

American Indian cultural models for sustaining biodiversity

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Just to give you my own background, my grandpa's bones and grandma's bones on my mother's side are in the San Joaquin Valley, and on my dad's side they're in northern Mexico—Sonora, Mexico.

My tribal background is O'odham on my dad's side—Sonora, Mexico—and I'm adopted by the Crow tribe, Whistling Water Clan Pretty Weasel family. My Crow name is De'k Sash 'M' Gosh, which means First Eagle.

What I want to talk about is something like when a person is living in two worlds, two worlds that are just now beginning to come a little bit together. These two worlds are very different.

I always have to have the caveat that I don't speak for any other Indian but myself. That's standard stuff. There are a lot of different kinds of Indians in the world. I do work with a lot of traditional people, a lot of elders, and I work in northern Mexico, in the United States, and in Canada.

You're going to read books talking about Indian people being in North America or South America 10,000 to 12,000 years, maybe 30,000 if the scientist is really brave. But there's a site in Mexico that may be much older.

You have heard of the Bering Strait theory. It's only a theory. If you search the literature, you will not find a single article that confirms the theory. What has been done is that one scientist after another has copied this idea.

You've heard of the megafauna extinctions. There's utterly no evidence for it, yet we hear over and over that Indian people exterminated the megafauna in North America. I can go on and on and on. The books you read don't reflect indigenous history at all.

So what we're going to have to do is start in the beginning and try to give you a traditional point of view. You're not going to find it in a book. There's no book out there and there are very few articles that tell you how to go from the past, which is the collective heritage of everyone in this room, to the present in solving problems using both science and traditional environmental knowledge.

In fact, what I'm going to talk about is trying to integrate traditional knowledge into modern science. I'm not putting Western science down. It has a very useful role, but from the traditional point of view, we feel it has a limited role. I will talk about why we need to try and integrate or form a synthesis of Western ecological sciences and traditional environmental knowledge.

There are around 300 million indigenous people on this globe of 6+ billion people. Those 300 million people are right now experiencing the worst genocide in the 500 years since the European voyages of discovery. The last 30 years, for example, have been utterly devastating to indigenous peoples in Mexico, also in North America, particularly in Canada for the last 20 years, in Amazonia, or in Siberia under communism, and it is no better now since the government's changed.

We're experiencing a global assault that's unparalleled in world history an assault on our cultures as indigenous people, just as biological diversity is experiencing an assault of a magnitude many times that of natural geological or climatic events.

What I'm going to tell you is that biological diversity and cultural diversity are linked. You cannot have one without the other. That is a very important concept to grasp. Zah Naveh, an Israeli restoration ecologist, has proposed that we call cultural diversity and biological diversity 'ecodiversity' because that's very broad. It encompasses both culture and biology.



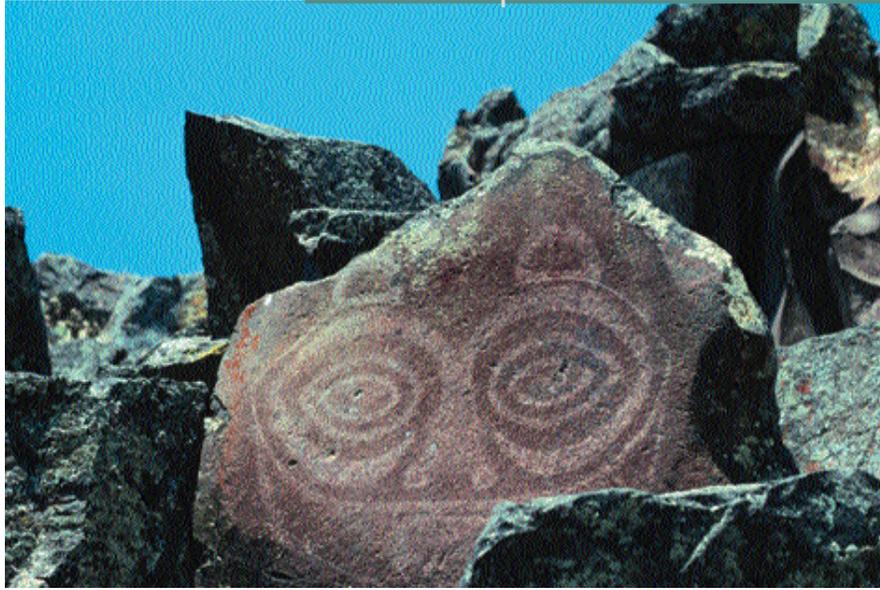
There's a tendency to think of nature as pristine. I think people are beginning to realize that there are very few places on this globe that one could adequately describe as pristine. The anthropogenic landscape has been around for not just tens of thousands of years, but hundreds of thousands of years.

Tribal and Forest Service representatives looking at deergrass management in Stanislaus National Forest

We're going to have to reorder the way we look at the world a little bit. If we as scientists view preserving wilderness or biodiversity as worthy of study only when the area has no native or any other peoples, then I think we're dangerously on the wrong track. If you take the native peoples out of their own habitat—the forest, the desert, the tundra or wherever—I think 9 times out of 10, the ecosystems start to unravel. This instability comes about because people have learned, as native people did here in North America for eons of time, to live in a relationship culturally and spiritually with the plants and animals in the natural world.

David Brower once said that if you took the whole time that life has been on this globe and you compressed it to 24 hours, the last 400 or 500 years of industrial civilization would last 1/40th of a second. So I'm trying to give you a very, very important time perspective.

People who lived in a place for generations—tens to hundreds of thousands of years—needed to have their act together in order to survive. They needed to know how to use the land, and how to use the land sustainably. This is not a function of just one population in any one generation.



Pictograph – “She who watches”

If you’ve ever been to a State or county park and tried to find a stick of firewood—after 20 or 25 years, you can’t find one. You’ve got to take a rock on a rope and throw it over a limb to pull it down. I’ve done that before. People can exhaust the resources of a place in 20 to 25 years in this culture. We can do that in a few years with mushroom hunting, for example.

There had to have been a way for people to have lived

sustainably, because these populations, smaller than we have at present, were here for a very long time. People could have exhausted a resource in any given generation very easily, had they not had a fundamental restraint and a fundamental notion of reciprocity—what to give back to that system. Without that restraint, one Indian with one club could have wiped out the Bering Strait cormorant, or the great auk, both of which later became extinct.

We’re attempting to resist the homogenization process that’s occurring globally through both species lost and cultures lost, because when we lose the last indigenous culture—which might be your own heritage dating back at least a half a million years in co-evolutionary time—this world is going to be a much poorer place.

It isn’t just a matter of looking back and saying, “Those people knew how to live sustainably on the land.” And when I say that, I’m not talking about the romantic noble savage. Let’s be clear on this—the noble savage is a European invention. That was a part of the 18th century European identity crisis politically. They hoped the Hottentots of South Africa or the Iroquois of New York or Ontario represented what people could be if they didn’t have the evils of civilization. That’s what that was all about. It’s not an Indian concept in the least, and it’s not an issue for us. There were bad people, there were good people—just like today. But there was a cultural way of making things work out more harmoniously than people are apparently able to do today. There was a cultural way of working with natural processes that, by and large, worked sustainably over a very long time period.

Even with a renewed interest in Native ideas, the modern tendency is to look upon North America as a place that was sparsely inhabited. There is a famous papal doctrine called the *Tierra Nullis*. In this Papal Bull, a justification put forth by the Spanish, Portuguese, and Catholic church for taking this land was that nobody was doing anything to the land. It was virtually uninhabited. There was “nullis” or “nothing.”

Granted, there were a few “primitive savages.” However, as you’ll read in your modern anthropology textbooks, they really had no impact on the land. The

land had an impact on them. People were, as one British philosopher said, “living short, nasty brutish lives,” dying at very young ages.

In our stories, just like in the Bible, there are stories of people living 400 and 500 years. There are stories of large animals, which we’ve only read about in books, living among Indian people and human giants 8 feet tall.

I just came from a meeting in Boulder, Colorado, sponsored by the American Indian Science and Engineering Society and hosted by Professor Vine Deloria of the University of Colorado in Boulder. It was 2 days of no notes, no audio, no tape recorders, just 2 days of oral presentations by elders from every corner of North America from Guatemala to Canada and from coast to coast telling their stories of origins and migrations of the people.

We sat on the edges of our seats afraid to breathe. Yet these elders knew only so much. The people that didn’t come knew even more. In the Ojibwa longhouse, it takes 7 days to tell the story of creation. Seven days just for that one story. The story of when a planet came close to the earth, when the poles changed overnight and the ice formed instantly. This is part of our traditions.

The knowledge at Boulder was absolutely stunning in its scope and depth. And yet most people in the environmental movement and the scientific community have ignored this tremendous potential for direction, for finding the way to reintegrate the modern separation of ecology, economics, ethics, spirituality: a holistic model. Again, not a romanticization of the past, but a practical formula for how to live and how to live with each other and how to live sustainably on the earth.

This was an incredibly inhabited place—1 million people alone at the mouth of the Columbia River. The idea that this was *Tierra Nullis*, that people really weren’t doing anything and making an impact on the land, is simply not true.

When I say “management,” that does not exclude the spiritual part. For many of us Indians today, spirituality is a touchstone of identity. The problem we wrestle with is identity. What does it mean, for example, to be an Indian person today, in 1995, in North America at Oregon State University?

Sometimes, it’s almost as if we’re living in two worlds. If there’s anything we can tell our children as Indians, it’s that we have an incredible heritage. If there’s anything we can tell our professors and our fellow students and friends in the environmental movement, it’s that we have something to offer today, not yesterday, that is relevant to the problems that they’re wrestling with.

In the old days we didn’t have any big buildings, and we didn’t have a lot of paved streets. Every place around here was well known, etched in memory since childhood. We knew the territorial boundaries by heart. We knew everything about our neighborhood, and we knew all the songs for the trails and the springs.

When the forest is clearcut, the way it is now in Borneo or in Southeast Asia, it’s like after Hiroshima or Nagasaki. It’s gone, the neighborhood, the

memory the place is unrecognizable. If the old people were to come back now to any forest system in the Pacific Northwest, they wouldn't recognize it, it's so completely different. That's what a lot of people call "natural." It really is a gigantic experiment in secondary succession, the end result of which is unknown.

If the elders were to come back now from the spirit world, they would look around and say, "There's nobody taking care of this place." You see, when they cut the forest down in Borneo, that was home. Now it's gone. Everything is gone—sustenance, livelihood, spirituality, the places where ancestors were buried. No identity, no remembrance—obliteration. That's what genocide is about. Now we're stuck in this modern world wondering who we are, where we belong, how to keep our self-esteem.

For Indian people who follow their traditions, the world is highly ordered. There's a sacred geography that constitutes their universe or world. And of all of the stories of creation and migrations, each different story is respected. It was that people's way of trying to understand how all this came about. Many of the stories we heard in Boulder conform to science. Some do not. But these are all very old stories.

Scientific fashions have a much, much shorter life span. I remember when it was good science to take logs out of rivers. I remember when they awarded the Nobel Prize in chemistry to the creators of DDT and so on. I remember when good science justified extensive clearcuts. Is this where we want to put our faith as indigenous people? I think not.

All of us—indigenous and nonindigenous—share the same watershed, live in the same cities, are subject to the same decisionmaking processes by our resource management agencies. We need each other. We need to be able to work together. To work together means that we want equal input into whatever environmental discussions affect us.

I work with the United Nations Biodiversity Convention that has been going on in Jakarta, Indonesia. I'm working with a global network. I'm the North American coordinator for the Meeting of Traditional Indigenous People, which is taking place on each continent and in the Pacific region. Elders from Mexico, Guatemala, Canada, and the United States are telling the United Nations their stories as traditional people, and how they value biological diversity.

Chalachortus
Roots of this prairie
species nourished
plains Indians



The whole discussion on biological diversity at the UN convention is dominated by the United States and the UK. Northern economists are now attempting to subsume all externalities into a new neoclassical economic paradigm. In terms of the Western point of view, this is certainly a step in the right direction, at least in the attempt to calculate the true costs of environmental degradation. But it has virtually nothing to do with the values of indigenous peoples. Everything in the indigenous philosophy has intrinsic worth, cannot be commodified, has a right to live in and of itself even if there's no economic value. We now live in a world

where a commodity without an economic value becomes an “invisible resource.”

That poses a dilemma. A lot of tribal people simply do not want to see any important cultural plant or animal made into a commodity. There are elders who would rather see the last species die out than let white people commercialize them. Believe me, there are some real strong feelings about this.

Now there’s a lot of gray here, too. In any given tribe, you’re going to have a variety of opinions about what and how much to harvest. One of our problems is that on most reservations and reserves, we don’t have any standardized way to reach a consensus on harvesting and commercialization of any given organism.

So the tendency of the elders, then, is to hold back, to hang onto this information. It may not even be shared with the children, if they are perceived as not ready to take responsibility for the respect and the constant attention the information commands. It entails responsibility. This education requires proper spiritual process and authority. Our way is a lot slower and more painstaking to go slowly up, step by step, guided by those who know more than we do. The old way of slow initiation into the mysteries of knowledge is a very personal endeavor.

A fundamental difference between Western education and indigenous education is that knowledge is accessible to everyone in indigenous communities and they acquire it in their own way, guided by tradition, the oral tradition and the elders living today.

I use a root called ikmish, osha, and a lot of other names—bearroot on the plains, angelico among the Pomo, etc. When my mouth gets dry on the road, the way it’s doing now because I’ve been talking a long time, I chew it. During the Spanish influenza of World War I, the Paiute Indians of Nevada would make tea from this root (which I do every day), and scientists noticed that they were remarkably free of the flu.

But do we want every Tom, Dick, and Harry going to the mountains to commercialize this? No, we don’t. We want access to traditional gathering places for this root. We don’t want to ask the Forest Service or Bureau of Land Management (BLM) for a permit. Indians are a special case—we’re not newcomers. We have a long-term special relationship with the land.

Multiple use refuses to recognize this. It’s a problem when you go for co-management, which is one area I work in. We want equal input into decisions affecting ceded ancestral lands.



N. Paiute water bottle starts

There are areas in which we don't want our plants harvested or commercialized. Other plants, however, may provide an economic base. Among tribal elders, opinions will vary.

In some places, like the area around the Six Rivers National Forest in northern California, the Forest Service and BLM are working to encourage tribes to make their own decisions. If the tribes can work it out amongst themselves, they'll decide what's off limits to commercial harvesters and what people are going to use for their own spiritual and material needs.

One of the really sad things about the work I do with traditional communities is that the elders cannot find the plants and animals necessary to keep the culture going for good diet and nutrition, for ceremonies, for baskets. They can't find a straight basket shoot. The average basketmaker in the California Basket Weaver's Association travels 3 to 8 hours every weekend to locate a patch of suitable twigs from hazelnut (*Corylus cornuta* var. *californica*) or redbud (*Cercis occidentalis*) or gray willow (*Salix bebbiana*) to make a basket.

If you can't make a basket, you can't teach your children how to make a basket. If you work Monday through Friday and spend half of every weekend trying to find basket material, there's no time left over to teach your children how to make a basket. On top of that, if you're worried about herbicide spray, you're afraid to let those children run the basket material through their teeth to take the strands apart, because you don't know if an area has been sprayed or not.

The motifs that go into the basket designs are the cultural reminders of our own responsibilities to each other and to the environment. Those symbols become agents of the cultural revitalization so desperately needed now. When the baskets no longer can be made in northern California, it will be a sad day for Indian people there, because the culture is going to die.

That's how closely we're related to the land. Not just to any land, but the land that's healthy. Fire rejuvenates basket lands. In the second year after a fire, straight shoots come up. At any museum, you'll see long spaces between the nodes because of fire: periodic, light, cool forest underburns. Go out in the woods today and they're all knotty and twisted, short spaces between nodes.

When I was a kid in the Sierra Nevada Mountains near the San Joaquin Valley, we lived on deer and salmon. We had a smoke house. The salmon disappeared in '49 when they put the Friant dam on the San Joaquin River the Central Valley Irrigation Project. That whole way of life ended.

Brush fields began to close up after clearcut logging and slash fires in the Sierras. And when that happened, the deer had no palatable browse. The nutrition in the old leaves of the buck brush were worthless, and we would find deer dead with their bellies full of old brush leaves. Sometimes the does would never fawn, and the bucks were no larger than a big dog and didn't grow horns.



Redbud—Traditional pruning practices are carried on today by California tribal members

You can't subsist in that kind of a situation. Therefore, you have to get a job. You become wage-dependent and your independence ends. And when your independence ends, your culture dies. It's economic things we're talking about: viable, multiple subsistence strategies in a healthy environment, and this is a global phenomenon. It's going on as I talk.

A lot of our own Indian people have begun to separate spiritual from practical care giving. The elders say, "You take care of the plants

and animals, and the plants and animals will take care of you." Once you make that split between your practical life and your spiritual life, you're on the road to major assimilation, and what was formerly a spiritual way becomes a religion.

While we are truly citizens of the universe, we are also citizens of a place, a specific local place. So then we have the question, how do we address ecological degradation? Because cultural degradation is tied directly to it. Believe me, the situation I've been outlining for indigenous peoples applies to everyone. As the plains Indian leaders predicted in the 19th century, "Someday they're going to treat all you people, you white people, just like they treat us. You all are going to become Indians." And, in fact, their prophecies have come true, more or less.

That's where we've got a lot of common ground, and that's where we can learn from one another and help one another in addressing issues of ecological degradation. If we're going to talk seriously about special forest products in this climate and with this kind of ecological degradation, we're going to have to tie ecological restoration to harvesting.

There is, I believe, no other way to do this. We can't just harvest without giving back. That's the advantage of this indigenous model that I've outlined to you. It's holistic. It's unfragmented. It integrates ecology and economy, and that doesn't just mean subsuming externalities to ascertain true costs of products.

It means a relationship with the plants and animals that is almost completely missing in modern society. We don't thank the plants and animals anymore. Even Indian people have stopped thanking them. Recognizing their contribution, as individual plants and animals, to our sustenance and livelihood—this is extremely important because there's a reciprocal relationship.

For Western peoples, one way to give back is to acknowledge the interdependency of all life and think about restoring the land. When you harvest, every harvesting move needs to further either conservation or restoration.

Willow





N. Paiute winnowers

To give you one example, when Indian women used to burn the gray willow—or prune it as they do now because fires are illegal—they opened up that gray willow like a vase, and the wind came into the gray willow and the birds came into the gray willow and ate the larvae that used to burrow into the centers of the stems used in baskets, which weakened the basket stem. The wind started to move those stems, strengthening them. The sunlight reached the area around the willow that

formerly was shaded. The bird could now see all the larvae, pick them off. Willows sprout from the crown and from the roots. So you have all sorts of possibilities enhanced by that pruning and that burning—high-protein forage for deer who love willow, and so on.

When you pruned, when you burned, you also enhanced the living situation, the quality of habitat for your relations in the family of life, and that's the relationship I'm talking about. We have a family. It's neither anthropogenic nor ecocentric. That's a false dichotomy, which is typical of Western thinking. I had to coin a word "kincentric." The English language itself is a problem because it has no words to describe relationships, socially or ecologically, of any consequence.

We're going to have to compound words, reorder syllables in order to come up with something like "kincentric" that expresses the fact that the family is the center of our life, and that we're all equal in it, horizontally equal. There's no hierarchy. Even the smallest species deserves special attention if we're losing it.

Most of our special forest products come from the herbaceous understory of the forest or riparian zone, or come from prairie plants in large openings or from desert plants. Most of our culturally important plants, most of our medicinal plants and our potential special forest products, come from openings that are also quality wildlife habitat.

What's good for cultural survival is also good for forest health, and what's good for forest health is also good for cultural survival. David Perry, an ecologist at Oregon State University, describes these as "key linkages" in ecosystem stability. The bunchgrass forb community between the trees that's enhanced by fire is a key place where mutualism takes place between soil, mycorrhizal fungi, and other plants in the bunchgrass forb community.

We're going to have to look really closely at the soil. The bunchgrass forb community is a keystone community. If it goes, lots of other species are going to go. Moreover, indigenous managers are also keystone species, and when they have gone, lots of other things have gone, too.

So if we're serious about special forest products, if we're serious about affirming the validity of indigenous cultural survival, and if we're serious about economic diversification, then we're going to have to look between the trees. In an economic scenario that involves thinning of smaller trees—pole-size trees, saplings, and seedlings—and using fire, we are going to have to learn how to restore the quality of those plant communities that used to exist extensively between the trees.

Part of restoration is trying to get back all the specialist species that have disappeared. We've got too high a proportion of generalist species. I'm a contract vegetation surveyor and grass seed collector, and I see slope after slope, aspect after aspect, of generalist species where conservative species should be—I've seen poison oak where I should find trillium, and so on and so on, over and over. It's almost depressing.

Species distributions and species richness have been severely impacted by fire suppression, by shading out, by the ecological destabilization caused by industrial forest practices, by overgrazing, and on and on.

Restoration is a way to reverse that degradation, to get forest health slowly back through multiple thinning re-entries and little fires started first in the spring and then later, when the fuel load is down, by going to the traditional seasonality, which is late summer and early fall.

If we want to talk about a natural fire regime in the Pacific Northwest—especially eastside Cascades, the Klamath area, Sierras, the Coast Range and to some degree the westside—we're going to have to include Indian burning as part of the natural fire regime. Unless we more or less match the seasonality, the intensity, the frequency and duration of Indian fires, we're not going to trigger the genetic memory resulting from coevolution that's going to produce optimum plant responses from the burns.

Indigenous knowledge is essential to how we define “natural” in this situation, especially with regard to fire. Most of our special forest products are adapted to periodic, low-intensity, fairly frequent fires. So along with our education about the uses and marketing of special forest products, we need a lot more education about how much to harvest, and how to harvest to stimulate natural rejuvenation processes. Indian women used to dig the *Brodiaea* and *Calochortus* and yampahs and many other “Indian potatoes.” These plants have corms with sterile offsets, and it wasn't until the women moved the corm that the young cormlets were released and could grow. To this day, the women bend down and put those right side up so they'll grow straight up.

That's caregiving. That's giving back as you're taking. Those competent Indian women were contemptuously called diggers. Unbeknownst to the Anglos and Spanish alike, they were doing something that was making the system work, and they had been doing that for tens of thousands of years.

When BLM put a fence around Indian potatoes in Eastern Oregon, they started to disappear. When Fish and Game in the thirties wanted to stop the California Indians at Bolinas Lagoon from harvesting clams, it was the same idea. The clams needed to be shaken up, moved around to establish a new niche to grow. The clams began to disappear. That's traditional environmental knowledge. There are many examples like these.

I've heard Shoshone elders talk about little organisms that live in the snowpack that have to do with the utilization of snowpack water in the soil. Has anyone ever heard of those? Or the Kogi in Santa Marta, Colombia, who talk about bacteria that live in the gold veins in the earth when you tap into the gold veins and take that gold out, you're hurting the Mother Earth. No science can tell us that.

How did the Sioux Indians know that a dung beetle always points its antenna toward the nearest bison herd? Think how long it must have taken people to realize that or was it so long? You see, we believe that no knowledge is ever really lost. Sometimes it can be accessed by spiritual means. The Tule River Tribe in the Southern Sierras brought back 32 songs as well as the bear dance from vision quests several years ago.

Grant Pilgrim, Agnes Baker Pilgrim's husband, was here last year and we were talking together, singing together. His dad was murdered when he was 5 years old. When he got to be a teenager, he began to sing his dad's songs. No one had ever shared those songs with him, but people who knew his dad remembered those songs.

This world is incredible. The spirituality behind the material phenomenon that we see is simply breathtaking. It's been ignored, and it's been ignored to our peril. You can't just take a little bit and expect to survive.

A lot of people have a hard time with loose ends. But we're not going to get through this ecological crisis until we learn to live with loose ends. That's part of the creative process.

We can't rely on the Government. There have been 385 treaties broken. Land was promised as long as the grass would grow and the waters would flow. You can't put your faith in the U.S. Government to protect even the forest reserves, because when times get hard, those reserve lines, just like the reservation lines, are going to change. That's the historical track record.

It's going to take your own efforts to go to your own watershed, in your own place, and resolve to take care of it. Take personal responsibility. Our ceremonies are our ways of taking personal responsibility for restoring the Earth spiritually every year to renew the Earth because we use it up.

Do you think you can go on and on, decade after decade, taking and taking and taking and not expect something bad to happen? It's impossible. It's a complete violation of Natural Law. That's why the personal responsibility for the products you use, whether special or not, is absolutely essential to their survival and your survival.

AUDIENCE: You speak of the need for partnerships. How can that be achieved on a sufficient scale?

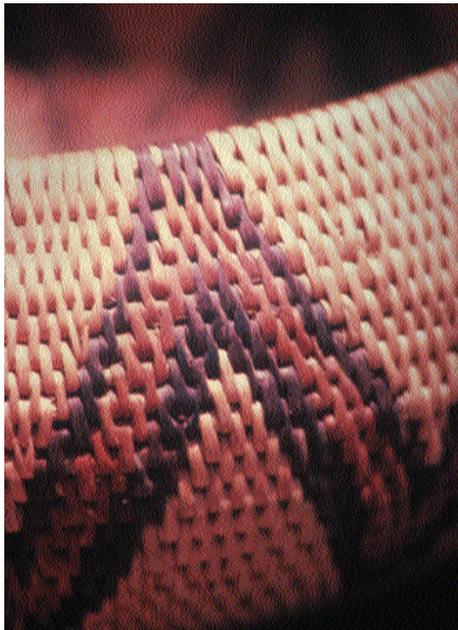
MR. MARTINEZ: I think that in any kind of change, only a few people typically lead the way. Indian people are more important than their numbers would indicate. If a few good scientists, a few creative people in science and in other social fields, would take notice of the ecological contributions of native peoples, as the founding fathers of the United States noticed the democratic political system of the Iroquois League, it would make a difference.

We're not really attempting to convert everyone. What we're trying to do is reach the right people so we can survive, you can survive, and the land can survive, at least for humans and many of our threatened animal and plant relatives, because in the end the Earth will heal herself. But her time frame is vastly different from ours.

AUDIENCE: I would appreciate your comments on the role or impact nonindigenous species have on the native flora.

MR. MARTINEZ: Well, if you're talking about temperate systems, I think we have a chance to resist most exotic invaders by having stable ecosystems. Stability really is the key to biodiversity, not the other way around. When I grew up in the Sierra foothills, if the rains came early, we had mostly grass, and if the rains came late, we had mostly forbs on the range. You had that kind of annual diversity, but it was highly unstable.

Close up of a *N. Paiute coil willow*



What characteristics allow star thistle to take advantage of destabilized systems? To change the emphasis, what species do we need to keep or restore to the system to resist invasion, or to encourage stability within the system?

The concept of seral succession is highly misleading. It's misleading because it assumes discrete breaks within vegetation development when in fact, except for conifers and most grasses, most species have been there from the beginning, shrubs and forbs in particular. So we need to manipulate the vegetation to restore or maintain species that perform the greatest role in resisting invasions by brush, woody plant, generalist native,

and exotic species. In that way we'll be able to weather the period before we learn exactly what kind of fire regimen is needed, because in most ecosystems we are writing our own book as we go.

They stopped burning by Indians. The latest Indian burning in Northern California and Southern Oregon was in the 1940's. When Henry Lewis did his 1973 study of the patterns of Indian burning in California, there were people living who remembered why they burned. Now their children, who are in their 60's and 70's, remember burning, but they don't remember the control techniques or the objectives. So we may have lost that knowledge.

At Three Fires Walpole Island Reserve (Ojibway, Potawattomi, Ottawa), they never stopped burning. Ontario's 70 endangered species are found in quantity in 2,200 hectares on Walpole Island. This is amazing to botanists, who come there from all over the world to see what a "pristine" landscape can be like. But the people are part of that "pristine" quality. They're still performing their role in the ecosystem, so the biodiversity is incredibly high. It's the only place in Ontario where you can find biodiversity that high.

Remember that Indian burning was rotational, as slash and burn Mayan burning is rotational. That's traditional. When tropical systems go away from the rotational nature of the burning, they become destabilized culturally. Economically, people have no hope without burning as much as they can for money to keep their kids from starving. It's coming down to that in most of the world.

Where the traditions are intact and they're based on multiple subsistence strategies, they're able to burn in such a way that little is disturbed at one time. That retains the stability of the system. The harvesting methods themselves may rejuvenate: through stress disturbing the key plants, or by selective harvesting of animals, for example.

Here in the Willamette Valley, the Calapooia used to burn a 50-mile circle. That burn line would go in toward the center. When it got in real close, they'd let the best animals out, and that way they kept the herd strong.

Indian people outplanted, they transplanted, they did root cuttings, they did leaf cuttings. A good part of Amazonia in Kayapo country is a function of outplanting because people always have the "drugstore" and the "supermarket" on their trips around their territory. Oak trees were the same in the Willamette Valley, planted out by Indians, not just jays. Jays participated, so did squirrels, but Indians planted, too. It's that kind of engagement that we're talking about here.

AUDIENCE: How do you acquire traditional knowledge and who is qualified to get it? Does contact with tribal people require that you be a social scientist or anthropologist?

MR. MARTINEZ: In areas where there are tribal people with traditions intact—not Oregon except Warm Springs north—you need to go to the literature or find an Indian go-between who has respect in the community and can talk to elders.

It is difficult for us, for Indian people, to get information from traditional elders in many cases because of lack of trust. The fact is, I know elders in Northern California—I know one who says she has a cure for diabetes and AIDS. I believe her when she says that. She's afraid of commercialization. So she's holding onto that and sharing it with a few students. She's about to retire.

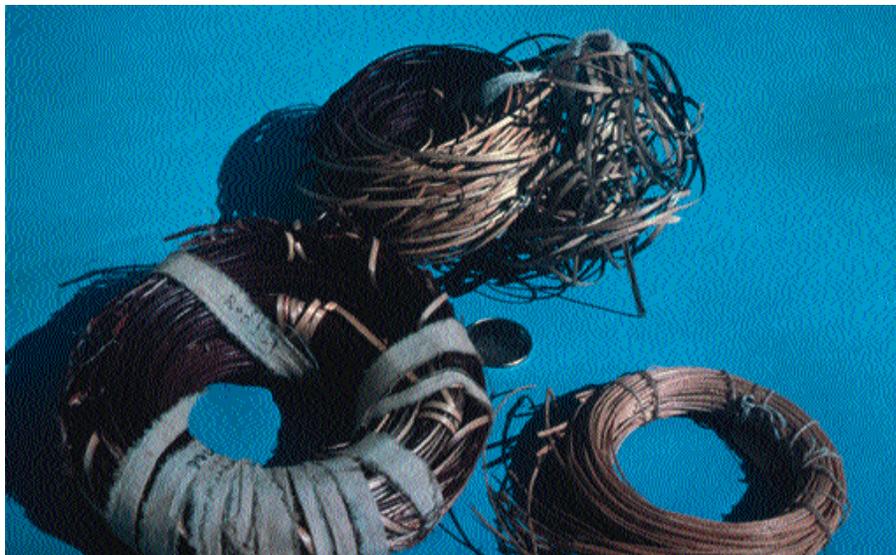
In the traditional knowledge council I work on, we have a “Cherished Elders” program and we just decided to pay elders \$4,000 or \$5,000, the same as major professors, for talking. We're going to go to their own locality with youth and adults, and we're going to start sharing that knowledge within that group. That knowledge then goes to Indian schools, native curriculum development. From there the theory is that it will go out—what can be shared with the elder's permission goes out beyond.

What's happening now is the non-Indians are defining Indian culture for Indians and everyone else, and we're trying to head that process off. We want Indian students to benefit first from that knowledge, because they need it in the worst way. The suicide rate is incredible in Indian youth communities.

From there it can get absorbed into the mainstream. I work not as a traditional person with a lot of knowledge. I don't have very much knowledge if I compare myself with elders that I know. I'm an interpreter or translator. I'm making you aware of the possibilities, I'm outlining a conceptual schemata that you can plug into that integrates all of these things.

It's going to be up to you to find a way. The library in this case is the best way to start—anthropology and ethnography. However, everything tribal people have told anthropologists is not necessarily true. Anthropologists were often deliberately misled.

You have to ferret out the good material, but don't go knocking on elders' doors. You'll get nothing but a door slammed in your face. They won't talk to you unless your heart is pure.



Redbud coils – redbud (Cercis occidentalis) is burned or pruned