composing presentations for the next board meeting while we sip our coffee or cappuccino, clicking on the computer and slipping into cyberspace in order to network with other bodiless minds, exchanging information about gene sequences and military coups, “conferencing” to solve global environmental problems while oblivious to the moon rising over the rooftops. Our nervous system synapsed to the terminal, we do not notice that the chorus of frogs by the nearby stream has dwindled, this year, to a solitary voice, and that the song sparrows no longer return to the trees.<sup>77</sup>

Notice how the “origins of the universe,” “gene sequences,” and “global environmental problems” show up within the scientist’s extended vision, appropriated to a great degree, yet something very important is still missing, i.e. *this* landscape here, *these* particular creatures “*this* year!” Here Abram is calling attention to the immediacy of nature that gets passed over when scientists shift their participatory stance too far towards an extreme kind of “scientific view from nowhere.” We must understand then how science, when floating free from phenomenological groundedness in place, *can* indeed be distancing and abstract, where there is a real danger of scientific abstractions coming to supplant or obviate direct experience entirely, leaving out experienced-nature. Here I agree with Abram and Turner in that science perhaps plays too dominant a role in

contemporary environmentalism, even an “imperial” one, as Turner puts it. While yes, ecology and biology are extremely important, for all the reasons we’ve covered, and more, they should not totalize or block out other ways of disclosing nature’s importance.

### 3.3: Integrating Science and Eco-phenomenology

The task we set for ourselves at the beginning of the inquiry was to elucidate human experience, knowledge, and value of nature in the hopes of making visible, with philosophical rigor and clarity, a target for whole-nature appropriation today. We have followed two parallel, often overlapping lines of discussion in order to brighten and sharpen this target, where these took us a long way towards our goal of seeing what it means to *become open* to nature: the first at the level of the individual’s experience and knowledge, which we labeled as “perspectives” on nature, the second being more academic, concerning “approaches” to environmental ethics. The former was carried out descriptively, where I tried to provide a crisp, sharp image of how experience and knowledge disclose nature differently, even if this meant initially exaggerating to extremes (part two). By getting clear on “science” we amended this picture (part three), showing how experience and knowledge come together in hybridized cases of scientific practice and frontloaded scientific knowledge, science here equipping us with a greater perspective, one that opens up more *of* nature for our potential care. We saw how this enhanced, integrated perspective could retain closeness, engagement, and relationship without sacrificing depth and scope. From our descriptive work we were able to weigh each *approach*—our second line of inquiry—in terms of the *perspective* being privileged, that is, in terms of the perspective’s benefits, dangers, and limitations. From this I

concluded that the two approaches, like the perspectives they advocate, are by themselves limited and incomplete. For the brief rest of the paper we will wrap up and tie together our two parallel strands of discussion, at one level rounding out the whole-nature perspective, further filling out our target, bringing it to life by looking to Leopold as the ideal case, and at another level by gesturing towards a middle ground between science-based and experience-based approaches to environmental ethics.

At the end of the previous section we highlighted the importance of *balancing* the two perspectives so not to miss whole-nature, and will continue with this theme of balance for the rest of the inquiry. Here we saw precisely what gets left out when one's participatory stance slides too far towards pure phenomenology or pure science, the key being to find a balance or middle-way between the bottom-up and top-down, between body and mind, between the local and universal, the concrete and abstract, and so on. Leopold, more than anyone else, illustrates for us how to achieve this balance, epitomizing the whole-nature perspective that I'm calling for here. I consider his relation to the central Wisconsin landscape as the ideal case, as an example to be followed, showing us what it means to become *most open* to nature. In his *Sand County Almanac* we see all of the positive, welcome features of science without any resultant loss or trade-off. Here is a man constantly *doing* science, right in his own backyard, who's regular and intense scientific practice opened him directly onto the flowering cycles of wild plants, onto subtle changes in mink and chickadee behavior, and onto the migration patterns of geese and cranes. This is the same sort of experiential pattern noticing that we saw with the Blackfeet, where this sense of "science" proceeds by way of close, personal involvement, where very real, concrete relationships are formed. In Leopold's case, the

degree to which he comes-to-know individual plants and animals is truly impressive, e.g. chickadee number 65290, “one of seven chickadees constituting the ‘class of 1937’ ...of 97 chicks banded during the decade, 65290 was the only one contriving to survive for five winters.”<sup>78</sup> This is a bird Leopold was literally *in touch* with, holding its little feet for banding, freeing it from the trap each winter, even being bitten by it! Although this specific example is somewhat trivial, the point is that we find Leopold, all throughout *Sand County*, being very much attuned to the land’s sensuous dimension. Here we see a refined perceptual intelligence at work, like what we saw with Blackfeet elders on the Front, which allows Leopold, for example, to pick out the soft, high-pitched chirps of chickadees and distinguish these from the similar calls of juncos or house sparrows.

But importantly, Leopold balances and supplements this experiential appropriation of the land with deep knowledge from ecology and evolutionary biology, where such knowledge extends his vision, allowing him to see beyond the level of individual organisms and put into view species, ecosystems, and evolutionary history. The following passage illustrates this point nicely as it shows how Leopold’s scientific knowledge enhances his encounter of sand cranes, their meaning and significance expanding in the light of evolution, stretching across space and time:

Our appreciation of the crane grows with the slow unraveling of earthly history. His tribe, we now know, stems out of the remote Eocene. The other members of the fauna in which he originated are long since entombed within the hills. When we hear his call we hear no mere bird. We hear the trumpet in the orchestra of evolution. He is the symbol of our untamable past, of that incredible sweep of millennia which underlies and conditions the daily affairs of birds and men.<sup>79</sup>

We must be careful then not to diminish the importance of facts, concepts, and theory simply because they are more “top-down.” Like Leopold, one can master the material to the point of absorption, overcoming and indeed reversing distance. Like any expert or



master, what ecological literacy does for Leopold is allow him to *immerse* himself in the central Wisconsin landscape, letting him see far enough and deep enough until he in a sense *becomes* the land, with no distance left to overcome—this is what I mean by *dilating the self* to receive nature’s full depths. But to be clear, scientific knowledge alone does not take Leopold all the way in this regard, it being his knowledge *combined* with years of direct, embodied experience that opens him onto whole-nature. In this way Leopold strikes the perfect balance between experiential and cognitive appropriation, showing us how to integrate the two perspectives in such a way to retain the benefits of both, i.e. an extended vision that is intimate and engaging.

This illustration of Leopold, however, doesn’t tell the whole story. While it does a good job of showing how to become open to the biological world, we can extend our vision of nature further, where now I wish to stress the importance of appropriating *whole-nature* in the widest sense. As hinted at before, the more “pure” the results of science are the more difficult it is to achieve balance and stay phenomenologically grounded, which isn’t problematic so long as the knowledge is appropriated in the right sorts of ways, i.e. to encourage closeness and engagement. Those of us today *can* know nature at the micro and macro levels, we *can* know so-called “big history,” our vision extending back 3.96 billion years to the beginnings of life on this planet, or even further, 13.7 billion years to the Big Bang, or dare I say even further, to universal laws that are timeless, eternal, even Godlike for some. Appropriating such “bigger picture” results is therefore needed to reach the scale of a truly *whole-nature* perspective, where this does not mean learning everything in the scientifically disclosed universe, rather, it means being able to tell a *story of everything*, putting into view “big history,” seeing how the

universe hangs together in one piece, how it works as a whole. The challenge is to achieve this wide, extended view of nature while bringing it down to Earth; to stretch one's understanding across the universe while *still being here*. Like the results of ecology and biology, this vision of nature only becomes problematic when floating entirely free from the local, immediate landscape, that is, when such "heady," more top-layer disclosures are not paired and balanced with bodily engagement in the here and now. Even worse is when the scientific picture of nature is made total, that is, when it comes to be seen as "more real" or "more important" than concrete, immediate nature.

It is because of this battle for ontological primacy between phenomenology and scientific naturalism that we intentionally set up "nature" as a kind of proxy for "reality," taking this issue on in the specific context of environmental ethics. I see the tension here as yet another instantiation of philosophers not being able to see past entrenched metaphysical and epistemological biases, e.g. Rolston's perpetuation of Modernity's self/world split, or Abram's phenomenological foundationalism, which relegates science to a derivative or secondary form of disclosure. If only these thinkers were to *first* get clear on things like "self," "world," or "science," I suspect much of the tension would be deflated for the simple reason that neither could claim primacy. The purpose of our descriptive work was to do just that, i.e. to put science and phenomenology on an equal footing, indeed, blurring the boundaries between the two wherever possible. With this I have tried to bridge the gap between the two camps, or more so, to reveal each to be much closer to the other than initially thought. This requires that each dissolve any strict claims to reality's "top" or "bottom" layers, where indeed, these are just useful metaphors, really only having nominal existence, not mapping onto the structure of the

world. In this way the reader should take our remarks on “top” and “bottom” layers of reality with a grain of salt, realizing that these are just helpful illustrations.

Instead of talking about top or bottom layers it is better to simply speak of an opening or clearing. If we must pick a shape to represent this, perhaps a circle is our best bet, i.e. an open space of intelligibility that dilates and contracts to receive more or less of reality. On this model, scientific knowledge does not sit at the “top” and embodied experience on the “bottom,” but instead, both operate together as part of humans’ common world-disclosing activity. The circle model suits our purposes quite well as it precludes hierarchies, privileging, and starting points, while the shape itself represents fullness and completeness, the “whole pie,” as it were. The circle also points us towards a center, which for our purposes means making room for nature as a focal, centering thing, putting it at the center of one’s attention and care through regular engagement, having it orient our projects and concerns. Although we can never “go back” to nature’s centering power for pre-technological humans, like the “Backbone” or serviceberries for the historical Blackfeet, we can at least start to shift nature to the foreground of attention, bringing it into relief, rescuing it from being a backdrop to “our world.” Eventually, if appropriated to a great degree, we *become open* to nature and feel at home in it, where becoming *most open* requires a balance and integration of experience and knowledge.

This was the main goal of the paper, to show how experience and knowledge, together, let us see nature whole, the consequences of which I think are twofold. First, in appropriating whole-nature we substitute detachment and ignorance for intimacy and understanding. This carries with it a certain care and value for nature—the second consequence—whereby opening up to the fullness of nature we find that more *of the*

natural world matters to us. It would be tempting to label the first consequence as “good for us” and the second “good for nature,” but this anthropocentric/biocentric value distinction is one of several dualisms that I tried to overcome. Both consequences are really just two sides of the same coin. Opening up and feeling at home in nature is inseparable from our finding value in it. The benefit is at once for us and for nature.

With the whole-nature vision comes a transformation of the self, one that strengthens and tightens our previously tenuous relationship and makes it robust, full, and healthy, in a word, “vital.” Given the symmetry between self and world, between humans and nature, this vitality emerges in us and in the land. It emerges in us in so far as we turn on and realize the fullness of our human capacities on this planet today, becoming full, healthy, balanced human beings, and it emerges in nature as the turning on of these disclosive capacities opens up the land’s full richness to us, where attuned and aware citizens appreciate this richness and come to respect and preserve the vitality of natural systems. This dually-instantiated vitality, that improves us and nature simultaneously, is to be learned from people like Leopold, where the taking on of the whole-nature vision, in his case, benefited him and the land equally. Today, more than ever, we must strive for this vitality if we are to make it through the crises facing us, where the environmental crisis is, I think, at its core a crisis in human consciousness, in human *being*. To solve the two together, which is indeed the only way how, we must come to see nature whole; a vision that transforms humans and nature equally, that brings vitality to the human/nature clearing, opening the circle most fully and richly.

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<sup>1</sup> Dermot Moran, introduction to *The Phenomenology Reader*, ed. Dermot Moran and Timothy Mooney (New York: Routledge, 2002), 2.

<sup>2</sup> As he says in his 1917 inaugural address at Freiburg, “A person in the natural attitude executes the acts of experiencing but, while he is executing them, he is not looking towards them but rather in the direction of the objects he is conscious of.” Edmund Husserl, “Pure Phenomenology, Its Method, and It’s Field of Investigation,” in *The Phenomenology Reader*, ed. Dermot Moran and Timothy Mooney (New York: Routledge, 2002), 128.

<sup>3</sup> *Ibid.*, 131.

<sup>4</sup> Edmund Husserl, *Experience and Judgment*, trans. James Churchill and Karl Ameriks (Evanston: Northwestern University Press, 1975), 41.

<sup>5</sup> Husserl, “Pure Phenomenology,” 125.

<sup>6</sup> Maurice Merleau-Ponty, “The Primacy of Perception and its Philosophical Consequences,” in *The Phenomenology Reader*, ed. Dermot Moran and Timothy Mooney (New York: Routledge, 2002), 437.

<sup>7</sup> Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson (New York: Harper & Row, 1964), 94.

<sup>8</sup> *Ibid.*

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<sup>9</sup> Aldo Leopold, *A Sand County Almanac: And Sketches Here and There* (New York: Oxford University Press, 1949), vii.

<sup>10</sup> *Ibid.*, 204.

<sup>11</sup> Holmes Rolston III, *Environmental Ethics* (Philadelphia: Temple University Press, 1988), 232.

<sup>12</sup> Holmes Rolston III, "Can and Ought We to Follow Nature?," *Environmental Ethics* [Journal] 1, (1979): 7.

<sup>13</sup> *Ibid.*, 24.

<sup>14</sup> *Ibid.*

<sup>15</sup> Jack Turner, *The Abstract Wild* (Tucson: The University of Arizona Press, 1996), 118.

<sup>16</sup> *Ibid.*, 25.

<sup>17</sup> He does ultimately acknowledge the importance of conservation biology, intrinsic arguments, environmental policy, and other top-down approaches. As he says, "There are excellent reasons to preserve wilderness, biotic communities, and biodiversity apart from any relation to wildness, reasons that are thoroughly covered in our environmental literature." *Ibid.*, 108.

<sup>18</sup> *Ibid.*, 113.

<sup>19</sup> *Ibid.*, 25.

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<sup>20</sup> Ibid., 26.

<sup>21</sup> Ibid., xiv.

<sup>22</sup> Ibid., 25. Ibid., 89.

<sup>23</sup> Ibid., 25.

<sup>24</sup> Ibid., 114f.

<sup>25</sup> Charles S. Brown and Ted Toadvine, introduction to *Eco-Phenomenology: Back to the Earth Itself*, ed. Brown and Toadvine (Albany: SUNY Press, 2003), xix.

<sup>26</sup> David Abram, *The Spell of the Sensuous: Perception and Language in a More-Than-Human-World* (New York: Random House, 1996), 27.

<sup>27</sup> Ibid., 40.

<sup>28</sup> Ibid., 57.

<sup>29</sup> Ibid.

<sup>30</sup> Ibid., 65.

<sup>31</sup> Ibid., 69.

<sup>32</sup> Betty Bastien, *Blackfoot Ways of Knowing: The Worldview of the Siksikaitstapi* (Calgary: University of Calgary Press, 2004), 111. F. David Peat, *Blackfoot Physics: A*

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*Journey Into the Native American Universe* (York Beach: Red Wheel/Weiser, 2002), 56f, 59f.

<sup>33</sup> Bastien, *Blackfoot Ways of Knowing*, 224.

<sup>34</sup> Peat, *Blackfoot Physics*, 56.

<sup>35</sup> See his “Materia Medica of the Blackfeet.” Walter McClintock, *The Old North Trail: Life, Legends & Religion of the Blackfeet Indians* (Lincoln: University of Nebraska Press, 1999), 524-531.

<sup>36</sup> *Ibid.*, 364.

<sup>37</sup> Rosalyn Lapier, “Blackfeet Botanist: Annie Mad Plume Wall,” *Montana Naturalist*, Fall 2005, 4.

<sup>38</sup> David R. Craig, Laurie Yung, and William T. Borrie, “‘Blackfeet Belong to the Mountains’: Hope, Loss, and Blackfeet Claims to Glacier National Park, Montana,” *Conservation and Society* 10, no. 3 (2012): 237.

<sup>39</sup> John C. Ewers, *The Blackfeet: Raiders on the Northwestern Plains* (Norman: University of Oklahoma Press, 1958), 80.

<sup>40</sup> Paul H. Carlson, *The Plains Indians* (College Station: Texas A&M University Press, 1998), 40-42. This required driving bison herds over long distances through established drive lanes (marked by stone cairns) towards site-specific deadfalls, often for days at a



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time. Russel Lawrence Barsh and Chantelle Marlor, "Driving Bison and Blackfoot Science," *Human Ecology* 31, no. 4 (2003): 571.

<sup>41</sup> Ibid., 585. McClintock observes a dance in which four dancers, dressed/painted as grey wolves, imitate wolves driving other dancers who represent bison. McClintock, *Old North Trail*, 300. The degree to which imitation of important animals and their behaviors factors into ceremonies is just astounding. Opening a medicine bundle, for example, consists of taking out each animal's skin, one-by-one, where songs, dances, and actions are given corresponding with each different animal.

<sup>42</sup> Barsh and Marlor, "Driving Bison," 587.

<sup>43</sup> Ibid., 587.

<sup>44</sup> Peat, *Blackfoot Physics*, 63.

<sup>45</sup> Gregory M. Kudray and Stephen V. Cooper, *Montana's Rocky Mountain Front: Vegetation Map and Type Descriptions*, report to the United States Fish and Wildlife Service (Helena: Montana Natural Heritage Program, 2006), 26 pp.

<sup>46</sup> McClintock, *Old North Trail*, 525.

<sup>47</sup> Bastien, *Blackfoot Ways of Knowing*, 227.

<sup>48</sup> Peat, *Blackfoot Physics*, 227f.

<sup>49</sup> McClintock, *Old North Trail*, 484.

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<sup>50</sup> Abram, *Spell of the Sensuous*, 144.

<sup>51</sup> Keith E. Aune, “Comparative Ecology of Black and Grizzly Bears on the Rocky Mountain Front, Montana,” *Bears: Their Biology and Management* 9, no. 1 (1992).

<sup>52</sup> *Ibid.*, 367.

<sup>53</sup> *Ibid.*, 368.

<sup>54</sup> McClintock, *Old North Trail*, 51.

<sup>55</sup> *Ibid.*, 55.

<sup>56</sup> James Hatley, “The Uncanny Goodness of Being Edible to Bears,” in *Rethinking Nature: Essays in Environmental Philosophy*, ed. Bruce Foltz and Robert Frodeman (Indianapolis: Indiana University Press, 2004), 18.

<sup>57</sup> Turner, *Abstract Wild*, 85.

<sup>58</sup> McClintock, *Old North Trail*, 34, 102, 178, 261.

<sup>59</sup> Alice Beck Kehoe, introduction to *Mythology of the Blackfoot Indians*, trans. Clark Wissler and D.C. Duvall (Lincoln: University of Nebraska Press, 1995), xxii.

<sup>60</sup> Also, the center-pole of the Sunlodge constitutes the literal center of the Blackfoot word. See Eliade on “axis mundi.” Mircea Eliade, *The Sacred and The Profane: The Nature of Religion* (Orlando: Harcourt, Inc., 1957), 42f.

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<sup>61</sup> Craig et al., “Blackfeet Belong to the Mountains,” 235.

<sup>62</sup> Joseph English and Stephen T. Johnston, “The Laramide Orogeny: What Were the Driving Forces?,” *International Geology Review* 46, (2004).

<sup>63</sup> McClintock, *Old North Trail*, 193-206.

<sup>64</sup> The East has a certain world-creating importance, as the first light of day, creating the world anew, where the beginning of each day is analogous to the beginning of the world. See Vest for an interpretation of “Napi”, the creator of the Earth, as literally meaning the white, early light of dawn that creates the world anew each day. Jay Hansford C. Vest, “Traditional Blackfeet Religion and the Sacred Badger-Two Medicine Wildlands,” *Journal of Law and Religion* 6, no. 2 (1988), 464.

<sup>65</sup> McClintock, *Old North Trail*, 219.

<sup>66</sup> Peat, *Blackfoot Physics*, 86, 107. Citing Abram can help us make sense of this; he says, “The perceiving being and the perceived being are *of the same stuff*, the perceiver and the perceived are interdependent and in some sense reversible aspects of a common animate element, or Flesh, that is *at once both sensible and sensitive*...Our experience of the forest is nothing other than the forest experiencing itself.” Abram, *Spell of the Sensuous*, 68f.

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<sup>67</sup> The following points made on science come largely from Borgmann. See Albert Borgmann, *Technology and the Character of Contemporary Life: A Philosophical Inquiry* (Chicago: University of Chicago Press, 1984), 15-31.

<sup>68</sup> “The Sun, as the great center of power and upholder of all things, was the Blackfeet’s supreme object of worship. He saw that every bud and leaf and blossom turned its face towards the Sun as the source of its life and growth; that the berries he ate reddened and ripened under its warmth; that men and animals thrived under its sustaining light, but all perished when it was withdrawn. He saw that in the darkness and cold of winter, nature retired into silence and sleep; that when the sunlight and warmth of spring returned, all nature awakened and put on its robe of green; the bears left their hibernating dens and the beavers their winter lodges. The Sun made the grass to grow and the trees to be covered with foliage for the subsistence of birds and animals upon which he himself depended for food.” McClintock, *Old North Trail*, 169.

<sup>69</sup> As Borgmann says, “To understand a particular event in seeing it within the framework of regularities is the common and pervasive way in which humans orient themselves in their world. To sow seeds is to act in view of the law of germination, growth, and fruition. To slaughter an animal is to proceed on one’s general knowledge of the sustaining force of meat. Scientific explanation is not a novel assault on the world but the radical precisioning of a procedure that is as old as humanity.” Borgmann, *Technology*, 20.

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<sup>70</sup> Quoted from Evelyn Fox Keller, *A Feeling For the Organism: The Life and Work of Barbara McClintock* (New York: Freeman, 1983), 197.

<sup>71</sup> Barbara Smuts, essay in *The Lives of Animals*, ed. Amy Gutmann (Princeton: Princeton University Press, 1999), 109f.

<sup>72</sup> Joseph Rouse, *Engaging Science: How to Understand Its Practices Philosophically* (Ithaca: Cornell University Press, 1996), 28.

<sup>73</sup> Keller, *Feeling For the Organism*, 386.

<sup>74</sup> There is (1) science as a human and social enterprise, (2) science as the body of well-established laws and theories, and (3) applied science or technology. See Borgmann, *Technology*, 17.

<sup>75</sup> Rolston, *Environmental Ethics*, 173.

<sup>76</sup> I borrowed this phrasing from Strong. A few points made in the next two paragraphs come from chapter three of Strong's *Crazy Mountains*. David Strong, *Crazy Mountains: Learning From Wilderness to Weigh Technology* (Albany: SUNY Press, 1995).

<sup>77</sup> Abram, *Spell of the Sensuous*, 265f.

<sup>78</sup> Leopold, *Sand County*, 89f.

<sup>79</sup> *Ibid.*, 96.