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RELATIVITY, RELATEDNESS, AND REALITY

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It was not so long ago that Newtonian physics and mathematics described a world of absolute space, time, and matter and people believed that understanding the universe completely was simply a matter of policing up the obscure subjects that had not received much attention in the past. Then the Michaelson-Morley experiments to detect and measure, if possible, the "ether" that was thought to exist between large bodies in the solar systems returned a blank and thinkers went back to their solitude to try to understand what this failure actually meant for cosmology—and by extension for science itself.

The result of deliberations by many of the best minds of the age was a theory put forth by Albert Einstein, then a patent clerk in Germany, and certainly not a luminary of the academic establishment. Einstein's thesis, viewed from our present perspective, is hardly revolutionary and probably just a simple corrective to the centuries of belief that human beings could know the innermost workings of the larger cosmos by examining phenomena on one tiny planet on the edge of a galaxy.

Space, time, and matter, Einstein argued, are concepts whose measurement should be in relationship to the context in which they are to be used. That is to say, these ideas are not part of the eternal structure of the universe in and of themselves but are how we describe this universe, and therefore as we do have experiences, we can use these ideas and they have substance as long as we remember that we are part of the process of gathering information.

Nearly three generations have been required to work through the implications of relativity, and physics and mathematics have prospered immensely in their ability to probe the micro and macro levels of cosmic existence once freed from the idea of absolute time and space. Other "sciences" have not fared as well because many of their practitioners adopted the idea that everything was "relative," which is to say, there is no absolute truth or description of reality, it all depends on the action of the observer and the nature of the experiment or investigation. In the social sciences in particular, the idea of including the observer meant a reduction of certainty almost to the point of personal preference. Americans, as we are likely to do, have reduced relativity to a form of psychobabble.

WE ARE ALL RELATIVES

A positive by-product of the entrenchment of relativity in the nonmathematical sciences and disciplines has been the willingness of people to look at non-Western cultures and give them a measure of respect for their knowledge of the natural world. In a previous article I reviewed the tendency of pioneer thinkers to begin to bring separate fields of inquiry together by merging ideas and concepts and in effect create new sciences that weld together the bodies of knowledge that should not have been separated in the first place. Strangely, there has been very little attention paid to Indian methodologies for gathering data, and, consequently, the movement is primarily an ad hoc, personal preference way of gathering new ideas and attempting to weld them to existing bodies of knowledge. We cannot expect fundamental change in the manner in which Western scientists interpret their data until massive changes in individual items occur and a paradigm shift is forced by the failure of the established doctrines in the field to explain the materials.

The Indian perspective of the natural world is not subject to this limitation because it already has a fundamental principle of interpretation/observation that pervades everything that Indians think or experience. Thus verification of existing knowledge and the addition of new knowledge is simply a matter of adding to the already considerable body of information that Indians possess. An unfortunate aspect of the Indian knowledge is that so much data have been lost in the last century as Indians have been prevented from roaming

freely over their traditional homelands, gathering plants and animals for food and ceremonies, and performing those ceremonies that ensured the prosperity of the earth and its life-forms. Nevertheless, the information that we formerly had remains available to us if we can return to the traditional manner in which we related to lands and life.

The Indian principle of interpretation/observation is simplicity itself: "We are all relatives." Most Indians hear this phrase thousands of times a year as they attend or perform ceremonies, and for many Indians without an ongoing ritual life, the phrase seems to be simply a liturgical blessing that includes all other forms of life in human ceremonial activities. But this phrase is very important as a practical methodological tool for investigating the natural world and drawing conclusions about it that can serve as guides for understanding nature and living comfortably within it.

"We are all relatives" when taken as a methodological tool for obtaining knowledge means that we observe the natural world by looking for relationships between various things in it. That is to say, everything in the natural world has relationships with every other thing and the total set of relationships makes up the natural world as we experience it. This concept is simply the relativity concept as applied to a universe that people experience as alive and not as dead or inert. Thus Indians knew that stones were the perfect beings because they were self-contained entities that had resolved their social relationships and possessed great knowledge about how every other entity, and every species, should live. Stones had mobility but did not need to use it. Every other being had mobility and needed, in some specific manner, to use it in relationships.

HARVEST BY OBSERVATION

Materials illustrating kinds of relationships are plentiful, but it is necessary when speaking to them to ponder their meaning very seriously in order to understand the body of knowledge that they represent. I will use some examples from the Plains, but the same kind of demonstrative process could be done by using the knowledge of the Pacific Northwest tribes, the desert tribes of the Southwest, and the woodlands tribes of the eastern United States. It is my hope that the present generation of Indian students will adopt some version of this methodology as they are studying Western science, particularly

social and biological science, and leapfrog into prominence in their fields by writing and teaching from an Indian perspective. In this way science will move very quickly into a more intelligent understanding of the natural world.

The tribes who lived along the Missouri River and its tributaries grew corn and vegetables but also conducted a summer hunt for buffalo, deer and antelope. It was their practice to plant the crops, do one hoeing to reduce the weeds and grasses around the corn hills, and then depart for the high plains and Rocky Mountains for July and August to prepare meat for the winter. We might think there was great concern about the condition of the corn crops as corn would provide the major food supply during the winter. But the tribes had already perceived plant relationships and so had what we might call "indicator plants" that told them how their corn was coming.

The Pawnees simply examined the seed pods of the milkweed, and when these pods had reached a certain condition and were at maturity, they packed up everything and headed for home, arriving in time to harvest their corn and hold a corn dance. At first glance this information seems like an interesting tidbit but with nothing to do with relatedness or relativity. In fact, the Pawnee had been able to discern, through observation or by information given to them in a ceremony, that corn and milkweed had about the same growing season. To be more precise, milkweed was a bit faster growing than corn because it would take several weeks to return to their villages after having examined the milkweed. Western science might run across the similarity between the two plants, but the chances of making the linkage and being able to use it predictively for practical purposes are minimal.

Standing Bear said, "Away from the woods grew the sand cherries on little low shrubs. Around and over the sand hills, and patches so barren that not a blade of grass grew, these bushes flourished, yielding a luscious fruit which we were very careful in gathering. We picked this fruit only against the wind, for if we stood with our body odors going toward the fruit its flavor was destroyed." Here we see that scope of relatedness in a surprising context. Unquestionably, we have a human-plant relationship but one in which the human is the less sensitive participant. The human had to be particularly aware of the bush and pay unusual respect to it in order to use its fruit.

I would be curious to learn how an anthropologist or botanist trained in Western science would explain how the Sioux discovered this fact of

plant life. People would have to harvest the fruit for a reasonably long time in order to have enough experiences with it to formulate the most constructive way to relate to the bush. But what on earth would inspire anyone to look into the direction of the wind when picking fruit? Annual harvests would occur for a very short time each summer. The variance in rain, heat, and other climatic factors would appear to be so much more important in determining the condition of the fruit that it would seem unlikely that anyone could identify human body odor as the critical factor in the relationship. Yet the Sioux were able to identify this element from everything else that needed to be considered.

Some information must have come directly from observations made by the people, and once this knowledge was gained, it was put to good use. Standing Bear noted that gophers and other small animals cached their food for the winter and

> *our women knew the likely places of these caches, usually near a low bank, and went hunting for them with long, sharp-pointed sticks. They poked in the ground until they came to a soft spot in the earth, and there, ten or twelve inches under the soil and carefully covered with fine dry shredded grass, would be a nice lot of vegetables lying in a heap as fresh as when they were gathered. Some of these caches would lie three feet in diameter and would hold as much as one person could carry.*

I suppose it is not good public relations to recount how the Indians used to steal from the gophers, but from this bit of information we can derive two things. First, Indians had the knowledge of the natural world necessary to sustain themselves in spite of any misfortune that might befall them. Thus a person lost on the prairie would not starve because of this knowledge. Second, and more important, by watching how the animals preserved food, the people learned that they could use the same techniques to preserve their foods. Standing Bear says that the gopher caches were "models of neatness. . . . There would be no sign of the tops and roots, both being cut clean from the vegetable, whereas when the women stored they left both attached, tying bunches together by the long string-like roots." The Indians, of course, did not have large bags and boxes for carrying vegetables and therefore had to keep the roots so they could tie the food to poles and harnesses in order to carry them.

BUFFALO, BULRUSHES, AND SUNFLOWERS

Not all information about the natural world came as a result of careful observation based on the principle of relatedness. If we greatly expand our understanding of the sense of being relatives, we discover that plants, birds, and animals often gave specific information to the people. Standing Bear described one such instance: "A food that had an interesting history for us was the tall plant that grew in the swamps, commonly called the bulrush. The duck, who brought many good plants and roots to the tribe, told the Duck Dreamer medicine-man about it and named it psa. In the early spring and summer we welcomed this plant, which was pulled up by the roots, and the white part eaten like celery." Here is a bird-human relationship that involves information about the plant and its use. We do not know what the subsequent plant-human relationship was or might have become, but we can assume that at some point the tribe had more knowledge than what Standing Bear relates.

An observation that always struck me as critically important for understanding the plant and animal relationship, although I have no good explanation for it, regarded the buffalo and the sunflower. I briefly mentioned this behavior in my previous article, and I would like to expand my comments on it. Standing Bear wrote, "The buffalo loved the simple and odorless sunflower just as did the Lakota. These great beasts wandered through the sunflower fields, wallowing their heads among them. Sometimes they uprooted the plants and wound them about their backs, letting sprays dangle from their left horns."

I suspect that we have here an observation of a buffalo ceremonial, perhaps even the buffalo version of the Sun Dance performed by human beings. Or we may have a form of buffalo recreation. There is no question that this kind of behavior enabled the sunflower seeds to be scattered over a much greater distance than they would otherwise be able to reach, but the benefit to the buffalo, other than enjoyment, was not explained. Nevertheless, we have to recognize that the buffalo, bear, and the cottonwood tree were the three dominant nonhuman entities on the Great Plains, that they engaged in purposeful action, and that they dominated even the ceremonial relationships of humans. Therefore, it is highly probable that we have in this behavior a much deeper meaning than we can presently explain.

These examples are only the anecdotal data that are most easily retrieved today in a library. Information about the buffalo could be

multiplied a thousandfold by talking with the people who are now raising buffalo and are now coming back to a knowledge of this animal. At a recent meeting of the Intertribal Bison Cooperative in Rapid City, speaker after speaker related observations on the intelligence and knowledge of this animal, affirming in many instances information that had been passed down in the oral tradition but never verified by the Sioux people because of being on the reservation for the last 120 years. Each speaker at this training session, however, once again confirmed the ancient understanding that these creatures are more like humans in their behavior than they are like other animals if you know how to interpret their behavior.

REALITY BY THE SENSES

The theory of relativity dislodged Western science in its belief that humans could not obtain absolute truth about the constitution and processes of the natural world. What this theory really did was eliminate the naive belief that by using one particular methodology, that of reducing everything to mechanical form, we could completely understand the world around us. This old belief saw reality as something beyond our senses and means of apprehension, and Western people have held this belief since the time of the Greek philosophers. For American Indians, however, it was not necessary to postulate the existence of an ideal world of perfect forms untouched by space or time or to suggest that space, time, and matter were inherent and absolute qualities of the physical world, which, when properly described in mathematical terms, could accurately explain the universe.

For most Indian tribes it was enough that they understood the manner in which living things behaved. Recognizing that the universe was alive, they began to accumulate knowledge about how every other entity behaved in various situations. Once this knowledge had begun to expand beyond the ability of anyone to remember, various people would come to be experts in how entities would behave in certain kinds of circumstances. Thus there was specialization somewhat like present academic subdivisions of bodies of knowledge, but the major principle of relatedness always remained as the critical interpretive method of understanding phenomena.

Reality for tribal peoples, as opposed to the reality sought by Western scientists, was the experience of the moment coupled with the interpretive scheme that had been woven together over the gen-

erations. If there were other dimensions to life—the religious experiences and dreams certainly indicated the presence of other ways of living, even other places—they were regarded as part of an organic whole and not as distinct from other experiences, times, and places in the same way that Western thinkers have always believed. Indians never had a need to posit the existence of a "real" reality beyond the senses because they felt that their senses gave them the essence of physical existence in enabling them to see how the other creatures behaved. Life in other dimensions was not thought to be much different from what had been experienced already.

GIVING SCIENCE A SENSE OF PURPOSE

The next generation of American Indians could radically transform scientific knowledge by grounding themselves in traditional knowledge about the world and demonstrating how everything is connected to everything else. Advocacy of this idea would involve showing how personality and a sense of purpose must become part of the knowledge that science confronts and understands. The present posture of most Western scientists is to deny any sense of purpose and direction to the world around us, believing that to do so would be to introduce mysticism and superstition. Yet what could be more superstitious than to believe that the world in which we live and where we have our most intimate personal experiences is not really trustworthy and that another, mathematical world exists that represents a true reality?

The idea of a relatedness of all things is not new, but it may seem to be outmoded to some Indian students who have been trained in Western scientific thinking. A good way to test this idea would be to talk with elders about what they know of plants, animals, and the natural world. If the student keeps the methodology of trying to relate bits of information to all elements in the scenario, that is to say, to regard information about plants as relevant to the birds and animals who use them and the location where they are found, there is no question that a great deal of important knowledge will be achieved. Taking these diverse bits of understanding and working them into the Western scientific format will be a little difficult at first, but eventually the student will discover that he or she is the possessor of a knowledge much broader, deeper, and more comprehensive than what is being taught in the classroom