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Resilience and Rebellious Memory Loops: Further Musings of an American Indian Ethnoecologist

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I am an indigenous scholar who studies and writes about indigenous ecological knowledge and practices. It is not an easy task. I have long struggled to find a way to best reveal the layers of knowledge encoded in American Indian thought in terms that can be understood by non-Native peoples, especially those who work in the social, environmental, and biological sciences. Resilience theory seemed best suited for this task, which is why it was a central character in my book, *Eating the Landscape*.[1] I was attracted to the facet of resilience theory that helped scholars understand the source and role of change, particularly the kinds of change that are transforming, lead to adaptive systems, and are sustainable.[2] The elements of transformation, adaptation, and sustainability are central to indigenous worldviews and influence land management practices. Some tribal nations have been able to adapt to new practices and concepts, while not forgetting long-standing practices and knowledges that work. Many of the tribes are still able to adhere to their cultural traditions. In this space I will describe some more of my thoughts regarding these concepts and introduce a couple of new examples in order to trace where my thinking has gone since I wrote *Eating the Landscape* five years ago.

In *Eating the Landscape*'s fourth chapter I describe some interactions with friends and Hopi elders Eric and Jane Polingyouma. Eric, the last member of his clan, introduced me to his shrine at the edge of his cornfield. Later, inside their home, we discussed how Eric will never be able to pass on his clan knowledge to their only child,

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a son, because the Hopi kinship system is matrilineal. Eric's knowledge and experience of coaxing heirloom blue and other kinds of corn from the arid Colorado Plateau soils is extensive and sophisticated. He can also discuss, in detail, Hopi clan migrations and history pulled from reams of oral history and literature stored in his memory: a library passed on to him from a line of Hopi historians.

Eric and other indigenous elders are managers of stores of complex knowledge of how humans have and can maintain responsible and sustainable relationships with local habitats. Unfortunately, more often than not historians, conservationists, environmentalists, ethnoecologists, and even Native people relegate this knowledge to categories such as "traditional knowledge," "the sacred," and "the old ways." When knowledge such as Eric's is categorized in this way, it becomes stagnant, metaphorically pickled and sucked of its life. When a student of mine once asked Eric why he could not simply write down or audibly record his knowledge, he told the student that his kind of knowledge is alive; it has its own energy and spirit. To put it into a book or audiotape would kill it. His knowledge must be kept alive through oral traditions and through its use. And as an indigenous scholar, when considering how I might best translate American Indian ecological understandings so that non-Native scholars and scientists will appreciate them as being equal to western ecological knowledge and practices, I struggle with the issue of living knowledge the most.

There are current examples of where Native ecological knowledge is being referenced by western researchers and scholars,[3] but when one reads reports and views videos from western scholars that discuss how an indigenous person played a role in their study, or show how a Native elder instructs a western field worker in deep ecological understanding, one can almost see the tongues in their cheeks. I have yet to see indigenous ecological knowledge reach the same status of that of western science.

I believe one explanation for this lack of western respect for American Indian science and ecological knowledge is that American Indian knowledge is inherently nonstandardized. For example, there is no single American Indian ecological practice for the sustainable collection of willow braces for basketry, or how American Indian-prescribed burns along the west coast differed from burns in the Rocky Mountains. I have often joked to my students that it is very difficult to be a traditional Apache in Vermont. This is because American Indian ecological knowledge and practice is geographically local and adaptive. It is this localized adaptation that accounts for a general misunderstanding and misplacement of American Indian science as well as a reason for the resilience of some American Indian communities.

In *Eating the Landscape* I reference resilience theory as an explanatory foundation for the concepts and meanings that I pulled from the many stories and anecdotes I wrote about the various American Indian communities where I had visited and worked. One of the central constants of resilience is "long-term memory." One way to categorize long-term memory is to think of it as either the old ways, traditions, or ancestral knowledge; however, it is more accurate to think of long-term memory in terms of *conservation and release*. All resilient systems, including human systems, move through periodic phases of stabilization and conservation. These are periods of cultural growth and perhaps levels of social stratification. During these periods,

the community also generates and accumulates cultural memory of past ecological successes, and applies that knowledge to current and planned ecological relationships.

Eric Polingyouma's reluctance to write down or record his knowledge is an example of the role that long-term memory plays for resilient American Indian communities. Eric suggested that this kind of knowledge is alive and has a spirit and energy. Therefore, the knowledge must be used or it will deteriorate and die. I shared that I have struggled to translate this kind of knowledge and practice in order for western science to understand and appreciate. Eric's knowledge of how to plant blue corn, for example, is not only *his* knowledge; he is but one point in a continuum of practical relationship with a specific landscape over millennia. Hopi blue corn has been planted and raised on the Colorado Plateau for nearly two thousand years. In the Hopi timeline, they have been raising blue corn since Spider Woman introduced it to the Hopi during their emergence into the first world. During that time, Eric's ancestors have developed a library of best practices regarding how to raise corn in their arid habitat. They have created a linguistic domain related to how they talk about corn. They continue to engage in ceremony and ritual connected to their reverence for this staple grain, and Hopi artists reflect their culture's relationship to corn in pottery, jewelry, song, and ceremonial regalia. There is hardly anything in Hopi culture that is not somehow related to or connected to corn.

Hopi knowledge of corn is not static. It is in constant flux as Hopi agriculturalists such as Eric shape, retune, and adjust their practices to meet shifting rainfall patterns, changes in soil types, and the hybridization of new varieties. This kind of practical and practiced knowledge, then, cannot be interrupted by a book or a video. It remains alive and vibrant as it is continually used. It is argued about in the kivas and sung about at corn dances, and opinions are shaped when Hopi cooks grind the kernels and adjust Hopi cuisine. Similarly, the fishing knowledge of the Haida needs to be continually used and reframed as over time, Haida culture adapts to environmental changes along the costal ranges and forest of the Pacific Northwest. In order to ensure their annual harvest of plant resources, Miwok basket makers in California have had to learn how to shift gathering and management patterns. These examples of adaptation lead to the next essential elements of resilience: cultural invention and short-term memory.

Be reminded that "resilience" is simply a term applied to American Indian cultural and social systems that occur organically over space and time. One would be remiss to approach an American Indian elder or holder of cultural knowledge and ask them to describe why their cultural systems are resilient. The elder would not have a reference point from which to begin to translate the concept. Nevertheless, resilience exists in relation to external forces, changes, and shocks—in this case, to human systems. Like all systems both human and non-human, American Indian systems have experienced a myriad of external changes. Our oral traditions are forms of historical texts. And they describe how our ancestors dealt with several kinds of geomorphic forces, invasions from other tribes, diaspora, and forced relocation due to changes in the land and climate. During the last five hundred years these forces have been multiplied and have led to near-extinction of the indigenous populations of North America. Those of us who are still here, are here due to what resilience theory describes as "phases of cultural invention."

In other words, in the wake of external shocks resulting from ecocide, genocide, disease episodes, and assimilation comes cultural reorganization. Some Native communities and tribes have learned how they were able to immediately adapt to and survive external forces, which has newly organized cultural knowledge innovations. The new knowledge, this new way of doing things, is short-term memory (not all new knowledge is short-term memory). Short-term memory best leads to cultural resilience, however, if it derives some of its foundation from long-term memory. In *Eating the Landscape* I tell the story of the Seri Indian band leader and punk rock frontman El Indio. His songs now seem to me to exemplify this path.

On the west coast of Mexico, along the Sea of Cortes, reside the Seri. They have successfully occupied and have thrived on this dramatic land- and ocean-scape for centuries, acting as stewards as they efficiently manage both the land and the sea. Song is at the core of their resilience. They sing to the stars, to which they are directly connected. They sing to the green leatherback sea turtles that migrate between the Sea of Cortes and Hawaii. They sing songs that describe the Sonoran desert plants and even what kind of plants particular animal species regurgitate. Encoded in the songs, then, are libraries of intimate traditional ecological knowledge. The songs are also cultural refugia; in this case, reproductions of culturally held knowledge that store long-term memory such as Seri morals, values, and how to be Seri. Seri being-ness is central to being Seri. Being Seri involves the act of perceiving the world in certain words.

During my time with the Seri I met El Indio, a young, traditionally minded hunter. Upon returning from a deer hunt on Tiburon Island, he expressed to me how in order to be a good hunter, one has to remain humble; the ego is very big when beginning a hunt, but afterwards it has diminished. El Indio was also the lead singer and song writer for *El Divino Fuego*, the one and only Seri punk rock band. He and his band had been updating Seri songs, arranging the sound so as to attract the ears of Seri youth of today. The lyrics were sung in the Seri language and follow the same pattern as the ancestral songs, which are marked by narrative lyrics and fast, repetitive rhythms. The only differences heard were in the driving, crunchy guitar licks, the electric bass, crashing drums, and, of course, El Indio's vocals. The band's application of punk rock aesthetics to Seri song enacts short-term memory, while at the same time the unchanged traditional lyrics reaffirm Seri long-term memory loops. *El Divino Fuego*, then, is resilience in action.

There are many more stories like El Indio's, in which mostly young, innovative change-makers and cultural interrogators are leading their communities toward resilience. Recently, I was made aware of another example, from the central California coast Ohlone community known as Indian Canyon. There, Canyon Sayers, the daughter of Ohlone elder and Native leader Anna Marie Sayers, has directed the wisdom of her mother and other Ohlone elders toward the publication of children's books that retell traditional Ohlone stories in the nearly extinct Ohlone language as well as English. In resilience theory, "memory loops" are stabilizing elements of long-term memory existing as accumulated memory of cultural systems.[4] These cultural memories are found in cultural histories and oral literature; they are the stories told and retold in the narratives expressed by traditional storytellers. In publishing children's books in both Ohlone and English, Canyon Sayer is attempting to activate dormant Ohlone memory loops. The children's books, like El Indio's

punk rock songs, are examples of short-term memory that draws from the long-term memory of their respective cultures. In resilience theory, these songs and books are seen as forms of revolt that create adaptive cycles leading to cultural resilience.

Language is a crucial avenue along which this kind of resilience is accomplished. Crucially, language and cognition are embodied; that is, the mind is partly shaped by its external experiences with the environment.[5] Embodiment can also be considered in a double sense, encompassing both the body as a lived, experiential structure and the body as the context or milieu of cognitive mechanisms. If on a fundamental level the symbols of language express meanings that are shared by the speakers of that language, certainly the speakers of those languages use their languages as mediums through which they express their relationships to their places. Native languages are thus reflections of the landscapes with which they developed, extending not only to traditional songs, but also to the associated performance art reflected in ceremonial regalia, dance, and ritual, all of which carry memory loops. Altogether, these loops affect long-held cultural practices and actions that convey the direct impacts of local landscapes and ecosystems.

Oral literature, ancestral narratives, song, story: all of these cultural practices that embody long and short-term memory are at the core of community resilience. They comprise the matter, substance, and the adhesive of human and cultural capital. During my many years of field study when I wrote *Eating the Landscape*, and during the last few years, it has become increasingly evident that all forms of oral literature encode and reproduce metaphors, cultural models, and other ways of talking about the land. They work to assure that the supporting framework of cultural diversity and resilience remains viable. Story and other forms of narrative also encode actual, quantifiable ecological references, cultural history, and biocultural lessons woven into the daily fabric of cultural activities.

Cahuilla and Hia:Ced Oo'dham bird songs store and transmit the ecological literacy of those cultures' connection to southern California and the Sonoran Desert, respectively. The regalia worn by Hopi corn and other dancers not only reveal a Hopi form of ecological ballet, but the elements of the regalia transmit the ecological knowledge of the Colorado Plateau. The lyrics of my people's (Rarámuri) Yúmari Songs reflect a very close and detailed understanding of the ecological interactions that occur among the various flowering species and the local ecosystem of the Sierra Madres of northwest Mexico.

Each year, Paiute Salt Song and Cahuilla Bird singers sing their local landscapes back to life. Rituals of annual renewal, their ceremonies act to revitalize centuries-old lifeways, a way of being with a landscape, and the identities of countless Paiute and Cahuilla to come who will sing also to the Mojave desert and mountains. The ceremonies place the people directly into the role of stewards of their lands. If not for their annual rites of giving voice to their lands, the land, the animals, the plants, the stars, and the people would fall out of balance.

For a few generations, the songs had become silent. However, due to much effort these songs are being heard again after decades of being silent. They emerge from a people that no one even knew existed anymore thirty years ago. Food, farming, refugia, resilience, and biocultural diversity cannot exist without the language, without community, and without those that speak it and through their heartfelt words that uphold the cultures that give voice to the lands.

Resilience: Revolt and Remember

As I mentioned at the beginning of this essay, the elements of transformation, adaptation, and sustainability are central to indigenous worldviews and influence land-management practices. Because some members of tribal nations have been willing to revolt against certain practices and concepts that they view as outdated, while still remembering the practices and knowledge that continue to make sense, many of the tribes are still able to adhere to their cultural traditions. It turns out that those members who are forging these new paths are Native youth. Those who are successful are those who challenge traditions while adhering to the elements of long-term cultural memory loops. In resilience theory, the Native youth creating these new approaches represent the small memory loop that feeds back into the larger loop where revolt and innovation, based on long-term knowledge and understanding, generates new knowledge and practice gleaned from traditions that now no longer work or are failing to stand up to current conditions.

El Indio and Canyon Sayers are good examples of this. In *Eating the Landscape*, I told the story of running out of breath while bicycling around Flagstaff, Arizona trying to keep up with a young community gardener. He was showing me the various gardens that he and his group, run by Native youth, were creating in empty lots around town. The gardens were managed by local tribal members who still wished to grow familiar ancestral foods while having to live and work in Flagstaff, which was often a long drive from their traditional villages.

Pima and Chicano elder and friend Dennis Martinez once explained to me that sacred indigenous knowledge is really just practical knowledge. What he meant is that on a landscape, over time American Indian communities develop ways of managing their landscape that are sustainable. Those unique practices become sacred because they have demonstrated that they work over long periods of time. The empty lots transformed into gardens of ancestral foods are examples of rebellious resilience. These kinds of resilient revolts are happening nearly everywhere in Indian country and need to be encouraged and supported. When indigenous long-term memory works in conjunction with adaptive short-term memory, new resilient and sacred paths are forged.

Notes

1. Enrique Salmón, *Eating the Landscape: American Indian Stories of Food, Identity, and Resilience* (Tucson: University of Arizona Press, 2012).

2. C. S. Holling, Lance H. Gunderson, and Donald Ludwig, "Quest of a Theory of Adaptive Change," in *Panarchy: Understanding Transformations in Human and Natural Systems*, ed. Lance H. Gunderson and C. S. Holling (Washington, DC: Island Press, 2002), 3–24, 5.

3. Zoltan Grossman and Alan Parker, *Asserting Native Resilience: Pacific Rim Indigenous Nations Face the Climate Crisis* (Corvallis: Oregon State University Press, 2012).

4. *Panarchy: Understanding Transformations in Humans and Natural Systems*.

5. Francisco J. Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge: The MIT Press, 1993).