Learning the Grammar of Animacy

To be native to a place we must learn to speak its language.

I come here to listen, to nestle in the curve of the roots in a soft hollow of pine needles, to lean my bones against the column of white pine, to turn off the voice in my head until I can hear the voices outside it: the *shhh* of wind in needles, water trickling over rock, nuthatch tapping, chipmunks digging, beechnut falling, mosquito in my ear, and something more—something that is not me, for which we have no language, the wordless being of others in which we are never alone. After the drumbeat of my mother's heart, *this* was my first language.

I could spend a whole day listening. And a whole night. And in the morning, without my hearing it, there might be a mushroom that was not there the night before, creamy white, pushed up from the pine needle duff, out of darkness to light, still glistening with the fluid of its passage. *Puhpowee.*

Listening in wild places, we are audience to conversations in a language not our own. I think now that it was a longing to comprehend this language I hear in the woods that led me to science, to learn over the years to speak fluent botany. A tongue that should not, by the way, be mistaken for the language of plants. I did learn another language in science, though, one of careful observation, an intimate vocabulary that names each little part. To name and describe you must first see, and science polishes the gift of seeing. I honor the strength of the

language that has become a second tongue to me. But beneath the richness of its vocabulary and its descriptive power, something is missing, the same something that swells around you and in you when you listen to the world. Science can be a language of distance which reduces a being to its working parts; it is a language of objects. The language scientists speak, however precise, is based on a profound error in grammar, an omission, a grave loss in translation from the native languages of these shores.

My first taste of the missing language was the word *Puhpowee* on my tongue. I stumbled upon it in a book by the Anishinaabe ethnobotanist Keewaydinoquay, in a treatise on the traditional uses of fungi by our people. *Puhpowee,* she explained, translates as "the force which causes mushrooms to push up from the earth overnight." As a biologist, I was stunned that such a word existed. In all its technical vocabulary, Western science has no such term, no words to hold this mystery. You'd think that biologists, of all people, would have words for life. But in scientific language our terminology is used to define the boundaries of our knowing. What lies beyond our grasp remains unnamed.

In the three syllables of this new word I could see an entire process of close observation in the damp morning woods, the formulation of a theory for which English has no equivalent. The makers of this word understood a world of being, full of unseen energies that animate everything. I've cherished it for many years, as a talisman, and longed for the people who gave a name to the life force of mushrooms. The language that holds *Puhpowee* is one that I wanted to speak. So when I learned that the word for rising, for emergence, belonged to the language of my ancestors, it became a signpost for me.

Had history been different, I would likely speak Bodewadmimwin, or Potawatomi, an Anishinaabe language. But, like many of the three hundred and fifty indigenous languages of the Americas, Potawatomi is threatened, and I speak the language you read. The powers of assimilation did their work as my chance of hearing that language, and yours too, was washed from the mouths of Indian children in government boarding schools where speaking your native tongue was forbidden.

Children like my grandfather, who was taken from his family when he was just a little boy of nine years old. This history scattered not only our words but also our people. Today I live far from our reservation, so even if I could speak the language, I would have no one to talk to. But a few summers ago, at our yearly tribal gathering, a language class was held and I slipped into the tent to listen.

There was a great deal of excitement about the class because, for the first time, every single fluent speaker in our tribe would be there as a teacher. When the speakers were called forward to the circle of folding chairs, they moved slowly—with canes, walkers, and wheelchairs, only a few entirely under their own power. I counted them as they filled the chairs. Nine. Nine fluent speakers. In the whole world. Our language, millennia in the making, sits in those nine chairs. The words that praised creation, told the old stories, lulled my ancestors to sleep, rests today in the tongues of nine very mortal men and women. Each in turn addresses the small group of would-be students.

A man with long gray braids tells how his mother hid him away when the Indian agents came to take the children. He escaped boarding school by hiding under an overhung bank where the sound of the stream covered his crying. The others were all taken and had their mouths washed out with soap, or worse, for "talking that dirty Indian language." Because he alone stayed home and was raised up calling the plants and animals by the name Creator gave them, he is here today, a carrier of the language. The engines of assimilation worked well. The speaker's eyes blaze as he tells us, "We're the end of the road. We are all that is left. If you young people do not learn, the language will die. The missionaries and the U.S. government will have their victory at last."

A great-grandmother from the circle pushes her walker up close to the microphone. "It's not just the words that will be lost," she says. "The language is the heart of our culture; it holds our thoughts, our way of seeing the world. It's too beautiful for English to explain." *Puhpowee.*

Jim Thunder, at seventy-five the youngest of the speakers, is a

round brown man of serious demeanor who spoke only in Potawatomi. He began solemnly, but as he warmed to his subject his voice lifted like a breeze in the birch trees and his hands began to tell the story. He became more and more animated, rising to his feet, holding us rapt and silent although almost no one understood a single word. He paused as if reaching the climax of his story and looked out at the audience with a twinkle of expectation. One of the grandmothers behind him covered her mouth in a giggle and his stern face suddenly broke into a smile as big and sweet as a cracked watermelon. He bent over laughing and the grandmas dabbed away tears of laughter, holding their sides, while the rest of us looked on in wonderment. When the laughter subsided, he spoke at last in English: "What will happen to a joke when no one can hear it anymore? How lonely those words will be, when their power is gone. Where will they go? Off to join the stories that can never be told again."

So now my house is spangled with Post-it notes in another language, as if I were studying for a trip abroad. But I'm not going away, I'm coming home.

Ni pi je ezhyayen? asks the little yellow sticky note on my back door. My hands are full and the car is running, but I switch my bag to the other hip and pause long enough to respond. *Odanek nde zhya,* I'm going to town. And so I do, to work, to class, to meetings, to the bank, to the grocery store. I talk all day and sometimes write all evening in the beautiful language I was born to, the same one used by 70 percent of the world's people, a tongue viewed as the most useful, with the richest vocabulary in the modern world. English. When I get home at night to my quiet house, there is a faithful Post-it note on the closet door. *Gisken I gbiskewagen!* And so I take off my coat.

I cook dinner, pulling utensils from cupboards labeled *emkwanen, nagen.* I have become a woman who speaks Potawatomi to household objects. When the phone rings I barely glance at the Post-it there as I *dopnen* the *giktogan.* And whether it is a solicitor or a friend, they speak

English. Once a week or so, it is my sister from the West Coast who says *Bozho. Mokɨthewenkwe nda*—as if she needed to identify herself: who else speaks Potawatomi? To call it speaking is a stretch. Really, all we do is blurt garbled phrases to each other in a parody of conversation: How are you? I am fine. Go to town. See bird. Red. Frybread good. We sound like Tonto's side of the Hollywood dialogue with the Lone Ranger. "Me try talk good Injun way." On the rare occasion when we actually can string together a halfway coherent thought, we freely insert high school Spanish words to fill in the gaps, making a language we call Spanawatomi.

Tuesdays and Thursdays at 12:15 Oklahoma time, I join the Potawatomi lunchtime language class, streaming from tribal headquarters via the Internet. There are usually about ten of us, from all over the country. Together we learn to count and to say *pass the salt*. Someone asks, "How do you say *please* pass the salt?" Our teacher, Justin Neely, a young man devoted to language revival, explains that while there are several words for *thank you,* there is no word for *please*. Food was meant to be shared, no added politeness needed; it was simply a cultural given that one was asking respectfully. The missionaries took this absence as further evidence of crude manners.

Many nights, when I should be grading papers or paying bills, I'm at the computer running through Potawatomi language drills. After months, I have mastered the kindergarten vocabulary and can confidently match the pictures of animals to their indigenous names. It reminds me of reading picture books to my children: "Can you point to the squirrel? Where is the bunny?" All the while I'm telling myself that I really don't have time for this, and what's more, little need to know the words for *bass* and *fox* anyway. Since our tribal diaspora left us scattered to the four winds, who would I talk to?

The simple phrases I'm learning are perfect for my dog. Sit! Eat! Come here! Be quiet! But since she scarcely responds to these commands in English, I'm reluctant to train her to be bilingual. An admiring student once asked me if I spoke my native language. I was tempted to say, "Oh yes, we speak Potawatomi at home"—me, the dog, and the Post-it

notes. Our teacher tells us not to be discouraged and thanks us every time a word is spoken—thanks us for breathing life into the language, even if we only speak a single word. "But I have no one to talk to," I complain. "None of us do," he reassures me, "but someday we will."

So I dutifully learn the vocabulary but find it hard to see the "heart of our culture" in translating *bed* and *sink* into Potawatomi. Learning nouns was pretty easy; after all, I'd learned thousands of botanical Latin names and scientific terms. I reasoned that this could not be too much different—just a one-for-one substitution, memorization. At least on paper, where you can see the letters, this is true. Hearing the language is a different story. There are fewer letters in our alphabet, so the distinction among words for a beginner is often subtle. With the beautiful clusters of consonants of *zh* and *mb* and *shwe* and *kwe* and *mshk,* our language sounds like wind in the pines and water over rocks, sounds our ears may have been more delicately attuned to in the past, but no longer. To learn again, you really have to listen.

To actually *speak,* of course, requires verbs, and here is where my kindergarten proficiency at naming things leaves off. English is a noun-based language, somehow appropriate to a culture so obsessed with things. Only 30 percent of English words are verbs, but in Potawatomi that proportion is 70 percent. Which means that 70 percent of the words have to be conjugated, and 70 percent have different tenses and cases to be mastered.

European languages often assign gender to nouns, but Potawatomi does not divide the world into masculine and feminine. Nouns and verbs both are animate and inanimate. You hear a person with a word that is completely different from the one with which you hear an airplane. Pronouns, articles, plurals, demonstratives, verbs—all those syntactical bits I never could keep straight in high school English are all aligned in Potawatomi to provide different ways to speak of the living world and the lifeless one. Different verb forms, different plurals, different everything apply depending on whether what you are speaking of is alive.

No wonder there are only nine speakers left! I try, but the complexity makes my head hurt and my ear can barely distinguish between

words that mean completely different things. One teacher reassures us that this will come with practice, but another elder concedes that these close similarities are inherent in the language. As Stewart King, a knowledge keeper and great teacher, reminds us, the Creator meant for us to laugh, so humor is deliberately built into the syntax. Even a small slip of the tongue can convert "We need more firewood" to "Take off your clothes." In fact, I learned that the mystical word *Puhpowee* is used not only for mushrooms, but also for certain other shafts that rise mysteriously in the night.

My sister's gift to me one Christmas was a set of magnetic tiles for the refrigerator in Ojibwe, or Anishinabemowin, a language closely related to Potawatomi. I spread them out on my kitchen table looking for familiar words, but the more I looked, the more worried I got. Among the hundred or more tiles, there was but a single word that I recognized: *megwech,* thank you. The small feeling of accomplishment from months of study evaporated in a moment.

I remember paging through the Ojibwe dictionary she sent, trying to decipher the tiles, but the spellings didn't always match and the print was too small and there are way too many variations on a single word and I was feeling that this was just way too hard. The threads in my brain knotted and the harder I tried, the tighter they became. Pages blurred and my eyes settled on a word—a verb, of course: "to be a Saturday." *Pfft!* I threw down the book. Since when is *Saturday* a verb? Everyone knows it's a noun. I grabbed the dictionary and flipped more pages and all kinds of things seemed to be verbs: "to be a hill," "to be red," "to be a long sandy stretch of beach," and then my finger rested on *wiikwegamaa:* "to be a bay." "Ridiculous!" I ranted in my head. "There is no reason to make it so complicated. No wonder no one speaks it. A cumbersome language, impossible to learn, and more than that, it's all wrong. A bay is most definitely a person, place, or thing—a noun and not a verb." I was ready to give up. I'd learned a few words, done my duty to the language that was taken from my grandfather. Oh, the ghosts of the missionaries in the boarding schools must have been rubbing their hands in glee at my frustration. "She's going to surrender," they said.

And then I swear I heard the zap of synapses firing. An electric current sizzled down my arm and through my finger, and practically scorched the page where that one word lay. In that moment I could smell the water of the bay, watch it rock against the shore and hear it sift onto the sand. A bay is a noun only if water is *dead*. When *bay* is a noun, it is defined by humans, trapped between its shores and contained by the word. But the verb *wiikwegamaa*—to *be* a bay—releases the water from bondage and lets it live. "To be a bay" holds the wonder that, for this moment, the living water has decided to shelter itself between these shores, conversing with cedar roots and a flock of baby mergansers. Because it could do otherwise—become a stream or an ocean or a waterfall, and there are verbs for that, too. To be a hill, to be a sandy beach, to be a Saturday, all are possible verbs in a world where everything is alive. Water, land, and even a day, the language a mirror for seeing the animacy of the world, the life that pulses through all things, through pines and nuthatches and mushrooms. *This* is the language I hear in the woods; this is the language that lets us speak of what wells up all around us. And the vestiges of boarding schools, the soap-wielding missionary wraiths, hang their heads in defeat.

This is the grammar of animacy. Imagine seeing your grandmother standing at the stove in her apron and then saying of her, "Look, it is making soup. It has gray hair." We might snicker at such a mistake, but we also recoil from it. In English, we never refer to a member of our family, or indeed to any person, as *it*. That would be a profound act of disrespect. *It* robs a person of selfhood and kinship, reducing a person to a mere thing. So it is that in Potawatomi and most other indigenous languages, we use the same words to address the living world as we use for our family. Because they are our family.

To whom does our language extend the grammar of animacy? Naturally, plants and animals are animate, but as I learn, I am discovering that the Potawatomi understanding of what it means to be animate diverges from the list of attributes of living beings we all learned in Biology 101. In Potawatomi 101, rocks are animate, as are mountains and water and fire and places. Beings that are imbued with spirit, our

sacred medicines, our songs, drums, and even stories, are all animate. The list of the inanimate seems to be smaller, filled with objects that are made by people. Of an inanimate being, like a table, we say, "*What* is it?" And we answer *Dopwen yewe.* Table it is. But of apple, we must say, "*Who* is that being?" And reply *Mshimin yawe.* Apple that being is.

Yawe—the animate *to be.* I am, you are, s/he is. To speak of those possessed with life and spirit we must say *yawe.* By what linguistic confluence do Yahweh of the Old Testament and *yawe* of the New World both fall from the mouths of the reverent? Isn't this just what it means, to be, to have the breath of life within, to be the offspring of Creation? The language reminds us, in every sentence, of our kinship with all of the animate world.

English doesn't give us many tools for incorporating respect for animacy. In English, you are either a human or a thing. Our grammar boxes us in by the choice of reducing a nonhuman being to an *it,* or it must be gendered, inappropriately, as a *he* or a *she.* Where are our words for the simple existence of another living being? Where is our *yawe?* My friend Michael Nelson, an ethicist who thinks a great deal about moral inclusion, told me about a woman he knows, a field biologist whose work is among other-than-humans. Most of her companions are not two-legged, and so her language has shifted to accommodate her relationships. She kneels along the trail to inspect a set of moose tracks, saying, "Someone's already been this way this morning." "Someone is in my hat," she says, shaking out a deerfly. Someone, not something.

When I am in the woods with my students, teaching them the gifts of plants and how to call them by name, I try to be mindful of my language, to be bilingual between the lexicon of science and the grammar of animacy. Although they still have to learn scientific roles and Latin names, I hope I am also teaching them to know the world as a neighborhood of nonhuman residents, to know that, as ecotheologian Thomas Berry has written, "we must say of the universe that it is a communion of subjects, not a collection of objects."

One afternoon, I sat with my field ecology students by a *wiikwegamaa*

and shared this idea of animate language. One young man, Andy, splashing his feet in the clear water, asked the big question. "Wait a second," he said as he wrapped his mind around this linguistic distinction, "doesn't this mean that speaking English, thinking in English, somehow gives us permission to disrespect nature? By denying everyone else the right to be persons? Wouldn't things be different if nothing was an *it?*"

Swept away with the idea, he said it felt like an awakening to him. More like a remembering, I think. The animacy of the world is something we already know, but the language of animacy teeters on extinction—not just for Native peoples, but for everyone. Our toddlers speak of plants and animals as if they were people, extending to them self and intention and compassion—until we teach them not to. We quickly retrain them and make them forget. When we tell them that the tree is not a *who,* but an *it,* we make that maple an object; we put a barrier between us, absolving ourselves of moral responsibility and opening the door to exploitation. Saying *it* makes a living land into "natural resources." If a maple is an *it,* we can take up the chain saw. If a maple is a *her,* we think twice.

Another student countered Andy's argument. "But we can't say *he* or *she.* That would be anthropomorphism." They are well-schooled biologists who have been instructed, in no uncertain terms, never to ascribe human characteristics to a study object, to another species. It's a cardinal sin that leads to a loss of objectivity. Carla pointed out that "it's also disrespectful to the animals. We shouldn't project our perceptions onto them. They have their own ways—they're not just people in furry costumes." Andy countered, "But just because we don't think of them as humans doesn't mean they aren't beings. Isn't it even more disrespectful to assume that we're the only species that counts as 'persons'?" The arrogance of English is that the only way to be animate, to be worthy of respect and moral concern, is to be a human.

A language teacher I know explained that grammar is just the way we chart relationships in language. Maybe it also reflects our relationships with each other. Maybe a grammar of animacy could lead us to

whole new ways of living in the world, other species a sovereign people, a world with a democracy of species, not a tyranny of one—with moral responsibility to water and wolves, and with a legal system that recognizes the standing of other species. It's all in the pronouns.

Andy is right. Learning the grammar of animacy could well be a restraint on our mindless exploitation of land. But there is more to it. I have heard our elders give advice like "You should go among the standing people" or "Go spend some time with those Beaver people." They remind us of the capacity of others as our teachers, as holders of knowledge, as guides. Imagine walking through a richly inhabited world of Birch people, Bear people, Rock people, beings we think of and therefore speak of as persons worthy of our respect, of inclusion in a peopled world. We Americans are reluctant to learn a foreign language of our own species, let alone another species. But imagine the possibilities. Imagine the access we would have to different perspectives, the things we might see through other eyes, the wisdom that surrounds us. We don't have to figure out everything by ourselves: there are intelligences other than our own, teachers all around us. Imagine how much less lonely the world would be.

Every word I learn comes with a breath of gratitude for our elders who have kept this language alive and passed along its poetry. I still struggle mightily with verbs, can hardly speak at all, and I'm still most adept with only kindergarten vocabulary. But I like that in the morning I can go for my walk around the meadow greeting neighbors by name. When Crow caws at me from the hedgerow, I can call back *Mno gizhget andushukwe!* I can brush my hand over the soft grasses and murmur *Bozho mishkos.* It's a small thing, but it makes me happy.

I'm not advocating that we all learn Potawatomi or Hopi or Seminole, even if we could. Immigrants came to these shores bearing a legacy of languages, all to be cherished. But to become native to this place, if we are to survive here, and our neighbors too, our work is to learn to speak the grammar of animacy, so that we might truly be at home.

I remember the words of Bill Tall Bull, a Cheyenne elder. As a

young person, I spoke to him with a heavy heart, lamenting that I had no native language with which to speak to the plants and the places that I love. "They love to hear the old language," he said, "it's true." "But," he said, with fingers on his lips, "You don't have to speak it here." "If you speak it here," he said, patting his chest, "They will hear you."

Mishkos Kenomagwen: The Teachings of Grass

i. Introduction

You can smell it before you see it, a sweetgrass meadow on a summer day. The scent flickers on the breeze, you sniff like a dog on a scent, and then it's gone, replaced by the boggy tang of wet ground. And then it's back, the sweet vanilla fragrance, beckoning.

ii. Literature Review

Lena is not fooled easily, though. She wanders into the meadow with the certainty of her years, parting grasses with her slender form. A tiny, gray-haired elder, she is up to her waist in grass. She casts her gaze over all the other species and then makes a beeline to a patch that to the uninitiated looks like all the rest. She runs a ribbon of grass through the thumb and forefinger of her wrinkled brown hand. "See how glossy it is? It can hide from you among the others, but it wants to be found. That's why it shines like this." But she passes this patch by, letting it slide through her fingers. She obeys the teachings of her ancestors to never take the first plant that you see.

I follow behind her as her hands trail lovingly over the boneset and the goldenrod. She spies a gleam in the sward and her step quickens. "Ah, *Bozho,*" she says. Hello. From the pocket of her old nylon jacket she takes her pouch, deerskin with a beaded red edge, and shakes a little tobacco into the palm of her hand. Eyes closed, murmuring, she raises a hand to the four directions and then scatters the tobacco to the ground. "You know this," she says, her eyebrows a question mark.

"To always leave a gift for the plants, to ask if we might take them? It would be rude not to ask first." Only then does she stoop and pinch off a grass stem at its base, careful not to disturb the roots. She parts the nearby clumps, finding another and another until she has gathered a thick sheaf of shining stems. A winding path marks her progress where the meadow canopy was opened by the trail of her passage.

She passes right by many dense patches, leaving them to sway in the breeze. "It's our way," she says, "to take only what we need. I've always been told that you never take more than half." Sometimes she doesn't take any at all, but just comes here to check on the meadow, to see how the plants are doing. "Our teachings," she says, "are very strong. They wouldn't get handed on if they weren't useful. The most important thing to remember is what my grandmother always said: 'If we use a plant respectfully it will stay with us and flourish. If we ignore it, it will go away. If you don't give it respect it will leave us.'" The plants themselves have shown us this—*mishkos kenomagwen*. As we leave the meadow for the path back through the woods, she twists a handful of timothy into a loose knot upon itself, beside the trail. "This tells other pickers that I've been here," she says, "so that they know not to take any more. This place always gives good sweetgrass since we tend to it right. But other places it's getting hard to find. I'm thinking that they might not be picking right. Some people, they're in a hurry and they pull up the whole plant. Even the roots come up. That's not the way I was taught."

I've been with pickers who did that, yanking up a handful that left a little bare spot in the turf and a fuzz of broken roots on the uprooted stems. They too made offerings of tobacco and took only half, and they assured me that their method of picking was the correct one. They were defensive about the charges that their harvesting was depleting sweetgrass. I asked Lena about it and she just shrugged.

III. Hypothesis

In many places, sweetgrass is disappearing from its historic locales, so the basket makers had a request for the botanists: to see if the different ways of harvesting might be the cause of sweetgrass's leaving.

I want to help, but I'm a little wary. Sweetgrass is not an experimental unit for me; it's a gift. There is a barrier of language and meaning between science and traditional knowledge, different ways of knowing, different ways of communicating. I'm not sure I want to force the teachings of grass into the tight uniform of scientific thinking and technical writing that is required of the academy: Introduction, Literature Review, Hypothesis, Methods, Results, Discussion, Conclusions, Acknowledgments, References Cited. But I've been asked on behalf of sweetgrass, and I know my responsibility.

To be heard, you must speak the language of the one you want to listen. So, back at school, I proposed the idea as a thesis project to my graduate student Laurie. Not content with purely academic questions, she had been looking for a research project that would, as she said, "mean something to someone" instead of just sitting on the shelf.

IV. Methods

Laurie was eager to begin, but she hadn't met Sweetgrass before. "It's the grass that will teach you," I advised, "so you have to get to know it." I took her out to our restored sweetgrass meadows and it was love at first sniff. It didn't take her long to recognize Sweetgrass after that. It was as if the plant wanted her to find it.

Together we designed experiments to compare the effects of the two harvesting methods the basket makers had explained. Laurie's education so far was full of the scientific method, but I wanted her to live out a slightly different style of research. To me, an experiment is a kind of conversation with plants: I have a question for them, but since we don't speak the same language, I can't ask them directly and they won't answer verbally. But plants can be eloquent in their physical responses and behaviors. Plants answer questions by the way they live, by their responses to change; you just need to learn how to ask. I smile when I hear my colleagues say "I discovered X." That's kind of like Columbus claiming to have discovered America. It was here all along, it's just that he didn't know it. Experiments are not about discovery but about listening and translating the knowledge of other beings.

My colleagues might scoff at the notion of basket makers as scientists, but when Lena and her daughters take 50 percent of the sweetgrass, observe the result, evaluate their findings, and then create management guidelines from them, that sounds a lot like experimental science to me. Generations of data collection and validation through time builds up to well-tested theories.

At my university, as at many others, graduate students must present their thesis ideas to a faculty committee. Laurie did a wonderful job of outlining the proposed experiment, ably describing multiple study sites, the many replicates, and intensive sampling techniques. But when she was through speaking there was an uneasy silence in the conference room. One professor shuffled through the proposal pages and pushed them aside dismissively. "I don't see anything new here for science," he said. "There's not even a theoretical framework."

A theory, to scientists, means something rather different from its popular use, which suggests something speculative or untested. A scientific theory is a cohesive body of knowledge, an explanation that is consistent among a range of cases and can allow you to predict what might happen in unknown situations. Like this one. Our research was most definitely grounded in theory—Lena's, primarily—in the traditional ecological knowledge of indigenous peoples: If we use a plant respectfully, it will flourish. If we ignore it, it will go away. This is a theory generated from millennia of observations of plant response to harvest, subject to peer review by generations of practitioners, from basket makers to herbalists. Despite the weight of this truth, the committee could only struggle not to roll their eyes.

The dean looked over the glasses that had slid down his nose, fixing Laurie with a pointed stare and directing a sidelong glance toward me. "*Anyone* knows that harvesting a plant will damage the population. You're wasting your time. And I'm afraid I don't find this whole traditional knowledge thing very convincing." Like the former schoolteacher she was, Laurie was unfailingly calm and gracious as she explained further, but her eyes were steely.

Later, though, they were filled with tears. Mine, too. In the early

years, no matter how carefully you prepared, this was nearly a rite of passage for women scientists—the condescension, the verbal smackdown from academic authorities, especially if you had the audacity to ground your work in the observations of old women who had probably not finished high school, and talked to plants to boot.

Getting scientists to consider the validity of indigenous knowledge is like swimming upstream in cold, cold water. They've been so conditioned to be skeptical of even the hardest of hard data that bending their minds toward theories that are verified without the expected graphs or equations is tough. Couple that with the unblinking assumption that science has cornered the market on truth and there's not much room for discussion.

Undeterred, we carried on. The basket makers had given us the prerequisites of the scientific method: observation, pattern, and a testable hypothesis. That sounded like science to me. So we began by setting up experimental plots in the meadows to ask the plants the question "Do these two different harvest methods contribute to decline?" And then we tried to detect their answer. We chose dense sweetgrass stands where the population had been restored rather than compromising native stands where pickers were active.

With incredible patience, Laurie did a census of the sweetgrass population in every plot to obtain precise measures of population density prior to harvest. She even marked individual stems of grass with colored plastic ties to keep track of them. When all had been tallied, she then began the harvest.

The plots were subject to one of the two harvest methods the basket makers had described. Laurie took half of the stems in each plot, pinching them off one by one carefully at the base in some plots and yanking up a tuft and leaving a small ragged gap in the sod in others. Experiments must have controls, of course, so she left an equal number of plots alone and did not harvest them at all. Pink flagging festooned the meadows to mark her study areas.

One day in the field we sat in the sun and talked about whether the method really duplicated the traditional harvest. "I know that it

doesn't," she said, "because I'm not replicating the relationship. I don't speak to the plants or make an offering." She had wrestled with this but settled on excluding it: "I honor that traditional relationship, but I couldn't ever do it as part of an experiment. It wouldn't be right on any level—to add a variable that I don't understand and that science can't even attempt to measure. And besides, I'm not qualified to speak to sweetgrass." Later, she admitted that it was hard to stay neutral in her research and avoid affection for the plants; after so many days among them, learning and listening, neutrality proved impossible. Eventually she was just careful to show them all her mindful respect, making her care a constant as well, so that she would not sway the results one way or the other. The sweetgrass she harvested was counted, weighed, and given away to basket makers.

Every few months, Laurie counted and marked all the grass in her plots: dead shoots, living ones, and brand-new shoots just pushing up from the ground. She charted the birth, the death, and the reproduction of all her grass stems. When the next July rolled around she harvested once more, just as women were doing in the native stands. For two years she harvested and measured the response of the grass along with a team of student interns. It was a little tough at first to recruit student helpers given that their task would be watching grass grow.

v. Results

Laurie observed carefully and filled her notebook with measurements, charting the vigor of each plot. She worried a little when the control plots were looking a little sickly. She was relying on these controls, the unharvested patches, to be the reference point for comparing the effects of harvesting in the other plots. We hoped they would perk up when spring came.

By the second year, Laurie was expecting her first child. The grass grew and grew, as did her belly. Bending and stooping became a little more difficult, to say nothing of lying in the grass to read plant tags. But she was faithful to her plants, sitting in the dirt among them, counting and marking. She said the quiet of fieldwork, the calm of sitting in a

flower-strewn meadow with the smell of sweetgrass all around, was a good beginning for a baby. I think she was right.

As the summer wore on, it became a race to finish the research before the baby was born. Just weeks away from delivery, it became a team effort. When Laurie was done with a plot, she would call out for her field crew to help hoist her to her feet. This too was a rite of passage for women field biologists.

As her baby grew, Laurie came to believe with increasing conviction in the knowledge of her basket-making mentors, recognizing, as Western science often does not, the quality of observations from the women who had long had close relationships with plants and their habitats. They shared many of their teachings with her, and they knit many baby hats.

Baby Celia was born in the early fall, and a braid of sweetgrass was hung over her crib. While Celia slept nearby, Laurie put her data on the computer and began to make the comparisons between the harvesting methods. From the twist ties on every stem, Laurie could chart the births and deaths in the sample plots. Some plots were full of new young shoots that signaled a thriving population, and some were not.

Her statistical analyses were all sound and thorough, but she hardly needed graphs to tell the story. From across the field you could see the difference: some plots gleamed shiny golden green and some were dull and brown. The committee's criticism hovered in her mind: "Anyone knows that harvesting a plant will damage the population."

The surprise was that the failing plots were not the harvested ones, as predicted, but the unharvested controls. The sweetgrass that had not been picked or disturbed in any way was choked with dead stems while the harvested plots were thriving. Even though half of all stems had been harvested each year, they quickly grew back, completely replacing everything that had been gathered, in fact producing more shoots than were present before harvest. Picking sweetgrass seemed to actually stimulate growth. In the first year's harvest, the plants that grew the very best were the ones that had been yanked up in a handful. But, whether it was pinched singly or pulled in a clump, the end

result was nearly the same: it didn't seem to matter how the grass was harvested, only that it was.

Laurie's graduate committee had dismissed this possibility from the outset. They had been taught that harvesting causes decline. And yet the grasses themselves unequivocally argued the opposite point. After the grilling Laurie received over her research proposal, you might imagine she was dreading the thesis defense. But she had one thing skeptical scientists value most: data. While Celia slept in her proud father's arms, Laurie presented her graphs and tables to demonstrate that sweetgrass flourishes when it's harvested and declines when it is not. The doubting dean was silent. The basket makers smiled.

VI. Discussion

We are all the product of our worldviews—even scientists who claim pure objectivity. Their predictions for sweetgrass were consistent with their Western science worldview, which sets human beings outside of "nature" and judges their interactions with other species as largely negative. They had been schooled that the best way to protect a dwindling species was to leave it alone and keep people away. But the grassy meadows tell us that for sweetgrass, human beings are part of the system, a vital part. Laurie's findings might have been surprising to academic ecologists but were consistent with the theory voiced by our ancestors. "If we use a plant respectfully it will stay with us and flourish. If we ignore it, it will go away."

"Your experiment seems to demonstrate a significant effect," said the dean. "But how do you explain it? Are you implying that the grass that was unharvested had its feelings hurt by being ignored? What is the mechanism responsible for this?"

Laurie admitted that the scientific literature held no explanations for the relationship between basket makers and sweetgrass since such questions were not generally deemed worthy of scientific attention. She turned to studies of how grasses respond to other factors, such as fire or grazing. She discovered that the stimulated growth she had observed was well known to range scientists. After all, grasses are beautifully

adapted to disturbance—it's why we plant lawns. When we mow them they multiply. Grasses carry their growing points just beneath the soil surface so that when their leaves are lost to a mower, a grazing animal, or a fire, they quickly recover.

She explained how harvesting thinned the population, allowing the remaining shoots to respond to the extra space and light by reproducing quickly. Even the pulling method was beneficial. The underground stem that connects the shoots is dotted with buds. When it's gently tugged, the stem breaks and all those buds produce thrifty young shoots to fill the gap.

Many grasses undergo a physiological change known as compensatory growth in which the plant compensates for loss of foliage by quickly growing more. It seems counterintuitive, but when a herd of buffalo grazes down a sward of fresh grass, it actually grows faster in response. This helps the plant recover, but also invites the buffalo back for dinner later in the season. It's even been discovered that there is an enzyme in the saliva of grazing buffalo that actually stimulates grass growth. To say nothing of the fertilizer produced by a passing herd. Grass gives to buffalo and buffalo give to grass.

The system is well balanced, but only if the herd uses the grass respectfully. Free-range buffalo graze and move on, not returning to the same place for many months. Thus they obey the rule of not taking more than half, of not overgrazing. Why shouldn't it also be true for people and sweetgrass? We are no more than the buffalo and no less, governed by the same natural laws.

With a long, long history of cultural use, sweetgrass has apparently become dependent on humans to create the "disturbance" that stimulates its compensatory growth. Humans participate in a symbiosis in which sweetgrass provides its fragrant blades to the people and people, by harvesting, create the conditions for sweetgrass to flourish.

It's intriguing to wonder whether the regional decline in sweetgrass might be due not to overharvesting but rather to underharvesting. Laurie and I pored over the map of historical locations for sweetgrass created by a former student, Daniela Shebitz. There were blue dots

where sweetgrass used to be found but has since disappeared. Red dots marked the few places where sweetgrass was reported historically and where it is still thriving. These red dots are not randomly scattered. They are clustered around Native communities, particularly those known for their sweetgrass basketry. Sweetgrass thrives where it is used and disappears elsewhere.

Science and traditional knowledge may ask different questions and speak different languages, but they may converge when both truly listen to the plants. To relate the story the ancestors told us to the academics in the room, however, we needed to use scientific explanations expressed in the language of mechanism and objectification: "If we remove 50 percent of the plant biomass, the stems are released from resource competition. The stimulus of compensatory growth causes an increase in population density and plant vigor. In the absence of disturbance, resource depletion and competition result in a loss of vigor and increased mortality."

The scientists gave Laurie a warm round of applause. She had spoken their language and made a convincing case for the stimulatory effect of harvesters, indeed for the reciprocity between harvesters and sweetgrass. One even retracted his initial criticism that this research would "add nothing new to science." The basket makers who sat at the table simply nodded their heads in agreement. Wasn't this just as the elders have said?

The question was, how do we show respect? Sweetgrass told us the answer as we experimented: sustainable harvesting can be the way we treat a plant with respect, by respectfully receiving its gift.

Perhaps it is no coincidence that it is Sweetgrass that reveals this story. *Wiingaashk* was the first to be planted by Skywoman on the back of Turtle Island. The grass gives its fragrant self to us and we receive it with gratitude. In return, through the very act of accepting the gift, the pickers open some space, let the light come in, and with a gentle tug bestir the dormant buds that make new grass. Reciprocity is a matter of keeping the gift in motion through self-perpetuating cycles of giving and receiving.

Our elders taught that the relationship between plants and humans must be one of balance. People can take too much and exceed the capacity of the plants to share again. That's the voice of hard experience that resonates in the teachings of "never take more than half." And yet, they also teach that we can take too little. If we allow traditions to die, relationships to fade, the land will suffer. These laws are the product of hard experience, of past mistakes. And not all plants are the same; each has its own way of regenerating. Some, unlike sweetgrass, are easily harmed by harvest. Lena would say that the key is to know them well enough to respect the difference.

VII. Conclusions

With their tobacco and their thanks, our people say to the Sweetgrass, "I need you." By its renewal after picking, the grass says to the people, "I need you, too."

Mishkos kenomagwen. Isn't this the lesson of grass? Through reciprocity the gift is replenished. All of our flourishing is mutual.

VIII. Acknowledgments

In a field of tall grass, with only the wind for company, there is a language that transcends the differences between scientific and traditional understandings, the data or the prayer. The wind moves through and carries the grass song. It sounds to me like *mishhhhkos,* over and over again on ripples of moving grass. After all it has taught us, I want to say thank you.

IX. References Cited

Wiingaashk, Buffalo, Lena, the Ancestors.

Putting Down Roots

A summer day on the banks of the Mohawk River:

Én:ska, tékeni, áhsen. Bend and pull, bend and pull. *Kaié:ri, wísk, iá:ia'k, tsiá:ta,* she calls to her granddaughter, standing waist deep in the grass. Her bundle grows thicker with every stoop of her back. She straightens up, rubs the small of her back, and tilts her head up to the blue summer sky, her black braid swinging in the arch of her back. Bank swallows twitter over the river. The breeze off the water sets the grasses waving and carries the fragrance of sweetgrass that rises from her footsteps.

A spring morning four hundred years later:

Én:ska, tékeni, áhsen. One, two, three; bend and dig, bend and dig. My bundle grows smaller with every stoop of my back. I drive my trowel into the soft ground and rock it back and forth. It scrapes against a buried stone and I dig my fingers in to unearth it, cast the stone aside to make an apple-sized hole big enough for the roots. From the tangled bundle wrapped in burlap, my fingers separate out a single clump of sweetgrass. I set it in the hole, scoop soil around it, speak words of welcome, and tamp it down. I straighten up and rub the small of my aching back. The sunshine pours down around us, warming the grass and releasing its scent. Red stake flags flutter in the breeze, marking the outlines of our plots.

Kaié:ri, wísk, iá:ia'k, tsiá:ta. From time beyond memory, Mohawk people inhabited this river valley that now bears their name. Back then the river was full of fish and its spring floods brought silt to fertilize