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News that Inspires

The Intelligence of Plants
by Unknown Yet

Stephen Harrod Buhner is an award-winning author of 22 books on nature, indigenous cultures, the environment, and herbal medicine. He comes from a long line of healers that include Leroy Burney, Surgeon General of the United States under Presidents Eisenhower and Kennedy, and Elizabeth Lusterheide, a midwife and herbalist who worked in rural Indiana in the early nineteenth century. He says that the greatest influence on his work, however, has been his great-grandfather, C.G. Harrod, who primarily used botanical medicines, also in rural Indiana, when he began his work as a physician in 1911.

Buhner, who says his DNA prevents him from working for others, has been a fulltime therapist in private practice; a fulltime clinical herbalist in private practice; has been on the faculty at Rocky Mountain Center for Botanic Studies in Boulder, Colorado; has taught throughout the United States on herbal medicine, the sacredness of plants, the intelligence of Nature, and developing the states of mind necessary for successful habitation of the Earth.

He attained a cult-like following as a result of his research into Lyme disease and natural remedies for it, which he detailed in three books: Healing Lyme: Natural Healing of Lyme Borreliosis and the Coinfections Chlamydia and Spotted Fever Rickettsiosis, 2nd Edition; Healing Lyme Disease Coinfections: Complementary and Holistic Treatments for Bartonella and Mycoplasma; and Natural Treatments for Lyme Coinfections: Anaplasma, Babesia, and Ehrlichia. His work has appeared or been profiled in media outlets throughout North America and Europe including Native Peoples, Shaman's Drum, Herbalgram, The Sun, Mother Earth News, The New York Times, CNN, and Good Morning America.

His most recent books are Plant Intelligence and the Imaginal Realm: Beyond the Doors of Perception into the Dreaming of Earth (Bear and Company/Inner Traditions, 2014), which is the sequel to Secret Teachings of Plants; and Healing Lyme (second edition), Raven Press, 2016. He lives in New Mexico and works closely with Julie McInture and Trishuwa, co-founders with him of The Foundation for Gaian Studies, a non-profit organization exploring and participating with "the non-linear intelligence of nature." All three believe that the survivability of the human species depends on once more reconnecting to the Earth and caring for the nonhuman world from which we emerged. – Leslee Goodman

The MOON: You've said that plants are intelligent; that they can perform complex mathematical computations; can plan for the future; can even interpret meaning. How do you come to this conclusion?

Buhner: I came to this conclusion doing research for my first book, Sacred Plant Medicine, which focused on the direct stories of indigenous people all over the world. Their first person accounts all said that that they learned the medicinal qualities of the

plants they used from the plants themselves, or that it came in a vision, or that Creator told them the uses. It was clear then that, in a way that reductive science did not understand, or even acknowledge, there was another way of gathering information about the world, and that in fact, plants were highly intelligent and able to communicate with people. Years later, in The Secret Teachings of Plants, I focused on this dynamic within the industrialized world, east and west, by focusing on people such as Goethe, Luther Burbank, George Washington Carver, and the great Japanese farmer Masanobu Fukuoka. More recently, in Plant Intelligence and the Imaginal Realm, I look at the work of plant researchers, including Barbara McClintock, who won the Nobel Prize for her work on corn genetics. She, too, said that the corn taught her everything she knew; that she didn't go any place the corn did not first tell her to go. I had a natural tendency to work with the natural world in this way but these stories gave me a great deal of permission to follow my own inquiry into plants—just following my interest when a plant caught my attention. In the beginning, I generally confirmed the knowledge the plant gave me by looking at how the world's peoples used those plants, but that's not how I initially acquired it.

Unfortunately, we've been raised with a strange set of ideas from the 19th century that places humans at the top of the intelligence hierarchy. Physicists are at the very top, of course, with the rest of us straggling along below them, followed by a few smart mammals, such as dolphins and chimpanzees. The rest of creation doesn't really count, in terms of intelligence, except for maybe parrots.

This idea originally came out of monotheistic perspectives that held humans to be a superior or special form of life. Rationalists simply applied that to the belief that it was our brain size and its large frontal lobe that made us unique. Then, when we found out that sperm whales have much larger brains than we do, we modified the hypothesis to say that the brain's size relative to the organism's size was the key factor. But it turns out that you don't necessarily need a brain to think; the brain is just an organ. What you really need is the neural network the brain holds. From this perspective, we are not all that unique or superior. Plants have incredibly complex neural networks, which use the same neural chemicals ours does. In many instances they are far larger than our own. For a long time reductionists denied the presence of a brain in plants (and many of them still do). I think it incredibly ironic that Darwin was the first to understand that a plant's neural network was its root system, but this part of his research has been largely overlooked.

To understand intelligence in other life forms it is crucial to realize that, to survive, all life-forms must have a sense of not me, which means they must have a sense of self; which means they are self-aware. Also, to survive, they all must be able to analyze the nature of the other entities that approach them, determine their intent—in other words, determine meaning—and further, be able to craft a response to that intent, or meaning. This means that all life forms—even viruses and bacteria, even our white blood cells, even slime mold—are, by definition, intelligent. They can not only process data, they can conduct a search for meaning, an analysis that runs much deeper than linear cause and effect. Thus, three capacities—self-awareness, intelligence, and the search for meaning that have—erroneously—been ascribed as belonging only to human beings, are in fact general conditions for every life-form—and particularly for plants.

Plants are the greatest chemists on the planet. Because they can't run, they have to deal with whatever their environment gives them. Many times their responses are chemical in nature. For example, if they're being attacked by spider mites, they might start manufacturing a pheromone that attracts spider mite predators. They'll also send a chemical signal to their neighbors, so that they, too, create the pheromone to protect themselves. This is absolutely not a trial and error process; the chemicals they make have

to be specific and they have to be present in exactly the right proportions, usually parts per trillion or billion. Any deviation simply doesn't work. Normally, they analyze the saliva of what is eating them and then specifically craft a chemical for that organism. This is tool-making by any definition of the term.

The MOON: Let's say I'm walking my driveway with a weed-whacker. What are a plant's options?

Buhner: Well, obviously, it can't run away, and it's not likely to be able to do anything to deter you in the moment. But plants typically think on a longer timeframe than that. Many plants co-evolved with grazing animals and are actually healthier when a certain amount of browsing takes place, so within that healthy range they don't produce an adversarial response. However, there is a type of clover in Australia that, if overgrazed by sheep, produces a chemical that causes the sheep to miscarry, thus reducing the density of future grazing. Again, they think long term.

Humans, too, are starting to experience severe reproductive difficulties worldwide—and I don't believe that's an accident. Endocrinologist Louis J. Guillette, Jr., pioneered the study of environmental factors that he found to be linked to reproductive difficulties that are widespread in males across many species. A lot of the problems for humans are certainly attributable to all the pharmaceuticals that are now in the water supplies at parts per trillion levels, which water treatment facilities aren't able to remove, neutralize, or often even test for. Worldwide there is an increase in testicular cancers, prostate cancers, uterine and ovarian cancers. Some of these problems are also plant induced. As Robert Heinlein once said, "Population problems have a horrible way of solving themselves." Plants are intimately involved in moderating ecosystem function; they are especially active if a single species begins increasing its population beyond sustainable levels. No one has really looked at how plant chemical production is altering human reproductive health, but every time researchers look at impacts on other animal species, they find plant involvement. This is not something I tend to focus on, as there is a strong tendency among humans to see the natural world as adversarial, to view plants for instance as inimical to human life (such as invasive plants). But plants have been on the planet for 700,000,000 years at least and have very advanced survival strategies, which are far more adept than our own.

The MOON: Wow. You've even said that plants recognize their own kin.

Buhner: Yes, I go into this in a lot of detail in my books, but basically, plants are rooted in soil and are extremely sensitive to events in their ecorange. The roots of plants—their neural network, produce the same neuro-transmitting chemicals that we use in our brains; their root systems also have synapses and neurons similar to ours. Plants store memories in their roots; have very sophisticated languages and communicate with others through chemicals produced in their roots; have a very rich community life; can recognize their own kin and pass information to them, and so on. They're even sensitive to events that they know will occur in the future, simply from their sensitivity to tiny alterations in ecosystem functioning. Researchers have realized that some plants prepare for weather changes two years in advance—well before human meteorologists have any inkling as to the forecast.

Older plants will teach the offspring that have taken root downslope from them. As decades or centuries go by, plants become very good at surviving, adapting, and responding to large ranges of environmental events and storing this knowledge inside their memories, just as we do. They store chemical responses to adverse events as well

as the knowledge of how to produce these chemicals. When released through a plant's stomata—which are the mouth-like openings on the underside of leaves—the younger plants then take them in through their own stomata. This is one of the ways that the younger plants learn how to make the chemicals themselves.

The chemicals are also made available to other plants that are not their kin. There's a very high level of sociability that is intended to ensure the survivability of the community.

It's basically a type of blindness, or species chauvinism, that has prevented us from seeing all of this—which, indigenous peoples "saw," or intuited, thousands of years ago. Nevertheless, Western thinkers are catching up, now that the whole field of plant neurobiology is becoming increasingly robust. It's teaching us what indigenous people have known all along, that humans are simply one member in the web of life and the other species that we share the planet with are our kin, our equals, each in their own unique way.

A lot of the credit for recognizing the interdependence of Earth species belongs to Jim Lovelock, who developed the Gaia theory, as well as Lynn Margolis, who developed the theory of symbiogenesis. Along with Barbara McClintock, they have been really instrumental in shifting the reductivist neo-Darwinian model of evolution (and even Darwin himself was a lot more sophisticated than many of his followers) to the concept that the Earth is a single, intelligent super-organism that is orchestrating its own evolution.

The MOON: Would you give us another example of plant community-mindedness?

Buhner: There are thousands. I've already mentioned that when bean plants are being fed on by spider mites, they'll analyze the saliva of the spider mite to identify the exact species of spider mite, and then manufacture a chemical in parts per billion or trillion to attract the specific predator of that specific spider mite and release it through their stomata. At the same time, they'll release other pheromones to warn neighboring plants of the spider mite's presence, so they too will protect themselves.

Here's another example: when scientists enter a forest and girdle one or more trees—which would theoretically kill the trees because girdling disrupts the nutrient flow from the leaves, where photosynthesis occurs, to the roots—neighboring trees, and other plants, will feed the girdled trees through the mycelial network—that's the fungal network that acts like an enormous internet throughout the soil. Scientists have found that other plants literally send nutrients to the deficient trees. You see this type of behavior all over the world.

Increasingly, we are learning that the two fundamental life forms on Earth are plants and bacteria. Plants basically work to maintain the ecosystems of the planet within the range that allowed human beings to develop as a species. They're community-oriented beings, who don't tend to get aggressive unless they're treated badly past a certain point.

The MOON: You had a personal experience with plants who felt as if that point had been crossed.

Buhner: Yes. It was on a trip I took with one of my colleagues to the Florida panhandle. One day we decided to go out and make relationship with the plants and offer prayers to them. The place we chose was quite lush, with huge trees and thick undergrowth, but as we sat there, we felt a strong anger coming from the land and the trees. They had little

use for us and told us so in strong language. We sat with them for a long time and did not shrink from their rage, until eventually they calmed down a little. They told us that we could do our ceremonies if we wished and that they appreciated the thought but that it would do no good. It was too late for that place, it could not be helped, the land would take its revenge for the damage done to it and nothing would stop it. I wondered then how everyone who lived in the area could just go on with their daily lives when this communication was crying out so loudly. I wondered if anyone else felt this rage and anger.

The MOON: But couldn't the same response from plants be expected from many places across the planet?

Buhner: Probably so; but very few people are paying attention. No one is listening. Alice Walker, however, describes a similar experience in Living by the Word. She says she was feeling depressed and went for a walk into the woods, where she lay down underneath some trees. She lay there quietly for a few moments, when she realized the trees were telling her to get out. Her reaction was, "What? No! I'm one of the good ones!" But the trees said, "No; two arms; two legs. You're one of them." She realized then that there are repercussions for human behavior; that all of us are responsible for what is happening. You can sense these repercussions in any ecosystem that's been logged heavily. When you walk onto this scene of total destruction you can feel the impact immediately. That kind of wholesale industrial destruction of an ecosystem does produce a kind of rage in the organisms who live there.

I think of the strong emotions—joy, sadness, anger, fear—as being like the instrumentation dials on the dashboard of your car. They tell you the state of the engine. Anger is really energy to solve a problem: you get angry and then you do something. Plants and ecosystems are no different; there are emotional dynamics in response to what's happening on the planet. Plants and ecosystems under tremendous assault use that emotional energy to mobilize a defense strategy. They're no different from humans in that regard; we're not that different from any other organism here.

The MOON: You say in Plant Intelligence, that the only real difference between humans and other organisms is our ecological function.

Buhner: Right. When you begin to grasp that the Earth is a single organism that acts very much like all other organisms except that its timelines are so very long, you begin to understand that no lifeform has emerged from the ecological matrix of the planet except to perform specific ecological functions. When a new organism comes into being it is balanced near to the edge of chaos, but not too near so as to topple it, rather like a bicycle in motion, or a spinning top. If you touch a spinning top, you'll cause a perturbation. If the perturbation is not too great, the top will recover and keep spinning. But if the perturbation crosses a certain point, the top will fall out of its spin. Same thing with a bicycle, and same thing with biological systems.

The Earth is constantly analyzing the degree of perturbation present in the system and developing response strategies. One of the major strategies is to develop new organisms or to send existing organisms in the guise of invasive species into damaged areas in order to re-establish homeodynamics. Plants literally create conditions for other forms of life to emerge. Many indigenous people acknowledge this by saying that humans are the offspring of the plants; that plants are our ancestors. Without plants altering the atmosphere, we never could have evolved here.

The MOON: So, if it's not too late, what is the proper ecological function of a human being?

Buhner: That's not a question with an easy answer. First you have to understand how the Earth's ecosystem functions and how it's been innovating for millions of years. The Earth brought humans forth to help it to fulfill specific ecosystem functions.

Part of my purpose in writing Plant Intelligence was because I was weary of hearing, "Human beings are a cancer; human beings are destroying the Earth." To my mind, that's the flip side of thinking human beings are the apex of creation.

If you understand the Earth, you know she has withstood challenges far greater than humans many times in the past. There's no way Earth would create a species that would just exist to destroy all life on the planet. The only way to get out of the doom loop thinking trap we are in is to really trust the Earth. Once that occurs, our thinking tends to break out of habituated patterns and at that point something new enters inside us.

The MOON: So what is a more proper attitude humans should adopt towards living with others in this giant superorganism?

Buhner: Humility. We're really ignorant and we need to come to terms with that fact. It's not just a matter of being inadequately informed; it's a matter of it not being possible to be adequately informed. The system is too vast and complex. Aldo Leopold famously said, "The first rule of intelligent tinkering is to save all the parts." We haven't done that.

If we begin to understand that the Earth is intelligent, alive, and aware, and that everything else on the planet is intelligent, alive, and aware, then we have to stop thinking that it's all here just to serve us. The truth is, we're here to serve it. We've been incredibly stupid and arrogant in thinking we could "manage" large-scale perturbations in ecosystems. When we finally understand the difficulty of predicting the outcome of any large scale perturbation, we'll approach them much more cautiously—as the Iroquois Confederacy advised, with an eye to the seventh generation. It's exceedingly difficult to anticipate how an action taken today will affect people seven generations out; not many actions will pass that test. We may still make mistakes—all of us do on the way to wisdom—but they generally won't have the same degree of severity as they do when we assume we know what we are doing.

An example is our response to invasive plant species. I often say that Republicans are terrified of invasive humans, but Democrats are terrified of invasive plants. Both believe that the invasion will destroy their way of life. The thing is, the ecosystem of the planet is constantly in flux. Innovation, or evolution, always still going on. We don't see it because we don't know how to look.

Plant species move across the planet in sophisticated ways that statistical analysis can't really explain. The thing we should ask ourselves when we see an invasive plant moving into an ecosystem is, "Why is it here? What ecological function is it performing?" That shows sensitivity and humility to the unknown. Instead, we tend to say, "That's an invasive species; we need to eradicate it." But we are gradually discovering that invasive species are typically performing an essential ecological function. They're part of the Earth's response to the perturbations in the system.

For example, Japanese knotweed tends to become endemic in all the regions where Lyme disease is going to emerge in about six months. The root of that plant happens to be the

best treatment for Lyme disease available; as specific as you can get. In addition, in the industrially ravaged places where this plant often grows, it scavenges heavy metals and restores soil dynamics; so rather than declaring it a problem, we need to be asking what it is doing for the ecosystem in the places it shows up. In most cases, invasive plants have moved into a region to somehow reclaim or restore the ecologic functioning, which many times includes human health, which plants attend to, as well.

There are other examples, for instance, in Montana where I wrote about the emergence of isatis (in the book, Herbal Antivirals). Not only is isatis specific for treating emerging viral diseases in humans, it also tends to reduce cattle foraging in the ecorange in which it grows, thus allowing the ecorange to recover. So, we have to be aware that we're ignorant, and we have to not mind that we're ignorant. That will produce the humility that is essential if we're to cooperate with the Earth for our long-term survival. The Earth is not in trouble, and really, ultimately, human beings are not in trouble, either. Our civilization, however, is in real bad trouble.

The MOON: You've said in your books that you've acquired your knowledge of plants, as indigenous cultures have done, by talking with them; which doesn't just mean speaking, but more importantly, listening. Can you tell us how that works?

Buhner: Just as Barbara McClintock said, of her Nobel Prize-winning work: "I never went anywhere in my searches that the corn didn't first tell me to go. You have to understand, these are living beings. They taught me everything that I know." Most of her fellow scientists said things like, "I respect Barbara's work; I just don't like her mysticism." To which she would reply, "Yes, but it's not mysticism."

People have a natural affinity for the natural world; it's just been strangled out of us. The easiest way to get back in touch with it is to remember what it was like to be a child. We were aware then that we lived in an animate world; that we could sit by a tree, who was our friend; or by a brook, who was our friend. It was only when we started going to school that they rather forcefully started to train us out of that perspective.

Because of our indoctrination, it's difficult for a lot of people to restore what James Hillman called, "the response of the heart to what is presented to the senses." Robert Bly likened our situation to becoming trapped inside our own houses and only occasionally looking out of the window at a view with which we can have no meaningful contact—because if there's nothing living or intelligent out there, why bother to extend yourself?

Yet we use our sixth sense, our ability to be touched by the world and to touch it back, every day. This is not in any way esoteric. It's what happens when you watch a puppy stumbling across the floor, and when it sees you absolutely lights up with joy. There's a flash of recognition, a kind of energy, that flows from the puppy to you and back again. The puppy bounds across the floor and licks your face and thumps its tail and you laugh and pet it like crazy, and the two of you share a wonderful experience that we have no word for our in our language. But how many millions of people have pets and know what I'm talking about, nonetheless? It's part of our interior world, and we've been taught not to talk about our interior world. That's "soft" stuff; it's not "hard science."

As a result, we've ignored our interior world, so we have no deep knowledge of it. But we can know it. We can rekindle the knowing we had as children, simply by asking ourselves in any given situation, "How does this feel?"

You see people do it all the time when they enter a restaurant, or a conference room. They pause for a moment at the door and scan the room to see how it feels and where they might like to sit. They'll choose a chair that "feels right," sit down, and if you want to see someone get mad, try sitting in "their" chair when the meeting resumes after the lunch break.

When you begin to routinely and consciously ask yourself, "How does this feel," a massive aesthetic dimension to life re-emerges and informs you. What it will mostly inform you about at first is how bad most environments feel. Most schools don't feel good and most kids know it, so they shut down their feeling selves. Most workplaces don't feel good; most workers know it, so they shut off their feeling selves. Most hospitals and clinics don't feel good; most patients know it, so they shut off their feeling selves. When we shut down "the response of the heart to what's presented to the senses," we end up tolerating conditions and situations that no one in their right mind would ever put up with.

I've always felt a great affinity for plants and have been receptive to various communications from them. Most people recognize the "presence" of a giant redwood or sequoia. Quite often, it's a very wise, peaceful energy. However, I started to go deeper into my feeling for plants when I became violently ill with abdominal cramping. The doctors couldn't figure out what the problem was, but an herbalist told me that the root of a plant that grew near our house in Colorado was good for that condition. It was the kind of pain that would throw me to the ground screaming, so I was motivated to try it. Not only did it alleviate my cramping, it filled me with a sense of well-being akin to that puppy love euphoria we spoke of earlier. It was such an incredible feeling that I wanted to experience it with all plants.

At the time we lived in Colorado at 9,000 feet, on land that had never been logged, or farmed, or grazed, so the plant diversity around us was massive. I would walk on the land, just letting myself be guided by any plant that drew my attention. Then I'd sit with it and get to know it. After a few years, I began sitting with usnea, a lichen that grows on trees. I was sitting there, gazing at the plant, when I fell into a dream-like state where everything disappeared. I saw a man walking towards me. As he approached, I saw that he was incredibly old, with lichen for hair.

He said to me, "I see that you've been sitting here in a good way, so I wanted to tell you that the reason usnea is so good at healing lungs in humans is because it also heals the lungs of the planet, the trees."

At the time, nothing I'd read or heard told me plants were medicinal for anyone but humans. It had never occurred to me that they performed significant medicinal functions for other species. I ended up writing a whole book about that, The Lost Language of Plants. I researched the medicinal properties of usnea and found out that, indeed, it was used to treat tuberculosis. Soon afterwards, I discovered that the basement of the University of Colorado library had all of these ethnographic accounts from the early 1900s in which researchers had asked native peoples from all over the country how they had learned about the medicinal properties of the plants they worked with. Every one of them described an experience like mine.

It turns out that this kind of experience is very common among scientists, too. Both Francis Crick and James Watson admitted that the image of the double helix of our DNA came to them in a kind of dream state, but they felt foolish saying it.

That experience with usnea was one of the first vivid ones I had, but as time went on I

began to have them more regularly. These kinds of experiences have been pushed to the margins of our culture, first by the monotheists then by the reductive scientists and rationalists who came after. Yet our ability to inhabit this Earth as a companion, rather than a dominator, is the kind of thread I've followed throughout all my work—whether it's investigating herbal alternatives to antibiotic-resistant bacteria, or the treatment of chronic illnesses like Lyme disease. I also put massive amounts of journal research into my books—reviewing several thousand articles for each one of them—but that's only to show more reductive readers the reliability of the knowledge I've gained from the plants themselves, by asking them to tell me about themselves.

This type of communication develops over time, like any kind of communication skill; like reading. We have to learn to read, and we have to develop comprehension of what we read. In this case, though, we're reading the text of the world, which is a living text, and which will communicate to anyone who approaches it with the proper attitude of mind.

The one benefit indigenous cultures share that we lack is the inherent understanding that the world is alive and that we're an embedded part of a living community. But Westerners—by which I mean Americans, the British, and Europeans—have been colonized so long, we have a longer journey back to the original sense of wonder and oneness with the natural world than others. We're like the black raven who decided he wanted to be a white dove, so practiced for years before deciding he'd never become a white dove; he would just have to stay a raven. But by then he'd forgotten how to be a raven. So, reclaiming our original orientation, which knows its embedded place in a living world filled with other beings, will take some work. But the rewards are a much richer life than the one most of us are living.

The MOON: Once we're aware that EVERYTHING we've been killing is alive, how should we live? It's bad enough to kill animals…Now we realize that plants are being slaughtered as well…

Buhner: Yeah, I know. [Laughs] When you recognize that in some instances plants are the mostintelligent species on the planet—that, for example, there are aspen groves with root systems that cover 100 acres and are hundreds of thousands of years old, whose neural networks dwarf virtually any other life form on the planet—then the moral argument for vegetarianism sort of falls apart.

Here again, I think we can learn from indigenous cultures, who knew that they needed to kill in order to live, and they were aware of the soul burden of taking another life. How did they handle that soul burden? They prayed. They talked to the spirit of the animal before they killed it. They prayed over it after they killed it. They took responsibility for what they did and asked for forgiveness. Through it all, there was a deepening of their relationship with other beings, as well as a deep understanding of the nature and inevitability of death. It's not possible to escape the reality that other beings die so that we might live. But it is possible to take responsibility for the killing we inflict and undertake it with great awareness and humility. That changes the dynamic of everything we do.

Sooner or later we give back, after all. We biodegrade. But to live with awareness, humility, gratitude, and respect for all of the beings who die so that we might live changes our attitude to everything. Right now, we're lacking that awareness because we've been taught that everything else is insentient; has no soul; and so has no right to be treated with respect.

The MOON: Yes. And being aware and sensitive to this reality might encourage us to kill

more reticently; to consume more frugally; because others are literally dying in order to feed us.

Buhner: One of the things I've noticed about moving into early old age—I'm 65—is my growing awareness of the side-effects of the most innocuous behaviors. Life keeps showing me that it hasn't been possible to live without causing harm. It hasn't been possible to anticipate all of the repercussions of my actions. I find myself increasingly sensitive to past events that have to be grappled with when I awaken in the middle of the night and an inner voice says, "There's something we need to talk about." The upside, however, is a growing wisdom, which is part of the gift of being an elder. I'm learning to accept that I'm a predator, and I have to both forgive myself and find a way to repay that debt so I can live with myself.

The MOON: You write quite often about "the metaphysical background of the world." What is it?

Buhner: There's a story I tell in my book, Plant Intelligence about Elizabeth Kubler-Ross visiting a Nazi concentration camp in Poland after the war. She walks through this desolate, horrific place where so many people died, and in one of barracks where people had scratched their names or messages to loved ones on the walls, she is startled to find a flurry of butterflies! Children had scratched butterflies in that dreadful place. She was struck motionless by the beauty of that gesture.

Then the young Jewish woman who had been working the gate approaches her and tells her that her entire family had been killed in this concentration camp.

Dr. Kubler-Ross says, "But you are so calm. How can you be so calm, working here where your entire family was killed?" And the woman says, "The Nazis taught me that we each have a Hitler inside of us. If we don't deal with our own Hitler, the violence will never stop."

A shift from the surface to the depth of the world takes place in that exchange. That's part of the metaphysical background of the world. It's always there, beyond the surface. If you begin to spend time with anything—a plant, a river, a mountain, an animal—its surface becomes more porous and you become aware of the deeper meanings that are flowing through it and all around you, and always have been, but we shut them out because we're so busy. Every time we stop and rekindle our feeling sense, we have the opportunity to reconnect to the metaphysical background of the world. Many times, though, it has to catch us by surprise—as it did in that moment for Elizabeth Kubler-Ross, with both the children's butterflies, and the young Jewish woman's wisdom.

That's why I like to spend time with plants. When I slow down enough, I can hear what they're trying to teach me. And always, though I learn more about them and what they do, I also learn things I need to know about being a human being. There is a reason, I think, why so many indigenous peoples in the world had legends that taught that the many invisibles with whom we are companioned taught people how to become human beings. But only if we are humble will we be able to understand that. And I think that one of the great tasks facing our species now is how to once again become human beings who sit in the circle of life, surrounded by kin, who can approach those kin in humbleness.