Humans in the Landscape

Historically, the field of ecology has often treated humans like an invasive species to be removed from the landscape. This should be no surprise, as modern humans are most often the cause of the destruction and degradation that ecology seeks to remedy. The classical model of wilderness conservation in the United States has often set up a duality that pits the survival of intact ecosystems against human needs and priorities. But it was not always thus, nor need it be, as traditional cultures around the world have accommodated both priorities simultaneously. Recent trends in environmental science have been in the process of reinventing that wheel - coming around to what in many traditional cultures are basic facts: the interconnectedness of life, the intelligence of natural systems, the need for reciprocity and human participation in the surrounding ecology. There is recognition that we need to move from an ideal of pristine nature - untouched by human hands - to one where humans are desired co-creators of the landscape, where they see themselves as wanted and necessary collaborators in the ongoing motion of the world.

Modern Western humans are saddled with the echoes of a mythology that preaches instead that we were cast out of paradise, that we have no place in the utopia of earthly existence, or worse yet, that we have dominion over all nature to do with as we please. And we have certainly behaved as such. Robin Wall Kimmerer, in *Braiding Sweetgrass,* tells a contrasting origin story to the one we have received from Genesis. Her story tells of Skywoman, who falls from a heavenly abode and forms land on Earth from a handful of mud, as a haven for all plants and animals. This is a cosmology where humans are not a negative or even neutral force, but one in which they are active agents enriching the earth for the benefit of all beings. She speaks of

creating cultures of reciprocity, where humans give back to the Earth for what they take, and engage in stewardship to balance and justify our harvest. And this history, this ecological ethos, is not simply a fantastical vision of some utopia. It has been and continues to be a potent force in shaping the world we live in.

There is a current in contemporary ecological discourse of Indigenous scientists seeking to reconcile Traditional Ecological Knowledge with Western scientific methods. A model has been advanced, referred to either as "walking on two legs" (Dickson-Hoyle et al 2021), or as "two-eyed seeing" (Bartlett et al 2012), which offers a new path forward in incorporating the methods of Western science augmented by the Indigenous wisdom that has accumulated over millennia. Restoration, in this conception, is not solely about returning the non-human world to some intact primal state, but includes restoring Indigenous peoples to their rightful roles as stewards and protectors within the landscape. In this paradigm, there is space for non-Indigenous peoples to advocate for restoration and to perform science that furthers ecological agendas. But I would argue that while this objective is extremely important from both a social justice and ecological perspective, it needs to go further. I think that humans - regardless of Indigenous status - need to be essential ongoing components in the restoration of the world, and that we need to move more toward Traditional Ecological Knowledge and toward historic methods of landscape maintenance, while preserving our scientific rigor and methodology. The integration of these two epistemologies is not simple; challenging the neutrality and objectivity that science professes in favor of a system of thought that has no written record, but relies on oral tradition and cultural wisdom will take some adjustment. But the goal is important: taking up the sacred responsibility as practiced by Indigenous societies that our roles should not be as separate entities

that intervene to restore the landscape and then retreat, hoping it will stay pristine; but rather as direct participants in an ongoing collaboration between us and the world.

One notable example, that typifies the kind of human intervention that is needed, is the Indigenous use of fire in the Pacific Northwest. Traditional burning in this area was used to maintain the prairies as vast wild gardens, maintaining optimal conditions not just for berry bushes and camas fields, but also for deer, elk, and bear who foraged on the lush grasses and wild plants that regrew after each fire (Long 2021, Storm & Shebitz 2006). It is estimated that millions of acres were intentionally set on fire each year, which happened with such regularity and consistency that many plants in the environment depend on it (Dunwiddie & Bakker 2011). There has been debate about the degree to which fire regimens in this area were anthropogenic, but an analysis in Okanagan areas of British Columbia of tree-ring scars where fires were initiated shows that many historic fires were concentrated near where there were pre-contact indigenous settlements (Dickson-Hoyle et al 2021). Native histories often attest to fire histories to maintain desirable ecological characteristics that are later supported by scientific analysis (Peter & Shebitz, 2006). Yet the displacement and genocide of Indigenous peoples, and the following change in land use practices, has resulted in the loss of ~97% of the native prairies (Dunwiddie & Bakker 2011), and the buildup of excessive amounts of fuel that all but ensures a catastrophic megafire sometime in the future.

Indeed, lack of cultural burning has led to many problems throughout our region, especially in open areas that depended on this disturbance to prevent encroachment of fast growing conifers and invasive species that shade out or displace grassland species in sensitive habitats (Pellatt 2014). In the prairies of our region this loss of regular burning can be seen in the

invasion of non-native species, the encroachment of conifers into open spaces, loss of resource cycling normal to fire regimes, and the density of mosses which can make germination of native seeds more difficult. In this situation, Western science has recognized the problem and validated the traditional tools used to address it, and is in the process of reviving this practice in collaboration with Indigenous land managers.

Another example of the beneficial effect of human interaction in the landscape comes from a story Robin Kimmerer tells about a study she conducted to test an Indigenous assertion that sweetgrass grew best when it was tended and harvested. She and a graduate student performed a controlled experiment that compared sweetgrass patches that were harvested according to two different traditional methods against patches that were left untouched. The results showed that the plants did indeed grow best when they were tended and harvested, by either of the two methods, while the control groups languished. Similarly, a study conducted here on the Olympic Peninsula showed that traditional tending and burning methods had positive effects for beargrass, an ecologically and culturally important plant, with traditional use by the many Northwest Indigenous peoples (Hart-Fredeluces et al 2020).

Like beavers or ants, other notable natural engineers, we excel at transforming our habitat. Unlike beavers and ants (as far as we know), we have the capacity and tools to deeply understand and work with a dazzling array of complexity in interwoven systems, and predict the outcomes of all sorts of different types of interventions. Ecologists are now reintroducing beavers to ecosystems, often at the behest of or in collaboration with Indigenous communities, because their interventions have cascades of positive repercussions (Martinez 2023). They have been shown to assist in improving water quality, recharging aquifers, improving fish habitat,

increasing overall biodiversity, and in general providing for healthy freshwater function (Wright et al 2002, Brazier et al 2021). This is another example of our ability to restore and regulate natural systems through a combination of scientific and traditional approaches, working with rather than against traditional models of land stewardship.

We care about what we know, what we are directly tied to. The modern world of the 21st century is one in which humans are ever more disconnected from many features of natural life. The divide between degraded human spaces and intact ecosystems has never been greater. Yet this distinction itself is an unnatural one. Human communities once flourished within and among natural ecosystems. But the way that humans live now can only be described as artificial. And yet our desire and appetite for natural spaces has also never been greater, as if we desperately desire to know that there is some place that still exists beyond the reach of our destructive grasp.

Especially in this day of globalism, with invasive species burrowed on every shore and boring into every tree, there can no more be an ideal of the untouched wilderness free of human interference. If anything, our interventions are even more necessary due to the incredible imbalance in many ecosystems. We need people to live within and care for natural spaces, to make their homes within the earth and not just upon it. We need to not just be restoring and caring for what wild areas there still are, but we need to be restoring civilized spaces so that human communities can also provide ecosystem services, so that the treatment of our water and cooling of our buildings can be provided free of charge by the systems that were designed through millions of years of evolution to do just that, while simultaneously providing sanctuary for the animals and insects that animate our dreams and mythologies, providing food and natural materials for our crafts, wood for our stoves, mulch for our gardens. To engage with

environmentalism alone, and think that restoring wild spaces and converting to clean electricity will effect the ecological transition we need would be to miss the point entirely. For we were once a part of, and now we see ourselves as apart from. Our very being is formed in interaction with this world, in endless feedback loop of metaphor and interconnectedness that liken our limbs to trees, our genealogies to roots, our rivers as mouths. We need to transform the work, and we need the work to transform us.

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