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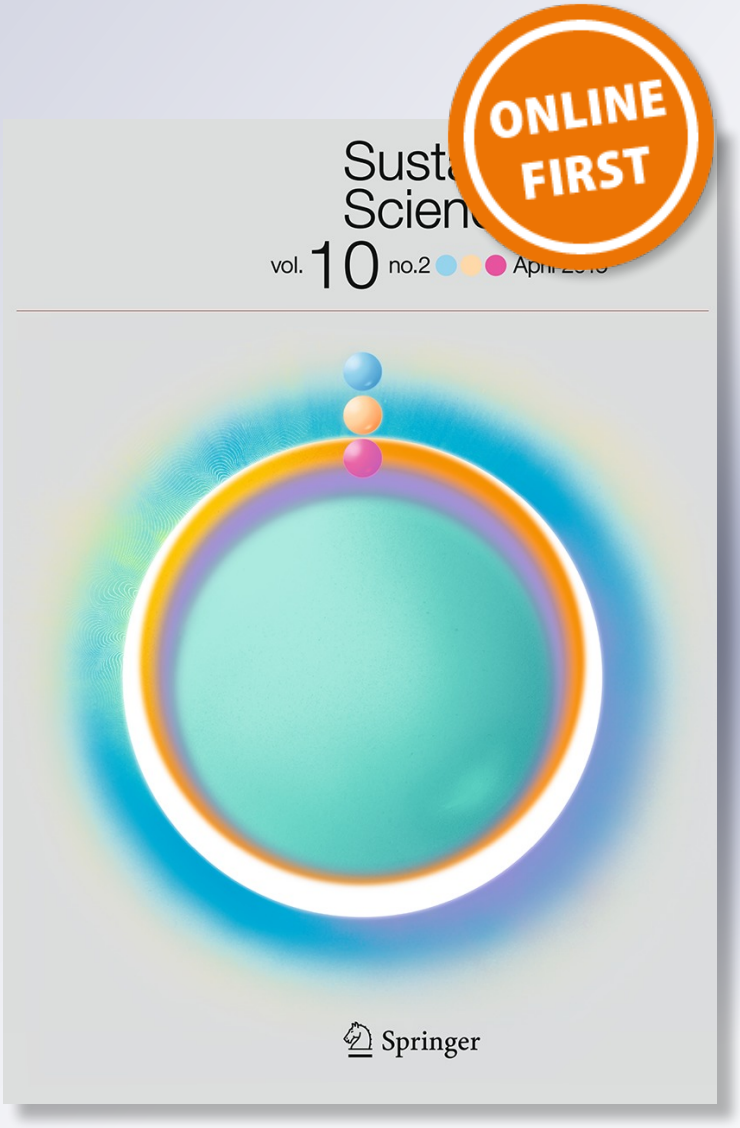

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SPECIAL FEATURE: ORIGINAL ARTICLE

Weaving Indigenous and Sustainability Sciences to Diversify Our Methods (WIS2DOM)

Traditional knowledge in a time of crisis: climate change, culture and communication

R. D. K. Herman[1]

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Abstract Science as it has come to be defined in Western thought is at the root of our current environmental problems. This article reviews the historical trajectory of specific facets in Western thought, including the disenchantment of nature, the apotheosis of reason, the technological domination of nature, and the Puritan temper. Illuminating this history points out that what is called "rational" and what popularly acceptable as "science" is in fact a by-product of specific historical, cultural, and political circumstances, and has produced a culture of "scientism" that is ideological, not value-free, and is in fact contrary to the open inquiry of science. These ideas are linked to economic rationality, colonialism, and human rights, severing modern humans from our Indigenous roots and fostering an ideology of rapacious environmental exploitation. The author proposes "indigeneity" as embracing the holistic knowledge and wisdom found in traditional cultures while also utilizing the advances in science and other areas of human endeavor. Specifically, the paper argues for bringing about a new cultural discourse that helps reshape human behavior into a more sustainable direction. The role of communication and storytelling is emphasized, with an example given in the story of Polynesian voyaging and the five values of the voyaging canoe.

Keywords Sustainability · Values · Scientism · Indigenous · Wisdom

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Introduction

Two years ago an invitation was circulated around the Smithsonian to attend a meeting at the National Academies of Science. Their Social and Behavioral group was working on a document regarding Climate Change, and since I was curious to see what they were up to, I went. I did not realize that the invitation was to be a "spectator." The group itself sat around a large rectangle of tables with individual microphones, while perhaps another 20–30 of us sat in chairs around the periphery. The working group had already been at work on a draft document, and this was time for feedback.

When discussion of the document began, the key drafter of it stated in his opening remarks that the one thing for sure they had agreed on was that the document was NOT going to talk about mitigation of climate change factors, only about adaptation. An alarm went off inside my head. An hour and a half later, we in the periphery were finally permitted to ask questions. My hand went up, and I was invited to a seat at the table with my own personal microphone.

"Let me get this straight," I said, "'You're NOT going to talk about mitigation? Okay, so that's kind of like this: you go to your doctor, and the doctor says 'I see you've been putting on weight over the course of your last few visits'. This is an observation based on the data. 'At this rate', he goes on to say, 'in 5 years you're going to weigh 350 pounds, and the longer-term future is not looking good'. Now we have a prediction. 'So, let's talk about adaptation: You might want to start investing in spandex clothes. You might think about having a wheelchair ramp installed in the front of your house. You might want to put in an elevator to get you up to your bedroom.'

'But we're NOT going to talk about your eating habits. We're NOT going to talk about the psychological reasons you might have for overeating and not exercising, or about

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the cultural milieu and the forces of advertising and marketing that encourage such behavior.'"

"This," I said, "is the Social and Behavioral Working Group. We have a narrow window of maybe 20 years at most to mitigate against the worst ravages of climate change. If we don't talk about mitigation, who will?" The gentleman responded, "Okay, I get it."

Strangely, I was never invited back, so I do not know whether my remarks had any impact, but the point of this story is twofold: first, that climate change is not a scientific matter. As with the increasingly obese person in my example, science can only monitor the data and make predictions based on current and possible future conditions. Rather, Climate Change is a Social and Behavioral Issue. And the way you change behavior is through culture. The second point of my story is that we who work in the field of culture have to be able to communicate effectively if we are to enlighten the public. Here is where Indigenous wisdom has a key role to play. Finding the right means for parlaying that wisdom in a form that can be grasped and accepted by the public is the trick.

The heart of the problem is the disjuncture between Science, Culture and Traditional Knowledge in Western thinking. Science gives us tools, but what we do with those tools is a product of culture. The wisdom to use those tools appropriately would have come from traditional knowledge. To bring these three back together, we need to remind ourselves how they were pulled apart to begin with. We need to remind ourselves that what modernity has enthroned as a "rational" worldview is not actually rational at all, but the product of specific historical, cultural, political and economic forces. Understanding these roots allows us to look to a new notion of "Rationality" that pulls culture and wisdom back into the fold.

Before I go further, let me position myself as a white member of a white-dominated settler society (the United States), well educated with a reasonable background in science and Western thinking but having always found the latter, at least, highly problematic. Much more about my position I have discussed in a previous work (Herman 2013), which explains my own journey in coming to the realizations I share here. While I do not speak as an Indigenous person, my early and lasting inclinations towards and explorations of other ways of being and knowing have located me somewhat apart from the dominant culture. This paper reflects the disjuncture I experience with what I consider to be an irrational worldview.

The roots of rational thinking

The philosophy of knowledge that permeates the dominant culture today can be traced back to the ancient Greeks, but really draws on the Protestant Reformation, the Enlightenment and the Scientific Revolution. During these shifts, it was seen as essential to remove science from the purview of the Church. The Church's condemnation of Copernican astronomy[1] as dangerous to faith shows that this was a much-needed divorce. This separation was supposed to allow Science to operate without ideological constraints. The actual story, however, is not so tidy. The politics of the Reformation were such that the philosophical baby was thrown out with the political bathwater: over time, all forms of philosophy and spiritual inquiry were deemed unscientific. Only that which could be validated empirically or proven mathematically could fall into the realm of science as it was being defined.

Christianity in Europe had already posited, for most people, a vertical geography in which the material world was merely the stage for a divine drama between humanity and Divinity. Nature as God's creation was placed under the stewardship of humanity, and had no intrinsic value or active role in the evolution of the human spirit. Then, with the Scientific Revolution—and despite a great deal of dispute, push-back and divergence of views over the ensuing centuries—a fairly consistent philosophy of knowledge emerged that still dominates Western thinking today (Maxwell 1984). Nature came to be seen as "an intricate, impersonal, and inert machine"[2] to be studied, understood, and harnessed for the betterment of humankind. There are four particular aspects of this emergent worldview (for it did not happen all at once, and it had its critics and opponents): the elimination of "superstition" and "magic" often referred to as the "disenchantment of the world"; an emphasis on Reason as the true nature of being human; the idea that technology should overcome nature for the betterment of humankind; and Puritan Temper with the rise of economic rationalism. These are worth addressing one at a time.

The disenchantment of the World

As I have written elsewhere (Herman 2008), Enlightenment thinking contributed to a process of secularization in that it posed a separation of "magic" from "religion". Taking the "magical" elements out of Christianity would eliminate the idea that religious rituals had any efficacy, or that material objects could be endowed with any sort of sacred power—in short, that human actions could have any supernatural effect. This new Protestant formulation, freed

[1] Copernican astronomy is heliocentric, posing that the Sun is stationary with the Earth and other planets moving around it. This was considered heresy to the traditional Ptolomaic notion that the Earth was the center with the sun and the planets revolving around it.

[2] "Sir Isaac Newton," Britannica, http://www.britannica.com/EBchecked/topic/413189/Sir-Isaac-Newton/12246/Influence-of-the-scientific-revolution. Accessed 5 Jan 2015.

of 'superstitious' notions about the workings of the world—characteristic of modernity—empowered rational human action free of supernatural constraints (Scribner 1993: 475).

When the manifest and unmanifest worlds interpenetrate, as they did in premodern European thought and as they do in many Indigenous worldviews, then activity and occurrences in the world are potent with meaning. Weber felt that in modernity, "as intellectualism suppresses belief in magic, the world's processes become disenchanted, lose their magical significance, and henceforth simply 'are' and 'happen' but no longer signify anything".[3] And as Greisman (1976) points out, a new pantheon emerged to take the place of the old gods: competition, commodity fetishism, hysterical nationalism, and counterfeit religion.

In Indigenous and traditional societies, including ancient Europe, the world is understood in terms of flows of energies (and sometimes entities) across a permeable boundary between manifest and unmanifest realities. Working relationships with forces deemed "superstitious" or "irrational" in modern science is a significant component in social processes and healing practices, and is understood by its own science and cosmology.[4]

It is this lack of "enchantment" whereby the natural world—so full of life, agency and creative energy—becomes inert and material, and the nations of beings with whom we share the planet become, at best, dumb animals, and at worst, mere matter.

The apotheosis of reason

The elevation of reason to a regal and commanding status is the particular legacy of Rene Descartes, though it did not truly come into its own until the nineteenth century (Swing 1889). Descartes argued that there was a real distinction between mind and body—i.e., that either could exist without the other. On the one hand, this assured the possibility of the immortality of the soul (Descartes, like his Enlightenment cohort, was a Christian); and on the other hand, it opened up a new, mechanistic physics in which the world (as matter devoid of reasoning mind) could be understood and manipulated (Skirry 2006, Mehta 2011).

Descartes initiated a new stage in philosophical thought by placing the mind—self consciousness—as the source of intelligibility in the world, rather than in the world itself (Dupre 2004: 3). Pure reason, as the defining characteristic of humanity, required the stripping away of everything that might contaminate the mind. As Peperzak (1995:136) puts it, "Everything which allows even the least opportunity for doubt must be abolished in the name of the desire for certainty. Everything written or spoken must be ignored, all advisors and all traditions must be put into parentheses." In this formula of rationality, literature and the arts—culture, more generally—make no direct contribution to the domain of intellectual inquiry. They may provide some inspirational value, but do not have any direct rational contribution to knowledge, since they are imbued with ideas, feelings, values, and imagination. They may be valid objects of intellectual inquiry, but they do not comply with the criteria of the search for truth. Rationality's insistence on being value-free and without agenda leaves us in the curious irony that the pursuit of knowledge must "ruthlessly ignore all questions concerning human values and aspirations precisely so that inquiry may ultimately be of genuine human value and may help us realize our human aspirations" (Maxwell 1984: 16–17). The particular, the emotional, and the moral are all seen as capricious and corrupting of rationality. So the result is a world based on reason alone, rather than on experience, and divorced from our actual living in the world.

The emphasis on rationality and on humans as rational beings created a new version of Humanist philosophy in the Enlightenment. Here, again the initial focus was on eschewing the dogmatism of the Church and the need to rely on a supernatural being, but in promoting the uniqueness of humans among all beings, Humanism also set humans apart from the rest of nature. A firm divide between humanity and the rest of nature was thus enshrined (Ginn 2014: 2). As Val Plumwood (1991: 6) puts it, reason was taken as characterizing the authentically human, creating the "supposedly sharp separation, cleavage, or discontinuity between all humans and the nonhuman world, and the similar cleavage within the human self." Humanity becomes defined not as part of the natural, or physical or biological realm (or at best, as a special and distinct part) but as separate from it and in opposition to it. Nature is not only sharply divided off from the authentic human self, but is alien and oppositional to it, and usually hostile and inferior. And as Bostrom (2011: 4) points out, "the Enlightenment's legacy, including a belief in the power of human rationality and science, is still an important shaper of modern culture."

Technological domination of nature

The disenchantment of the world and the apotheosis of reason work together in the separation of humanity from integration with nature, and with human nature. With the physical world thus set apart, it then became the object of control. One of the key figures in advancing technology (a

[3] Weber is quoted in Greisman (1976).

[4] See for example Long (1948), Deloria Jr. (2006). Francis Bacon himself considered "magic" to be a science of understanding matter's hidden virtues, but his focus on magic has largely been ignored.

product of reason) to dominate nature is Francis Bacon, a seventeenth century philosopher and scientist (among other things) often pointed to as the father of empiricism. Though initially at odds with Cartesian rationality, the empiricism espoused by Bacon follows Descartes in seeing the world as separate from the human and as inanimate and mechanical. Bacon put emphasis on direct knowledge of the material world, and asserted that knowledge of natural causes should be used to extend man's power over nature for the benefit of human society and its inhabitants (Reydon 2012; Bostrom 2011).

White (1967: 1203) states that this "Baconian creed"—that scientific knowledge means technological power over nature—does not manifest much before about 1850. He dates the growth of technology and the transformation of nature to around AD 1000, when water power began to be more broadly applied, followed by wind power. He remarks, "From the 11th century onward, the scientific sector of Occidental culture has increased in a steady crescendo" (White 1967: 1204). After the 1850s, the development of the internal combustion engine leads to a radical transformation of technology that literally "takes off" in the early twentieth century with advances in petroleum refining.[5] White posits that the acceptance of technological domination over nature as a normal pattern of action "may mark the greatest event in human history since the invention of agriculture, and perhaps in nonhuman terrestrial history as well." This exhortation that nature can and should be transformed through technology for the good of humanity is the logic of industrial capitalism and has not been successfully challenged up to the present time.

The progression from the disenchantment of the world, to the split between humanity and nature, to the exhortation to dominate nature with technology—these three pose quite enough to reshape the planet. But added to these is an emergent creed that exhorts us to do this for our own personal benefit, without regard for others or for external impacts.

The puritan temper

Concomitant with this change is the rise of the Protestant Ethic, and the Puritan Temper: in this empty, material world, the fulfillment of worldly duties took on a moral mandate as the only way to live acceptably to God (Weber 1930: 41). We need to work hard to prove our divine worth. Gratification should be postponed, for it will come in the afterlife. Meanwhile, one should be industrious. Now in the original Puritan ethic, one pursued wealth not for one's own benefit (one should live simply), but for the benefit of the community. But as economic opportunities increased with the Industrial Revolution and urban middle classes rose into being, this would change.

Here emerges the model of Homo Economicus: economic man, a notion derived from the works of Adam Smith (Grampp 1948). Over time, the notion of economic man became somewhat of a caricature that William D. Grampp describes as "an alarmingly rational creature who invariably seeks his own interest, who reacts with lightning speed to actual and anticipated changes in his real income and wealth…he is conscious of no other activities which legitimately could engage a human being" (Grampp 1948: 315). This model is part of the scientific approach to social theory—eliminate the variables and formulate consistent laws. Hence, it is also called economic rationalism, and is the foundation of most modern economic theory (see Ostrom 1990). Such thinking is best exemplified by Garrett Hardin's (1968) "Tragedy of the Commons," which we are indeed facing now.

It is not until the early twentieth century that this combination of the "Protestant Ethic" and the "Puritan Temper" breaks down into pure pursuit of personal gain for one's own pleasure. Modern culture as we know it really emerged, in the U.S., shortly after the turn of the twentieth century (Bell 1972; Leach 1994; Robbins 1999), probably linked to the development of the internal combustion engine. As industrialization moved into full swing, and people increasingly moved from rural to urban areas, the cultural transformation we now call "modernization" began to take place. Writers such as Virginia Woolf and others noted in the early 1900s that *human* character had changed (Leach 1994). As Daniel Bell (1972) puts it, in the 1920s, "the rise of mass production and high consumption began to transform the life of the middle class itself," with the Protestant Ethic being replaced by what Bell calls a "materialistic hedonism." This is when the notion of "economic man" is extended to its logical conclusion.

As Historian William Leach puts it, the new culture was distinct in that it was

> unconnected to traditional family or community values, to religion in any conventional sense, or to political democracy. It was a secular business and market-oriented culture, with the exchange and circulation of money and goods at the foundation of its esthetic life and of its moral sensibility….The cardinal features of this culture were acquisition and consumption as the means of achieving happiness; the cult of the new; the democratization of desire; and money value as the predominant measure of all value in society (Leach 1994: 3).

[5] National Academy of Engineering (2015) "Petroleum Technology History Part 1—Background". http://www.greatachievements.org/?id=3677. Accessed January 9, 2015.

Nonetheless, this new culture continued the stance of its Western antecedents by equating itself with Civilization, implying that anything else is uncivilized (Robbins 1999). With the end of World War II, this culture was spread around the globe in the form of "development," a scheme overtly aimed at raising standards of living in poorer countries, and succeeding in some significant ways. But—either incidentally or covertly, as one might care to believe—linking the rest of the world into a market economy keeps accelerating the rapacious exploitation of the natural world.

This has been an incredibly fast, incredibly radical, and incredibly destructive transformation. What is clear is that the worldview that is commonly accepted as "rational" today is actually the result of specific historical, cultural and economic forces, not a natural product of intellectual inquiry. It is as ideological as any other cultural formation.

Colonialism and the spread of western culture

Putting these four together—and their coalescence was gradual and not uncontested, but did follow a certain logic—simply amplified the human penchant, at least in Europe and later Japan, for expansion and conquest. If rationality and with it science and technology, are what make us distinctly human, then those with more science and technology are more human than those without. As Castree and Nash (2006: 501) state, Humanism was used to "define some humans as more human through their distance from nature than others." This gradation of humanity across the scale of savages, barbarians, semi-civilized and civilized peoples would not emerge with clarity until the nineteenth century, but the ideas were well underway in the eighteenth century, if not sooner. In fact, the more the technological gap grew, the more strongly this hierarchy was reified in Western thinking. And it was not merely a racial hierarchy, but included gender, class and religion as well. It was the mentality by which the great age of colonization was justified: it was incumbent upon the more civilized to take a parental hand to the less civilized, and lead them—if they could, in fact, be led, which was never quite certain—towards a higher state of being.[6] As Ginn (2014: 5) puts it,

> Historically, a powerful standard of the human emerged from the Western Enlightenment and colonial encounters with various other peoples deemed by Europeans to be inferior in one way or another: due their environment, physiology, innate intelligence, or distinct cultural evolution, for example. The figure of the white, male, full-bodied, and heterosexual human was deployed to justify a series of epistemic and physical violence against subaltern groups.

Science was a part of this from the late eighteenth century. Like the U.S.S. Enterprise, Captain Cook's ships were loaded with scientists of all sorts, seeking out new life, new civilizations, and boldly going where no white man had gone before. Explorers after him such as La Perouse did the same, and many of the scholarly people sent out were also collecting data on "racial science," as Europeans set about proving their superiority to other races by scientific means. The colonization of Australia, deemed *terra nullius* or "empty land" despite an obvious Aboriginal population, is the most drastic example.

The hegemony of Western thinking dismissed and marginalized the indigenous knowledge and wisdom about how to list sustainably. Of course, Europeans never had the sole claim to systematic knowledge. Cultures everywhere have sustained themselves by developing systematic knowledge of planting, hunting, weather and climate, environmental conditions, medicine and health care, navigation and engineering—the list is extensive. Why these are not "science"? The short answer is, because the discourse of rationality tells us they are not (Amundson 1982). Because they do not come from the European tradition that defined science in a certain way. It is still the legacy of colonialism that traditional lifeways, worldviews and understandings are still seen as backwards and irrational, if not heathen. This is a powerful discursive force that still colors the dominant worldview and acceptance of what is knowledge and what is not.

Reason, rights and property

There is also, coming from the Enlightenment, the parallel trajectory of the Rationalization of human rights: questioning why one man should have power over another, rejecting the Divine right of kings in favor of democracy, leading to the rejection of slavery and colonialism, and producing the ever-broadening discourse of civil rights. This is based on the Enlightenment notion of reason and of human ability to rise above nature, and has been a very important trajectory in human social and political evolution. But it also brought its own problems that are directly relevant to the climate crisis today. For while human rights emerged out of an improved notion of what it means to be human, by the late eighteenth century it was being conjoined with rights to property (Golay and Cismus 2010: 2). This often uneasy alliance persists (Jacobs 2013) and is reflected in the focus on the individual. Thus human rights,

[6] While such sentiment is not so overt in the writings of the late eighteenth century explorers, it becomes much more clear in the early to mid-nineteenth century. Commodore Wilkes' (1845) journal of the *United States Exploring Expedition* is an excellent example.

as manifested in Western discourse, further the atomization of the individual. Each of us has inalienable rights, including of our property. But in this discourse, we have no inalienable responsibilities. The world "responsibility" appears nowhere in The Universal Declaration of Human Rights. The linking of "rights" with "profitability" echoes profoundly in our society today: it is perceived by some, perhaps by many Americans, that we have a right to make as much money as possible, and that no laws or regulations should stand in the way. This comes out in every attempt by the U.S. government (among others) to curtail greenhouse gasses or other environmentally harmful actions. This is not to say that the progression of human rights has not been a crucial and outstanding part of the evolution of humanity. Just as rationality was needed to break free from the intellectual tyranny of the church, human rights are needed to end other forms of tyranny. But…then what? What is next?[7]

The pitfall of scientism

My point heretofore is that modern science results from a historical agenda that is both political and economic. In its truest form, science is open and expansive in nature. As Williams (2015: 4) notes, science does assume and require that the world can be made sense of by a rational mind, but that there is no reason that science "should require that the rationality and order derive from, or have their roots in, any particular sort of reality." Until the nineteenth century, there was no clear boundary in Western thought between science and philosophy, and the word science was used simply to mean "knowledge" (Hutchinson 2011). "Science" was considered just one of many approaches to knowledge, and the physical or natural sciences were not conferred a special status. As Hayek (1955:12) states, "Those who devoted themselves to those fields indeed readily chose the designation of philosophy when they were concerned with the more general aspects of their problems, and occasionally we even find 'natural philosophy' contrasted with 'moral science'." This began to change during the nineteenth century: "science" as a designation became more confined to the physical and biological disciplines, which Hayek asserts "at the same time began to claim for themselves a special rigorousness and certainty which distinguished them from all others."

The resulting reification of science results in "scientism," what Hayek (1955: 15–6) describes as "an attitude which is decidedly unscientific in the true sense of the word, since it involves a mechanical and uncritical application of habits of thought to fields different from those in which they have been formed." Scientism is a cultural phenomenon wherein science is commonly regarded as providing knowledge about the natural world that has "an unsurpassed claim to reality and truth" (Hutchinson 2011: 1). As Hutchinson goes on to explain, "Scientism is the belief that all valid knowledge is science. Scientism says, or at least implicitly assumes, that rational knowledge is scientific, and everything else that claims the status of knowledge is just superstition, irrationality, emotion, or nonsense." He adds that many leading scientists, and science popularizers, speak and act as if science and scientism are one and the same. This results too easily in a confusion between the two, and a rejection of science when scientism is actually the problem. (Hutchinson 2011: 1).

Hayek states that the scientistic (as distinguished from the scientific) view is "not an unprejudiced but a very prejudiced approach which, before it has considered its subject, claims to know what is the most appropriate way of investigating it." Hutchinson (2011: 1) adds that "In so far as scientism is an overarching world-view, it is fair to regard it as essentially a religious position." Williams (2015: 3–4) makes an even stronger case, stating that

> scientism entails a metaphysical commitment to naturalist, reductive or emergent materialism and tries to define science in a way that includes, not only a commitment to empirical methods, but also to a particular metaphysics. Within scientism, then, questions are framed in terms of this particular metaphysical perspective, and the propriety of any method is evaluated primarily in terms of whether it deals with the world as if it really is as naturalist materialist metaphysics claims it is. Therefore, a scientistic science can only produce results compatible with or affirming of the same metaphysical commitment it started with, since the validity of the metaphysics itself is not a question that can be answered scientifically.

While not all scientists are scientistic, and undoubtedly exercise plenty of irrational thought and behavior in their personal lives, the scientistic attitude provides a plethora of obstacles. It is scientism that makes the National Science Foundation (NSF) a major funding agency while there is no comparable body in the United States for the social sciences (except for the puny way in which they fall under the rubic of the NSF), and far less money for the National Endowment for the Humanities or for the Arts.

How does this relate to climate change? A quick example. At the Smithsonian I was involved in developing a project called IndiGEO—a combination of my own "Indigenous Geography" approach with the Smithsonian's Global Earth Observatories (SIGEO). The idea was to bring

[7] While I am discussing human rights in the broadest sense, there are sub-areas within the human rights arena that approach the issue more holistically, including the Declaration of the Rights of Indigenous Peoples, and the United Farmworkers Union.

culture and science together in a project for Indian Country focused on adaptation to climate change. The lead scientist brought in three additional science colleagues, and I gave them all my presentation on Indigenous Geography. As described elsewhere (Herman 2008), this is a methodology for collecting and presenting community-based indigenous knowledge about place in a holistic framework. I explained—with the aid of extensive graphics and illustrations—how Indigenous epistemologies and ontologies differ from the Western models, and how the Indigenous Geography methodology was focused particularly on the values for sustainability. At the end of my presentation, one of the scientists—a respected forest modeler—put up his hand and asked, "So…where's the hypothesis?" In the end it became clear that none of the scientists saw any value to the cultural component, and the entire project fell apart. This emphasis on technological solutions for the challenges of climate change is a facet of scientism (Hutchinson 2011).

The scientistic worldview is not only not scientific but also not "rational" at all. Val Plumwood argues that the human-centeredness of this so-called rational thinking "is not in the interests of either humans or non-humans, that it is even dangerous and irrational." It disenables us from understanding "our embeddedness in and dependency on nature," distorting "our perceptions and enframings in ways that make us insensitive to limits, dependencies and interconnections of a non-human kind." We have become unable to "see ourselves as part of ecosystems and understand how nature supports our lives…. This failure" she states, "lies behind many environmental catastrophes… (Plumwood 2009). It has fostered an ideology of environmental exploitation that was hitherto unheard of and even anathema to most peoples on Earth. All of our ancestors would have found it horrific if they could see us now. Dan Wildcat (2009) calls it the path of "self termination."

All of this is to say: climate change is a cultural issue. If we want to do something about climate change, we need to tackle it from the angle of culture—using science. Can we move culture further in the direction of the wisdom of our ancestors—to ensure that there is always enough? I think we can.

Traditional knowledge

To begin with, let us position traditional knowledge systems in relation to Western science, since the culture of scientism posits that non-Western knowledge is not "science." The traditional cultures of the world developed deep and complex knowledge systems based on their own traditions of observation, experimentation, trial and error, philosophical exploration, and—most importantly—lived experience in places over long periods of time. This is what Wildcat calls "multigenerational deep spatial knowledges" (Wildcat 2009: 15-6) that present a different way of looking at the world from the atomized, anthropocentric and "economically rational" viewpoint predominant in Western culture. Indigenous worldviews are characterized by a fluidity between cultures and environments, wherein individuals understand their position in the world in terms of relationships to larger processes. Tewa Indian scholar Cajete (2000: 75, 79) describes this worldview as follows:

> Everything is considered to be 'alive' or animated and imbued with 'spirit' or energy. A stone has its own form of animation and unique energy. Everything is related, that is, connected in dynamic, interactive, and mutually reciprocal relationships. All things, events, and forms of energy unfold and infold themselves in a contextual field of the micro and macro universe….The ultimate aim is not explaining an objectified universe, but rather learning about and understanding responsibilities and relationships and celebrating those that humans establish with the world.… [It] is also about mutual reciprocity, and which presupposes a responsibility to care for, sustain, and respect the rights of other living things, plants, animals, and the place in which one lives.

At the same time, such an epistemological standpoint is not antithetical to the use of technology, but differs in approach to how and towards what ends technology should be used. From Native Hawaiians having electricity in their palace before the White House and Buckingham Palace had it (Burlingame 2008), to the highly progressive and innovative strides towards reducing carbon emissions found in Indian Country today, Indigenous peoples have shown a readiness to adapt technological means they see as useful.[8] But their cultural traditions posit that knowledge resides in our living in this world, not in controlling it (Wildcat 2009:16).

There are those including myself (Coleman and Herman 2010; Cajete 2000; Johnson and Murton 2007; Baker et al. 2011) who have posited Native Science in opposition to Western Science. In the formulation used by Baker et al. (2011: 1), the opposition looks like this:

Native Science	Western Science
Holistic	Discipline-based
Locally valid	Universally valid
Contextual	Abstraction
Value-Laden	Value-Free

[8] See, for example, the work of the Intertribal Council on Utility Policy in promoting wind energy.

While there is some validity to this distinction, I suggest that it is no longer useful and can even be misleading, because there are ways in which each manifests the characteristics of the other. Rather, these are points along a continuum that we must not perpetuate through "scientism" on one end and some reified "indigentism" (or whatever) on the other. The time is now to put these two together and collectively call them "knowledge." The increasing engagement of scientists working with indigenous peoples in the Arctic on climate change points out the growing recognition that these knowledge systems complement each other. Baker et al. (2001: 3–4) present other examples where the Western scientific approach was unable to solve problems but solutions came from the Indigenous knowledge holders. As my colleague Arctic anthropologist Igor Krupnik put it, "I wouldn't put it like 'indigenous people' and 'scientists.' It's a difference between someone who lives in the environment daily, and someone who studies it [at a distance]" (Loury 2012).

Because they are place-based, traditional knowledges are aimed at deriving the wisdom to ensure survival. They embrace that we are part of the Earth, and dependent on it, and dependent on each other and all the nations of beings that inhabit this earth. And they think towards the future, and plan accordingly. This, I suggest, is the kind of knowledge approach that is needed globally today.

Now the question arises, are these two approaches to knowledge—Western Science and traditional knowledge—incommensurable? Can we, as I suggest, lump them together under the single umbrella of "knowledge"? Some, such as Cajete (2000) would say yes; others (particularly Western scientists) might say no. If there can be no agreement here, what is needed is what Sami scholar Rauna Kuokkanen calls "multi-epistemic literacy."[9] We need to engage in dialog and learning across these two approaches to knowledge so that we can at least be literate in both, if not seeing them as parts of a whole. Turnbull (2007: 142) similarly calls for creating "a third space, a space in which the possibilities of agonistic pluralism can occur based on a performative rethinking of knowing and mapping."

What is clear is that right now, the dialog (if it can be called that) is mostly going one way: incorporating traditional knowledge into Western science and technology when it proves useful to do so, but not changing the dominant epistemological outlook (as with my IndiGEO colleagues). And clearly there is a lack of literacy here, and a lack of the will for such multi-epistemic literacy: for while Indigenous peoples seem to have no problem adopting Western science and technology for their own uses, and modifying their worldviews accordingly, the opposite does not seem to take place much. Such is the problem of hegemony, which needs to be overcome.

There is no single, discernable true way of seeing or knowing, short of complete nirvana. For we less enlightened beings, all knowledge formations are like the proverbial blind men and the elephant, each feeling and identifying a different characteristic, none of which are wrong, but all of which are needed to discern a larger understanding. And they are not necessarily translatable, or rather, much information is lost in translation. Hence, we need to be humbly multi-lingual—multi-epistemic—in our approach to knowledge. Dialogical tension (Turnbull 2007: 146) is useful and productive.

Indigeneity

While the matter of knowledge is important, more important still is our being in the world. Here, I contrast modernity with a notion we might call "indigeneity." By this I do not mean any essentialist notion, that one kind of people are any better or wiser than any other. All of our ancestors were Indigenous once, somewhere. Rather, my focus here is on a way of being in the world: being indigenous to a place means having a depth of knowledge, understanding, and connection to that place. Indigeneity also includes a sense of stewardship and responsibility for managing that place and working respectfully with its non-human inhabitants. And certainly before, and perhaps to a lesser degree, after Christianity wreaked its havoc on traditional ontologies, this included holistic and spiritual engagement. Prior to that shift away from agrarian society that took place with the Industrial Revolution, most people on this planet retained some degree of Indigeneity under this definition.

I am using the term "indigeneity" differently from the way it appears in much contemporary scholarship on the rights and struggles of indigenous peoples (see, for example, Hauser-Schäublin 2013; Fowler 2011; O'Sullivan 2006; Barnard 2006; Lewallen 2003). In that literature, "indigeneity" refers to being an indigenous person or group, as either defined under internationally recognized proclamations such as the UN Declaration on the Rights of Indigenous Peoples, or within or about Indigenous communities themselves. This is an important discussion and movement in its own right, but is not related to my argument herein. Rather, I am eschewing such essentialist or political notions of being indigenous in favor of mobilizing a behavioral one. This is not to diminish or demean the struggles of Indigenous peoples for sovereignty and identity, but to address a different matter altogether: how can humanity live sustainably on this planet?

My argument draws on Dan Wildcat's call for "Indigenous Realism": that the approach to living in this

[9] I am drawing on Sundberg's (2014) reading of Kuokkanen. See also Shaw et al. (2006) for a critique of the Indigenous-Western binary.

world manifested by Indigenous cultures—in multitudinous forms but with some key, core principles—offers real, practical insights that the non-Indigenous public could and should learn from. It is a call to see the fallacies and pitfalls of the Western tradition in its approach to the natural world, and turn towards something more realistic.

Toward that end, strengthening the position of actual indigenous peoples is an important strategy, because the rationale that dispossessed them is the same as the rationale for conquest of the environment. Fostering Indigenous peoples and their lifeways is part of the path to returning the rest of us to grasping the logic of indigeneity as I am defining it here. But we must beware an essentialism that reifies bloodlines with behavior. There are plenty of modernized indigenous peoples who are just as exploitative as their white neighbors may be, and many non-indigenous peoples who embrace holistic worldviews and practices.

My conception of Indigeneity is a universal call for each and all of us to understand, connect with, relate to, and act in balance with the places in which we live. It is the ultimate form of "Think Globally, Act Locally": if each of us takes responsibility to sustainably manage the places in which we live, then the entire world will be taken care of. But to make this idea catch on, we need to enter it into the popular discourse by redefining what is "rational behavior."

"Rationality" and wisdom

Let me tentatively suggest a new formulation called "Rationality," with a capital "R". This form of Rationality reclaims the knowledge, insights, and wisdom which have been pushed out since the Enlightenment and the Scientific Revolution. It involves removing the blinders—metaphysical and cultural—of scientism and small-r "rationality" (e.g., economic rationality) to understand the roots of climate change and to determine an effective way forward. "Rationality" does not accept infinitely expanding consumption based on a belief that when things run out, we will figure something out. That is a castle made of sand, or as Dan Wildcat (2009: 51) calls it, "laying a destructive foundation." "Rationality" does not involve polluting our own nest so we can keep costs down for the short term, without regard for long-term consequences. And Rationality does not involve discounting human values and experience as "unscientific" and therefore outside the realm of data worth careful consideration. That is ideology, not Rationality.

Real Rationality would take a careful look at the science of how we are living and what is going on with our planet. It looks holistically at both at our world and at our selves and our experience of the world. It asks questions about how our values reflect our interconnection with and dependency on other beings. It is attentive to the place in which human action is situated—the web of relationships and their trajectories from past into future, and hence the likely impacts or consequences of one's actions. At the same time, this Rationality seeks not detached rationality, but transcendent meaning—transcendent of the bonds of ego. And it informs our cultural practices accordingly. "Rationality," in short, is the path to wisdom.

As John Kekes defines wisdom, it is a kind of knowledge accessible to anyone:

> Wisdom consists, partly, in understanding the significance of what everybody knows. Depth and priorities make this understanding possible. What a wise man knows, therefore, is how to construct a pattern that, given the human situation, is likely to lead to a good life. This knowledge is not esoteric, for it is within everyone's reach; nor does it require a special skill or talent, for it concerns the recognition of possibilities and limitations that are the same for everyone. But it does take self control, enabling a person to modify his wants in accordance with his ideals; self-knowledge, for knowing what his wants and ideals are; breadth and depth; constancy, so that adversity will not deflect him from his commitments; and the hierarchical ranking of his commitments, for judging what is important to him (Kekes 1983: 280).

If we combine this common sense approach to wisdom with the more holistic thinking of my proposed Rationality, we open a path to a new path of human evolution. We have already had the Agricultural Revolution, the Scientific Revolution, the Industrial Revolution, and the Medical Revolution. Now it is time for the "Wisdom Revolution": a new acceptance of what is truly Rational and a movement away from the unsustainable lifestyle that Western culture has promoted planet-wide.

Wildcat similarly, has made an articulate case for embracing and adopting what he calls Indigenous Realism. This approach entails that "we, members of humankind, accept our inalienable responsibilities as members of the planet's complex life system, as well as our inalienable rights" (2009: 9). In Wildcat's view, scientific knowledge is useful but does not generate life-enhancing knowledges for humankind. He emphasizes the importance of knowledges gained through attentive living, through understanding humanity's place in the web of life and our relationships and responsibilities towards our relatives—the other nations of beings with whom we share the planet. Wildcat points out that Indigenous Realism converges quite closely with what science calls complex adaptive systems—"fluidly changing collections of distributed interacting components that react to both their environments

and to one another," such as "the electric power grid, telecommunications networks, the Internet, biological systems, ecological systems, social groups, and even human society itself" (Argonne National Laboratory 2015).

A related school of thought has emerged in the West under the rubric of "Post-humanism." As Franklin (2007: 1) describes posthumanism, "It rejects the notion of the separability of humanity from the non-human world…and the division of knowledge into separate domains. Rather, it seeks to recover the complex ways in which humans are entangled with non-humans." Ginn (2014: 1) adds that it "emphasizes the different ways humans are continually produced through material forces, discursive regimes, and through nonhuman agencies. One of posthumanism's key aims is to dissolve binary distinctions that characterize humanism, most notably culture/nature and self/world." This emergent approach clearly accords with my call for indigeneity, marking a distinct change within Western thinking—reclaiming ground lost under the Enlightenment thinkers. How much it will actually influence behavior, however, remains to be seen. Sundberg (2014) and Panelli (2010) have argued that posthumanism (at least in the discipline of Geography) is tightly bound in and by Eurocentric scholarship, reproducing colonial ways of knowing and thereby further subordinating other ontologies. But posthumanism clearly signals a potential shift towards a more "indigenous" epistemological framework, and Sundberg (2014: 38–42) offers a useful critique for how it can be further decolonized, particularly with attention to place and taking responsibility for the paths we walk. Properly engaged, posthumanism could have a very positive impact.

In that vein, I prefer to use the term "indigeneity" to Indigenous Realism because I feel the latter term suggests a philosophical rubric, among the many "isms" out there. Such concepts are useful academically, but my focus is on behavior, on how we live our lives. Rather than strategizing how to manage nature, indigeneity involves learning how to live well and sustainably as one small but powerful part of nature.

Again, technology is no enemy to indigeneity. Rather, technology must be embraced and utilized effectively for the collective good—not just of humanity, but of the entire web of life. We should be drawing on the wisdom and knowledge of our ancestors to learn how to live in a more balanced and sustainable manner with our local environments, and applying technology towards that end.

Whither romanticism?

Let me be clear that embracing indigeneity is not the same as a romantic notion of returning to nature or to our primal lifestyles. True, the Romanticist movement that peaked in the first half of the nineteenth century was a backlash against the rationalization of nature I described earlier; and yes it engaged in the glorification of Native peoples. For Native peoples, however, romanticism has largely been a two-edged sword. It is what Mary Louis Pratt (1992) has called "anti-conquest": glorifying the conquered other. It leads non-Native peoples to have appreciative thoughts and attitudes not towards those peoples today, but toward an idealized fiction of how they used to be as Noble Savages. Such romantic ideas can often co-exist with overtly hostile and even racist attitudes towards present-day peoples.

What I wonder is whether this two-edged sword can still be wielded a little bit to encourage a cultural shift towards indigeneity. I realize this is fraught undertaking, but my thinking derives from what most Americans over 50 probably remember the "crying Indian" anti-littering campaign on television in the 1970s. The actor, Iron Eyes Cody, turned out not to be a real Indian, but that did not matter much outside of Indian Country. The Washington Post (2013) recently anointed this campaign as the most powerful public service commercial of all time. It struck a cord. We still remember it. Like it or not, this image had a real resonance for the dominant culture. The emptiness of modernity summons an aching for Indigeneity, for a connection to a more meaningful world and a more integrated way of being in it. Modernity left people craving something that is more "authentic." Phillip Deloria (1998) has documented the stages of "Playing Indian" in White America, as an important part of American identity. And at the time of this writing, there is an active debate regarding whether Native American sports mascots honor or degrade Native peoples. The use of the Indian arrowhead and the buffalo as symbols for the National Park Service, and the Crying Indian public service announcement, show engagement with the Indian has served as a sort of National Unconscious Archetype of a respect for the wilderness.

Is it romantic to say that we are interconnected with and part of the Earth, to use the Lakota phrase "all my relatives" in referring to the soil, the rocks, the water, the air, the plants and the animals? No, actually, this is science. We are one with our environment. The boundary between our bodies and our environments is not just permeable, but a blur of movement as components from Earth, Air, Water and Fire cycle through us. We partake of, and contribute to, the Hydrological cycle, Atmospheric circulation, the Nutrient Cycle, and the Mineral cycle. We embody, and return to, the animal, vegetable, and mineral kingdoms. We are what we eat, drink and breath, and we share those elements with the rest of the Earth. Even our DNA tells us that we are related to all other species on the planet (Zimmer 2013). The Lakota phrase "all our relatives" becomes a scientific reality when we consider this. And when we think of the world as "relatives" rather than

"resources," we will treat it differently. It does not have to be romanticized.

But these are all facts, and as a Hawaiian colleague of mine (who works at NOAA) likes to say, "Tell me the facts and I will understand. Show me the data and I will believe you. But tell me a story, and it will live in my heart." I suggest we need to employ some storytelling. The fact is—for better or worse—that despite scientism, popular culture in the United States is much more leaned towards the romantic, as demonstrated by the plethora of television shows and movies regarding outer space, vampires, hobbits, ghosts and the supernatural.[10] I am simply wondering whether this interest can be harnessed to direct attention towards real indigeneity, and I suspect it could help if it were done right. It is all a matter of communication. As Callicott (2013) puts it, "The putatively "value-free" discourse of science—a mixture of mathematics, statistics, and technical terminology—is not readily or easily accessible. The discourse of the humanities—rich with imagery, metaphor, emotion, and honest moral judgment—resonates with a much wider audience."

Communication

Contemporary social theorists such as Jürgen Habermas, Anthony Giddens and Daniel Bell suggest that "the tension between [Western-style] rationality and transcendent meaning might be overcome by the development of a shared language people could use to relate to transcendent meanings within a rationalized context" (Besecke 2001: 365). I have already suggested that the traditional lifeways that were displaced by modernity have a better approach to living on the planet that we can learn from and harness to move forward in a more sustainable manner. How can we combine traditional wisdom with modern science and sensibility to produce a shared language of Rationality that will have real resonance for the general population? How can we bring culture, science and traditional knowledge together into a new discourse of wisdom for how to live on this planet? I offer one possible take on that: the values of the voyaging canoe. This framework is based on my extensive field research on the Oceanic voyaging canoe as well as culture, values and conservation in Hawaii and Micronesia. From 2000 to 2005, I worked in Hawaii and Micronesia on my Pacific Worlds project (http://www.pacificworlds.com), collaborating with seven communities to produce indigenous geography websites representing their cultural knowledge. Then, from 2010 to 2013, I conducted extensive interviews in Hawaii for a proposed exhibition for the National Museum of the American Indian, "Aloha ʻĀina: Hawaii, the Canoe and the World." Both of these projects underwent rigorous review and approval processes with the persons and communities involved. From this work, I derived five values for the voyaging canoe as the basis for that exhibition.[11]

Polynesian voyaging was brought back to life in 1976 with the building of the Hōkūleʻa voyaging canoe and its being sailed from Hawaii to Tahiti guided by Mau Piailug, a traditional navigator from Tahiti. Forty years later, a plethora of voyaging canoes have come into being and a new generation of voyagers are learning the art of their ancestors. As I write, the traditional Polynesian voyaging canoe Hōkūleʻa is engaging in a three-year voyage around the world, to raise consciousness about the need to live sustainably. I suggest that the voyaging canoe offers a means by which we can express wisdom for living on this planet in very clear and comprehendible terms that has real resonance.

First, it cannot be denied that the settling of the Island Pacific is one of the greatest human adventures of all time. Sailing mostly upwind across an ocean that covers a third of planet, finding tiny dots of land, and *returning*. Then going *back*. And all of this on open double-hulled canoes built with stone-age tools and materials—a thousand or more years before Columbus. WOW. This is a great Romantic story, full of life and death, bravery against the elements, teamwork and survival, as these relatively small crafts crossed the most massive ocean on the planet. Now, there is a Hawaiian proverb that "the Canoe is an Island, the Island is a Canoe." This emphasizes that the same circumstances, the same values and conditions, apply to both situations. Both are limited vessels surrounded by ocean, and what you have is all you have. How do you make it work?

First of the five values is knowledge (ʻIke): While for a century it was assumed impossible that Pacific peoples with stone-age technology and no written language could navigate back and forth over long distances, the voyages of the Hōkūleʻa with Micronesian navigator Mau Piailug have proved that wrong. Pacific navigators developed extensive knowledge based on observation of the stars at sea, observing their risings and settings at different latitudes and working out a system of wayfinding based on star paths. But they also read the swells of the ocean, and systematized that knowledge into useful means for guiding the canoe in the absence of stars. The subtlety of their ability to read the swells required training from early childhood. Methods for finding land beyond the horizon also used the

[10] See also Nisbett 1999.

[11] The Polynesian Voyaging Society, with whom I worked closely, espouses six values which are similar to the five I propose. See http://www.pvs-hawaii.com/about.htm. I had derived mine before learning of theirs, but those I worked with there approved of my five.

swells and their refractions off land, as well as detailed readings of clouds based on color and movement. It was important also to know which land-based birds (and which stages of life for those birds) could be reliably followed to find land. All of this knowledge is encoded in traditional languages, where we can find rich vocabularies of terms for conditions of the sea, animal life in different stages, and so on.

This is the science aspect, but as with all traditional cultures, this science involves intuition and a deep spiritual connection with the world. As master navigator Pius Mau Piailug told his Hawaiian apprentices, there were two kinds of navigators on his home island of Satawal: those who only knew how to navigate, and those who knew both navigation and magic. These latter were considered the higher ones. My informants from Ulithi Atoll in Micronesia also spoke of the use of magic. Like other native peoples, they understood another science that involves the unmanifest world, and they knew how to use it. The Enlightenment discarded "magic," intuition and spirituality, but they are an essential part of the human experience, and the means by which our transcendent values are informed.

The second value, *po'okela*, refers to the Pursuit of Excellence: as one culture keeper told me, "If you're going to build a voyaging canoe that can go 2,500 miles *and back*, 'good enough' is not good enough." With no usable metals available, Hawaiians and their Polynesian forebears transformed lava rock into tools to hew trees and carve canoes. They twisted coconut-husk fibers into rope that held the craft together, and breadfruit sap into glue. There were many plants involved in the production of even the simplest canoe, and this required both knowledge and skill to utilize them. We are talking about technology, and in this humanity currently excels. That is good, and we need to keep doing that. But we need to direct that technology towards a higher destination: living wisely and sustainably.

Third and fourth are two related terms: *Kuleana* refers to your area of responsibility, but also to rights. In modern parlance your kuleana is your "turf"—an area for which you are solely responsible, but which is also your domain. As I stated earlier, economic rationalism and even the discourse of Human Rights poses no responsibilities whatsoever. If we want to save the planet, we need to have not just inalienable rights, but inalienable responsibilities—towards each other, towards the myriad nations of beings with whom we share this planet, and towards the Earth itself. It is the individualism of the Enlightenment, and of modernity, that has enabled us to think we can do what we want and not concern ourselves with the external impacts on the Earth and on others. Rights and responsibilities go together. If you do not attend to your responsibility, that puts a burden on someone else, and the system starts to break down. We are all in the same boat. Do your part.

Pono, for me, is a most important and useful Hawaiian word. An Aleut elder once glossed it for me as "In harmony with all of Creation." As a student of Chinese Buddhism, I think of it as "In accordance with the will of Heaven." It means to act in a way that balanced, not just socially, but cosmically. It is, in short, to do the right thing in any given situation, even if that is to your personal disadvantage. Sometimes you have to take the hit to accomplish the greater good.

The fifth value is *mālama*: this refers to nurturance, like a mother looking after a child, or farmers after their crops. You nurture what is in your care, feed it, ensure that it has everything it needs to thrive, and heal or fix things when they are damaged. It recognizes the sentience, the spirit, in those things we look after. We mālama things not just for our own benefit, but because it nurtures the spirit of the world around us. Especially, we need to look after the vessel that carries us. Hence, the name of the *Hōkūle'a*'s World Wide Voyage: "*mālama honua*—take care of the Earth." On board, this means not only do you mālama the canoe, but also each other, and your supplies. What we have is all we have: we need to look after it, make it last, make it endure, make it flourish. We all need to mālama honua, by being pono in our management of our kuleana, using 'ike and po'okela.

Of course, all of this works best with *aloha*—compassionate, loving kindness. And this may be where the culture of individualism provides the weakest link. But as with all of these values, it can be reclaimed if we accept that we are all in the same boat.

Our own voyages

Today, with global interconnectivity and global environmental issues, of which climate change is the most important by far, the Earth is the canoe, the Earth is the island. It is not just a metaphor. And we need to understand it as such, and practice those five values that enabled survival on the canoe and on small islands. It is time we replaced the value of self-interest with the values of living and working together. It is time to promote a culture that unites science with wisdom. Otherwise, we are lost.

Knowledge should be about putting our best values into practice, NOT about giving everyone the freedom—and incentive—to pursue their own self-interest at the expense of others. If the Anthropocene tells us anything, it is that the Age of the Individual is over. We are all in the same boat, and that boat is getting smaller, and leakier, and more of trash. And that is just not rational. Let us tell a new story that encourages us how to live Rationally and sustainably on this planet. Let us learn again how to be wise.

Now, how to do it? How can we live wisely and sustainably, acting in balance with the places we live, especially with a crisis so complex as climate change? What do we do in the hard, nitty-gritty world where things are never simple, where problems always involve trade-offs, and where the best intentions are often crushed by the juggernauts of capital and state? Well, in the words of the late Buddhist master Hsuan Hua, "Try your best." What I have attempted to provide here is a framework for thinking that can guide action.

I have elsewhere used the canoe idea to describe the journeys we undertake in the course of our regular lives and work (Herman 2013). In my own life, I find it useful to remember that we are always "in the canoe," trying to raise our destinations out of the sea. Whether it is a classroom, a workplace, a car, a home, or an entire business or government entity, if you treat it as a voyaging canoe—all participants in it together, each needing to do his or her part, and all looking after and taking care of tasks, equipment, people, whatever, and with a common goal that is appropriate (*pono*)—then you will have a happier, more fulfilling, more successful and less harmful outcome. The more of us who think and act this way, the better chance we have of mitigating the impacts of climate change.

So in keeping with Sundberg (2014), Turnbull (2007) de Certeau (1984) and others, I conclude by emphasizing our daily journeys. We know that in our paths through the world, we play active, constitutive roles with the people, places, and webs of relationships among whom we pass. It is important to *enact* the recognition of the principles at stake. Some people—corporate CEOs, large property holders, managers, etc.—have larger spheres of influence than others, but the principle remains the same: understand your immediate situation, as well as the Earth itself, in terms of the values of the canoe: Are you using the best knowledge available? Are you pursuing excellence? Are you taking care of your areas of responsibility? Are you acting in a way that is *pono*—to yourself, to others, and to the Earth? And do you *mālama* those things and places that need your attention? From the small practical things such as recycling, using less energy, and so forth, to taking a stand against practices that are clearly unbalanced and unsustainable, to getting into government office at whatever level, we all have the ability to make some difference. And the more, the better. That does not mean it is easy. But if we can educate a new generation to see it as self-evident that the natural world is a part of ourselves that we should know and care for responsibly, to strive for excellence not for themselves but for their communities, and to see the Earth as this marvelous, living, finite vessel that carries humanity around the galaxy, it will become much easier.

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