

A hymn of love to the world.

—ELIZABETH GILBERT

BRAIDING
SWEETGRASS



Indigenous Wisdom, Scientific Knowledge,
and the Teachings of Plants

ROBIN WALL KIMMERER

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SKYWOMAN FALLING

In winter, when the green earth lies resting beneath a blanket of snow, this is the time for storytelling. The storytellers begin by calling upon those who came before who passed the stories down to us, for we are only messengers.

In the beginning there was the Skyworld.

She fell like a maple seed, pirouetting on an autumn breeze.* A column of light streamed from a hole in the Skyworld, marking her path where only darkness had been before. It took her a long time to fall. In fear, or maybe hope, she clutched a bundle tightly in her hand.

Hurling downward, she saw only dark water below. But in that emptiness there were many eyes gazing up at the sudden shaft of light. They saw there a small object, a mere dust mote in the beam. As it grew closer, they could see that it was a woman, arms outstretched, long black hair billowing behind as she spiraled toward them.

The geese nodded at one another and rose together from the water in a wave of goose music. She felt the beat of their wings as they flew beneath to break her fall. Far from the only home she'd ever known, she caught her breath at the warm embrace of soft feathers as they gently carried her downward. And so it began.

The geese could not hold the woman above the water for much longer, so they called a council to decide what to do. Resting on their wings, she saw them all gather: loons, otters, swans, beavers, fish of all kinds. A great turtle floated in their midst and offered his back for her

* Adapted from oral tradition and Shenandoah and George, 1988.

to rest upon. Gratefully, she stepped from the goose wings onto the dome of his shell. The others understood that she needed land for her home and discussed how they might serve her need. The deep divers among them had heard of mud at the bottom of the water and agreed to go find some.

Loon dove first, but the distance was too far and after a long while he surfaced with nothing to show for his efforts. One by one, the other animals offered to help—Otter, Beaver, Sturgeon—but the depth, the darkness, and the pressures were too great for even the strongest of swimmers. They returned gasping for air with their heads ringing. Some did not return at all. Soon only little Muskrat was left, the weakest diver of all. He volunteered to go while the others looked on doubtfully. His small legs flailed as he worked his way downward and he was gone a very long time.

They waited and waited for him to return, fearing the worst for their relative, and, before long, a stream of bubbles rose with the small, limp body of the muskrat. He had given his life to aid this helpless human. But then the others noticed that his paw was tightly clenched and, when they opened it, there was a small handful of mud. Turtle said, “Here, put it on my back and I will hold it.”

Skywoman bent and spread the mud with her hands across the shell of the turtle. Moved by the extraordinary gifts of the animals, she sang in thanksgiving and then began to dance, her feet caressing the earth. The land grew and grew as she danced her thanks, from the dab of mud on Turtle’s back until the whole earth was made. Not by Skywoman alone, but from the alchemy of all the animals’ gifts coupled with her deep gratitude. Together they formed what we know today as Turtle Island, our home.

Like any good guest, Skywoman had not come empty-handed. The bundle was still clutched in her hand. When she toppled from the hole in the Skyworld she had reached out to grab onto the Tree of Life that grew there. In her grasp were branches—fruits and seeds of all kinds of plants. These she scattered onto the new ground and carefully tended each one until the world turned from brown to green.

Sunlight streamed through the hole from the Skyworld, allowing the seeds to flourish. Wild grasses, flowers, trees, and medicines spread everywhere. And now that the animals, too, had plenty to eat, many came to live with her on Turtle Island.

Our stories say that of all the plants, *wiingaashk*, or sweetgrass, was the very first to grow on the earth, its fragrance a sweet memory of Skywoman's hand. Accordingly, it is honored as one of the four sacred plants of my people. Breathe in its scent and you start to remember things you didn't know you'd forgotten. Our elders say that ceremonies are the way we "remember to remember," and so sweetgrass is a powerful ceremonial plant cherished by many indigenous nations. It is also used to make beautiful baskets. Both medicine and a relative, its value is both material and spiritual.

There is such tenderness in braiding the hair of someone you love. Kindness and something more flow between the braider and the braided, the two connected by the cord of the plait. *Wiingaashk* waves in strands, long and shining like a woman's freshly washed hair. And so we say it is the flowing hair of Mother Earth. When we braid sweetgrass, we are braiding the hair of Mother Earth, showing her our loving attention, our care for her beauty and well-being, in gratitude for all she has given us. Children hearing the Skywoman story from birth know in their bones the responsibility that flows between humans and the earth.

The story of Skywoman's journey is so rich and glittering it feels to me like a deep bowl of celestial blue from which I could drink again and again. It holds our beliefs, our history, our relationships. Looking into that starry bowl, I see images swirling so fluidly that the past and the present become as one. Images of Skywoman speak not just of where we came from, but also of how we can go forward.

I have Bruce King's portrait of Skywoman, *Moment in Flight*, hanging in my lab. Floating to earth with her handful of seeds and flowers, she

looks down on my microscopes and data loggers. It might seem an odd juxtaposition, but to me she belongs there. As a writer, a scientist, and a carrier of Skywoman's story, I sit at the feet of my elder teachers listening for their songs.

On Mondays, Wednesdays, and Fridays at 9:35 a.m., I am usually in a lecture hall at the university, expounding about botany and ecology—trying, in short, to explain to my students how Skywoman's gardens, known by some as “global ecosystems,” function. One otherwise unremarkable morning I gave the students in my General Ecology class a survey. Among other things, they were asked to rate their understanding of the negative interactions between humans and the environment. Nearly every one of the two hundred students said confidently that humans and nature are a bad mix. These were third-year students who had selected a career in environmental protection, so the response was, in a way, not very surprising. They were well schooled in the mechanics of climate change, toxins in the land and water, and the crisis of habitat loss. Later in the survey, they were asked to rate their knowledge of positive interactions between people and land. The median response was “none.”

I was stunned. How is it possible that in twenty years of education they cannot think of any beneficial relationships between people and the environment? Perhaps the negative examples they see every day—brownfields, factory farms, suburban sprawl—truncated their ability to see some good between humans and the earth. As the land becomes impoverished, so too does the scope of their vision. When we talked about this after class, I realized that they could not even imagine what beneficial relations between their species and others might look like. How can we begin to move toward ecological and cultural sustainability if we cannot even imagine what the path feels like? If we can't imagine the generosity of geese? These students were not raised on the story of Skywoman.

On one side of the world were people whose relationship with the living world was shaped by Skywoman, who created a garden for the

well-being of all. On the other side was another woman with a garden and a tree. But for tasting its fruit, she was banished from the garden and the gates clanged shut behind her. That mother of men was made to wander in the wilderness and earn her bread by the sweat of her brow, not by filling her mouth with the sweet juicy fruits that bend the branches low. In order to eat, she was instructed to subdue the wilderness into which she was cast.

Same species, same earth, different stories. Like Creation stories everywhere, cosmologies are a source of identity and orientation to the world. They tell us who we are. We are inevitably shaped by them no matter how distant they may be from our consciousness. One story leads to the generous embrace of the living world, the other to banishment. One woman is our ancestral gardener, a cocreator of the good green world that would be the home of her descendants. The other was an exile, just passing through an alien world on a rough road to her real home in heaven.

And then they met—the offspring of Skywoman and the children of Eve—and the land around us bears the scars of that meeting, the echoes of our stories. They say that hell hath no fury like a woman scorned, and I can only imagine the conversation between Eve and Skywoman: “Sister, you got the short end of the stick . . .”

The Skywoman story, shared by the original peoples throughout the Great Lakes, is a constant star in the constellation of teachings we call the Original Instructions. These are not “instructions” like commandments, though, or rules; rather, they are like a compass: they provide an orientation but not a map. The work of living is creating that map for yourself. How to follow the Original Instructions will be different for each of us and different for every era.

In their time, Skywoman’s first people lived by their understanding of the Original Instructions, with ethical prescriptions for respectful hunting, family life, ceremonies that made sense for their world. Those measures for caring might not seem to fit in today’s urban world, where “green” means an advertising slogan, not a meadow. The

buffalo are gone and the world has moved on. I can't return salmon to the river, and my neighbors would raise the alarm if I set fire to my yard to produce pasture for elk.

The earth was new then, when it welcomed the first human. It's old now, and some suspect that we have worn out our welcome by casting the Original Instructions aside. From the very beginning of the world, the other species were a lifeboat for the people. Now, we must be theirs. But the stories that might guide us, if they are told at all, grow dim in the memory. What meaning would they have today? How can we translate from the stories at the world's beginning to this hour so much closer to its end? The landscape has changed, but the story remains. And as I turn it over again and again, Skywoman seems to look me in the eye and ask, in return for this gift of a world on Turtle's back, what will I give in return?

It is good to remember that the original woman was herself an immigrant. She fell a long way from her home in the Skyworld, leaving behind all who knew her and who held her dear. She could never go back. Since 1492, most here are immigrants as well, perhaps arriving on Ellis Island without even knowing that Turtle Island rested beneath their feet. Some of my ancestors are Skywoman's people, and I belong to them. Some of my ancestors were the newer kind of immigrants, too: a French fur trader, an Irish carpenter, a Welsh farmer. And here we all are, on Turtle Island, trying to make a home. Their stories, of arrivals with empty pockets and nothing but hope, resonate with Skywoman's. She came here with nothing but a handful of seeds and the slimmest of instructions to "use your gifts and dreams for good," the same instructions we all carry. She accepted the gifts from the other beings with open hands and used them honorably. She shared the gifts she brought from Skyworld as she set herself about the business of flourishing, of making a home.

Perhaps the Skywoman story endures because we too are always falling. Our lives, both personal and collective, share her trajectory. Whether we jump or are pushed, or the edge of the known world just crumbles at our feet, we fall, spinning into someplace new and

unexpected. Despite our fears of falling, the gifts of the world stand by to catch us.

As we consider these instructions, it is also good to recall that, when Skywoman arrived here, she did not come alone. She was pregnant. Knowing her grandchildren would inherit the world she left behind, she did not work for flourishing in her time only. It was through her actions of reciprocity, the give and take with the land, that the original immigrant became indigenous. For all of us, becoming indigenous to a place means living as if your children's future mattered, to take care of the land as if our lives, both material and spiritual, depended on it.

In the public arena, I've heard the Skywoman story told as a bauble of colorful "folklore." But, even when it is misunderstood, there is power in the telling. Most of my students have never heard the origin story of this land where they were born, but when I tell them, something begins to kindle behind their eyes. Can they, can we all, understand the Skywoman story not as an artifact from the past but as instructions for the future? Can a nation of immigrants once again follow her example to become native, to make a home?

Look at the legacy of poor Eve's exile from Eden: the land shows the bruises of an abusive relationship. It's not just land that is broken, but more importantly, our relationship to land. As Gary Nabhan has written, we can't meaningfully proceed with healing, with restoration, without "re-story-ation." In other words, our relationship with land cannot heal until we hear its stories. But who will tell them?

In the Western tradition there is a recognized hierarchy of beings, with, of course, the human being on top—the pinnacle of evolution, the darling of Creation—and the plants at the bottom. But in Native ways of knowing, human people are often referred to as "the younger brothers of Creation." We say that humans have the least experience with how to live and thus the most to learn—we must look to our teachers among the other species for guidance. Their wisdom is apparent in the way that they live. They teach us by example. They've been on the earth far longer than we have been, and have had time to figure things out. They live both above and below ground, joining Skyworld

to the earth. Plants know how to make food and medicine from light and water, and then they give it away.

I like to imagine that when Skywoman scattered her handful of seeds across Turtle Island, she was sowing sustenance for the body and also for the mind, emotion, and spirit: she was leaving us teachers. The plants can tell us her story; we need to learn to listen.

PEOPLE OF CORN, PEOPLE OF LIGHT

The story of our relationship to the earth is written more truthfully on the land than on the page. It lasts there. The land remembers what we said and what we did. Stories are among our most potent tools for restoring the land as well as our relationship to land. We need to unearth the old stories that live in a place and begin to create new ones, for we are storymakers, not just storytellers. All stories are connected, new ones woven from the threads of the old. One of the ancestor stories, that waits for us to listen again with new ears, is the Mayan story of Creation.

It is said that in the beginning there was emptiness. The divine beings, the great thinkers, imagined the world into existence simply by saying its name. The world was populated with a rich flora and fauna, called into being by words. But the divine beings were not satisfied. Among the wonderful beings they had created, none were articulate. They could sing and squawk and growl, but none had voice to tell the story of their creation nor praise it. So the gods set about to make humans.

The first humans, the gods shaped of mud. But the gods were none too happy with the result. The people were not beautiful; they were ugly and ill formed. They could not talk—they could barely walk and certainly could not dance or sing the praises of the gods. They were so crumbly and clumsy and inadequate that they could not even reproduce and just melted away in the rain.

So the gods tried again to make good people who would be givers of respect, givers of praise, providers and nurturers. To this end they carved a man from wood and a woman from the pith of a reed. Oh, these were beautiful people, lithe and strong; they could talk and dance and sing. Clever people, too: they learned to use the other beings, plants and animals, for their own purposes. They made many things, farms and pottery and houses, and nets to catch fish. As a result of their fine bodies and fine minds and hard work, these people reproduced and populated the world, filling it with their numbers.

But after a time the all-seeing gods realized that these people's hearts were empty of compassion and love. They could sing and talk, but their words were without gratitude for the sacred gifts that they had received. These clever people did not know thanks or caring and so endangered the rest of the Creation. The gods wished to end this failed experiment in humanity and so they sent great catastrophes to the world—they sent a flood, and earthquakes, and, most importantly, they loosed the retaliation of the other species. The previously mute trees and fish and clay were given voices for their grief and anger at the disrespect shown them by the humans made of wood. Trees raged against the humans for their sharp axes, the deer for their arrows, and even the pots made of earthen clay rose up in anger for the times they had been carelessly burnt. All of the misused members of Creation rallied together and destroyed the people made of wood in self-defense.

Once again the gods tried to make human beings, but this time purely of light, the sacred energy of the sun. These humans were dazzling to behold, seven times the color of the sun, beautiful, smart, and very, very powerful. They knew so much that they believed they knew everything. Instead of being grateful to the creators for their gifts, they believed themselves to be the gods' equals. The divine beings understood the danger posed by these people made of light and once more arranged for their demise.

And so the gods tried again to fashion humans who would live right in the beautiful world they had created, in respect and gratitude and humility. From two baskets of corn, yellow and white, they ground a fine meal, mixed it with water, and shaped a people made of corn. They were fed on corn liquor and oh these were good people. They could dance and sing

*and they had words to tell stories and offer up prayers. Their hearts were filled with compassion for the rest of Creation. They were wise enough to be grateful. The gods had learned their lesson, so to protect the corn people from the overpowering arrogance of their predecessors, the people made of light, they passed a veil before the eyes of the corn people, clouding their vision as breath clouds a mirror. These people of corn are the ones who were respectful and grateful for the world that sustained them—and so they were the people who were sustained upon the earth.**

Of all the materials, why is it that people of corn would inherit the earth, rather than people of mud or wood or light? Could it be that people made of corn are beings transformed? For what is corn, after all, but light transformed by relationship? Corn owes its existence to all four elements: earth, air, fire, and water. And corn is the product of relationship not only with the physical world, but with people too. The sacred plant of our origin created people, and people created corn, a great agricultural innovation from its teosinte ancestor. Corn cannot exist without us to sow it and tend its growth; our beings are joined in an obligate symbiosis. From these reciprocal acts of creation arise the elements that were missing from the other attempts to create sustainable humanity: gratitude, and a capacity for reciprocity.

I've read and loved this story as a history of sorts—a recounting of how, in long-ago times just at the edge of knowing, people were made of maize and lived happily ever after. But in many indigenous ways of knowing, time is not a river, but a lake in which the past, the present, and the future exist. Creation, then, is an ongoing process and the story is not history alone—it is also prophecy. Have we already become people of corn? Or are we still people made of wood? Are we people made of light, in thrall to our own power? Are we not yet transformed by relationship to earth?

Perhaps this story could be a user's manual for understanding how we become people of corn. The Popul Vuh, the Mayan sacred text in which this story is contained, is perceived as more than just a chronicle.

* Adapted from oral tradition.

As David Suzuki notes in *The Wisdom of the Elders*, the Mayan stories are understood as an *ilbal*—a precious seeing instrument, or lens, with which to view our sacred relationships. He suggests that such stories may offer us a corrective lens. But while our indigenous stories are rich in wisdom, and we need to hear them, I do not advocate their wholesale appropriation. As the world changes, an immigrant culture must write its own new stories of relationship to place—a new *ilbal*, but tempered by the wisdom of those who were old on this land long before we came.

So how, then, can science, art, and story give us a new lens to understand the relationship that people made of corn represent? Someone once said that sometimes a fact alone is a poem. Just so, the people of corn are embedded in a beautiful poem, written in the language of chemistry. The first stanza goes like this:

Carbon dioxide plus water combined in the presence of light
and chlorophyll in the beautiful membrane-bound machinery
of life yields sugar and oxygen.

Photosynthesis, in other words, in which air, light, and water are combined out of nothingness into sweet morsels of sugar—the stuff of redwoods and daffodils and corn. Straw spun to gold, water turned to wine, photosynthesis is the link between the inorganic realm and the living world, making the inanimate live. At the same time it gives us oxygen. Plants give us food and breath.

Here is the second stanza, the same as the first, but recited backward:

Sugar combined with oxygen in the beautiful membrane-bound machinery of life called the mitochondria yields us right back where we began—carbon dioxide and water.

Respiration—the source of energy that lets us farm and dance and speak. The breath of plants gives life to animals and the breath of animals gives life to plants. My breath is your breath, your breath is mine. It's the great poem of give and take, of reciprocity that animates the world. Isn't that a story worth telling? Only when people understand

the symbiotic relationships that sustain them can they become people of corn, capable of gratitude and reciprocity.

The very facts of the world *are* a poem. Light is turned to sugar. Salamanders find their way to ancestral ponds following magnetic lines radiating from the earth. The saliva of grazing buffalo causes the grass to grow taller. Tobacco seeds germinate when they smell smoke. Microbes in industrial waste can destroy mercury. Aren't these stories we should all know?

Who is it who holds them? In long-ago times, it was the elders who carried them. In the twenty-first century, it is often scientists who first hear them. The stories of buffalo and salamanders belong to the land, but scientists are one of their translators and carry a large responsibility for conveying their stories to the world.

And yet scientists mostly convey these stories in a language that excludes readers. Conventions for efficiency and precision make reading scientific papers very difficult for the rest of the world, and if the truth be known, for us as well. This has serious consequences for public dialogue about the environment and therefore for real democracy, especially the democracy of all species. For what good is knowing, unless it is coupled with caring? Science can give us knowing, but caring comes from someplace else.

I think it's fair to say that if the Western world has an *ilbal*, it is science. Science lets us see the dance of the chromosomes, the leaves of moss, and the farthest galaxy. But is it a sacred lens like the Popul Vuh? Does science allow us to perceive the sacred in the world, or does it bend light in such a way as to obscure it? A lens that brings the material world into focus but blurs the spiritual is the lens of a people made of wood. It is not more data that we need for our transformation to people of corn, but more wisdom.

While science could be a source of and repository for knowledge, the scientific worldview is all too often an enemy of ecological compassion. It is important in thinking about this lens to separate two ideas that are too often synonymous in the mind of the public: the practice of science and the scientific worldview that it feeds. Science is the process

of revealing the world through rational inquiry. The practice of doing real science brings the questioner into an unparalleled intimacy with nature fraught with wonder and creativity as we try to comprehend the mysteries of the more-than-human world. Trying to understand the life of another being or another system so unlike our own is often humbling and, for many scientists, is a deeply spiritual pursuit.

Contrasting with this is the scientific worldview, in which a culture uses the process of interpreting science in a cultural context that uses science and technology to reinforce reductionist, materialist economic and political agendas. I maintain that the destructive lens of the people made of wood is not science itself, but the lens of the scientific worldview, the illusion of dominance and control, the separation of knowledge from responsibility.

I dream of a world guided by a lens of stories rooted in the revelations of science and framed with an indigenous worldview—stories in which matter and spirit are both given voice.

Scientists are particularly good at learning about the lives of other species. The stories they could tell convey the intrinsic values of the lives of other beings, lives every bit as interesting, maybe more so, as those of *Homo sapiens*. But while scientists are among those who are privy to these other intelligences, many seem to believe that the intelligence they access is only their own. They lack the fundamental ingredient: humility. After the gods experimented with arrogance, they gave the people of corn humility, and it takes humility to learn from other species.

In the indigenous view, humans are viewed as somewhat lesser beings in the democracy of species. We are referred to as the younger brothers of Creation, so like younger brothers we must learn from our elders. Plants were here first and have had a long time to figure things out. They live both above and below ground and hold the earth in place. Plants know how to make food from light and water. Not only do they feed themselves, but they make enough to sustain the lives of all the rest of us. Plants are providers for the rest of the community and exemplify the virtue of generosity, always offering food. What if

Western scientists saw plants as their teachers rather than their subjects? What if they told stories with that lens?

Many indigenous peoples share the understanding that we are each endowed with a particular gift, a unique ability. Birds to sing and stars to glitter, for instance. It is understood that these gifts have a dual nature, though: a gift is also a responsibility. If the bird's gift is song, then it has a responsibility to greet the day with music. It is the duty of birds to sing and the rest of us receive the song as a gift.

Asking what is our responsibility is perhaps also to ask, What is our gift? And how shall we use it? Stories like the one about the people of corn give us guidance, both to recognize the world as a gift and to think how we might respond. The people of mud and wood and light all lacked gratitude and the sense of reciprocity that flowed from it. It was only the people of corn, people transformed by awareness of their gifts and responsibilities, who were sustained on the earth. Gratitude comes first, but gratitude alone is not enough.

Other beings are known to be especially gifted, with attributes that humans lack. Other beings can fly, see at night, rip open trees with their claws, make maple syrup. What can humans do?

We may not have wings or leaves, but we humans do have words. Language is our gift and our responsibility. I've come to think of writing as an act of reciprocity with the living land. Words to remember old stories, words to tell new ones, stories that bring science and spirit back together to nurture our becoming people made of corn.