The Language of Activism

From the Interspecies Newsletter

A pine needle fell.
The eagle saw it
The deer heard it
The bear smelled it.

Dreaming of brains in a cage

Many animal species communicate although correspondence is generally limited to instinctual signals expressing danger, territory, and courtship. A dog growls at a perceived threat, a frog croaks at dusk, a male bird of paradise clings to a branch upside down while preening its feathers. Signaling as acquired behavior is much less common. A dog is trained to bark at a deer, but not at a sheep. Redwing blackbirds possess regional accents they pick up from their parents causing a blackbird from Maine to ignore the call of one from New Jersey. Ravens, mynahs and mockingbirds mimic the sounds in their environment for reasons that may include impressing a potential mate, hoodwinking predators, and playing.

Baby orcas learn discrete vocalizations referred to as dialects. These calls vary from pod to pod, even among pods that inhabit the same waterway. When orcas interact physically with one another–chasing, nipping, pushing, the kind of thing we call play in humans–they occasionally improvise melodic phrases they seldom if ever repeat again. Some scientists interpret these frequency-modulated gestures as an example of vocal creativity. When humans do much the same thing, we call it making music.

Blue whales rumble at volumes louder than a commercial jet at takeoff to broadcast their location and probably their heading to other blues. They vocalize directly at a thermocline, using it as an underwater PA system to amplify and echo calls over distances measured in oceans. A US Navy listening post in Long Island has recorded blue whales vocalizing loud and clear seven hundred miles away in Bermuda. I

Some of the most complex examples of animal communication occur within species that stand relatively low on the evolutionary scale. The best known example is probably the honey bee's waggle dance, first observed by Karl von Frisch in the 1940s. Von Frisch established that their dance (regarded as an art form when humans do it) communicates sun position (astronomy), a system of measure (mathematics) and precise direction (navigation). It even communicates the *desirability* of a food source (denoting a syntax composed of adjectives and adverbs). One variant of the waggle dance communicates the location of standing water which is used to cool an overheated hive (thermodynamic engineering). Another dance alerts the bees that their hive is irreparably damaged. They are directed to commence a swarm, in effect the dancer declaims, "Sisters, gather round, watch my footwork. Most of us need to form into a search party. We'll leave tomorrow at sun up, fly off in every direction. Our mission is to locate a new hive cavity. Whoever finds an appropriate

site, send out a pheromone to signal the rest of us. We'll pass the word around, and delegate some individuals to inspect it. If you all agree, we'll start constructing the new hive immediately. But some of you need to stay behind. You have the critical job of protecting the queen. When the new hive is built, you can transport her to our new home".

Most entomologists explain the diverse messages of the waggle dance as an advanced form of instinctual behavior, arguing that honeybees comprehend the footwork of the damaged hive dance even though none of them have experienced it before. If it is instinct, then the bees' ability is analogous to a human child emerging from the womb, not only cerebrally prepared to acquire language, but possessing the syntax and vocabulary of a specific language bound up with specific tasks. It is as if French babies were born speaking French and baking French bread. Of course, people who have never baked French bread learn to do it all the time by reading a recipe. Whether or not the syntax of the waggle dance is instinctual or acquired, honeybees clearly use it to communicate (and possibly even devise) solutions to community issues on a task by task basis. Actually, the argument against acquired behavior in social insects is mostly a presumption based on what biologists expect, given the insects' tiny brain.

In which culture is Kukukuk the word for weasel?

In the 1920s, South African naturalist, Eugene Marais, spent ten years studying termites and ants, concluding that colonies are best understood as a composite organism possessed of a group purpose and even a group mind. Individual workers are not individual entities, but cells of a higher organism, yet with no awareness of the greater strategy of this group mind. Marais believed the queen's reproductive function is the main focus of this intellect, although, she herself, is not in control either. He observed that the tasks of the group were communicated through some unknown mechanism comprising elements of syntax, and vocabulary, now known to be chemical fragrances called *pheromones*. When Marais enclosed a termite queen within a tiny steel-plated prison, the colony continued to flourish. When he killed the queen inside her prison, the community ceased to function. If another termitary existed nearby, the queenless workers drifted to it where they immediately began carrying out the functions of the new group mind, indicating that they spoke the same pheromone language. But if the disinherited termites were brought to a nest further away, the newcomers were always killed, implying that the new group mind spoke a "foreign language".

A few animals use sound to communicate a vocabulary. In response to the sight of weasel invading the coop, a bantam hen emits a high-pitched "Kuk-kuk-kuk". If the invader is a hawk circling overhead, she'll shriek a single long note. In 1980 biologists Tom Struhsaker, Robert Seyfarth, Dorothy Cheney, and Peter Marler discovered that vervet monkeys in Kenya also possess a vocabulary based on the predators in their life. A certain grunt is the actual word for eagle. When it is vocalized, all the vervets in earshot scan the sky. A bark means leopard, prompting the monkeys to scamper to the top of a tree. Other sounds express territoriality, kinship, and social standing. As in some human languages, meaning varies depending on who is speaking. When a vervet infant screams out the word signifying a certain predator, only its mother responds directly. The other monkeys react to the mother, recognizing whose baby is in distress. Until these discoveries, linguists generally agreed that the use of sounds as symbols (i.e. words) was a unique trademark of human communication.

While communication *among* species is common throughout nature, communication *between* species is much less frequent. The alarm call of a robin attracts robins, but also blue jays, orioles, and catbirds, who help drive off the predator. The birds arrive, not out of curiosity, or because of some universal sensibility to pain and suffering, but because certain alarm calls mean the same thing to several bird species. The timbre and frequency of that

particular call overrides territorial protocol.

Horses and their riders communicate in subtle ways, combining vocals, touch, and body language to disclose direction, pain, fear, and joy. Recent studies also verify what pet owners have known for ages, that communication occurs regularly between humans and canines. Dogs bark to let us know they want food. They scratch the door to tell us they want to go outside. Animal Rights advocate, Dr. Michael W. Fox writes that dogs are masters of non-verbal interspecies communication as well, ascertaining as much about human happiness, submission, and aggression by reading our postures and facial expressions as we learn about them from watching their tails wag, their ears lay back, and their necks bristle. What develops is a dialogue of sorts. We reply to a dog's tail wagging by giving her an affectionate pat. She rolls on her back, communicating allegiance. We kneel to rub her belly, confiding intimacy. She growls contentedly, prompting us to the kitchen to get her a dog bone. She sits up, barks firmly. We throw her the bone.

Rudyard Kipling observed "six honest serving men of learning and intellect: *what, where, who, when, how, and why*." Dogs, parrots, elephants, and even pigeons have been documented communicating *what, where, who*, and arguably, *how*. But they all lack the other two servants, *when* and *why*, which is the reason Dr. Fox stops short of recommending a dog's interaction with its master as an intellectual dialogue. Dogs can be taught to tell *who* precisely *how* and *where* to throw *what* stick for them to catch. But no dog can communicate *why* she prefers that stick over another one. Beyond the *when*, of right now, no dog has ever asked a person to feed it tomorrow. Even the dogged quality of unconditional love, as exemplary an expression of loyalty as exists on Earth, can be explained as an instinctual allegiance to a pack leader transferred to a human master.

Fine Animal Gorilla

The science of interspecies communication is in its infancy and saddled with more controversy than it probably deserves. Among cognitive scientists, the idea of animals holding an abstract conversation with us is met with knee-jerk disapprobation as often as with professional inquisitiveness. Credibility seems a cultural issue as much as a scientific one. This subject is born of children's stories and traditional myths, deeply influenced by our dreams, and distorted by long-lost gut feelings from childhood, the end of the world as we all once lived it, the destruction of the kindred worldview replaced by the advent of the objective revelation. This loss, our loss, fosters an innate resistance to objectification, which explains why some critics seem to regard the subject as anthropomorphic by default. It hardly helps matters that the few experiments in interspecies communication have failed to unearth much of sublime import. Success is a dolphin which, after five years exposed to a rigorous regimen of lingual training, vocalizes with less sophistication than a toddler. Or it's a chimpanzee able to sign words in Ameslan, but whose psyche is described as neurotic and "not much like a chimp anymore".

Scientific success stories do exist. Koko the gorilla has been taught nearly 2000 words of spoken English. As her language skills increased, her ability to communicate emotions and concepts has leapt far beyond the rote mastery of words. Koko adopted a cat as a beloved pet and expressed grief when it died. She even learned to fib, using sign language to distort tutor Penny Patterson's perception of reality, then skillfully resorted to Kipling's *why* when Patterson expressed misgivings. When Koko was asked by a journalist if she was an animal or a person, her response was "fine animal gorilla."

Bottlenose dolphins at Hawaii's Kewalo Basin Marine Mammal Laboratory have learned sixty words and basic grammatical rules that allow them to understand hundreds of simple sentences. The command "person (subject), surfboard (object), fetch (verb)" is understood as "bring surfboard to person " while "surfboard, person, fetch" is interpreted as "bring

person to surfboard". The dolphins also understand the word *creative*. When they are separately commanded, "tandem, creative", they find each other, presumably agree on an action, then respond in tandem, perhaps spitting water and pirouetting, or whistling and lifting their tails high.

Alex, an African gray parrot identifies seven colors, five shapes, forty objects, and numbers up to six, all in plain English. When professor Irene Pepperberg showed him a green bottle and a green hat, and then asked him what was the same about them, he answered "color". Asked the difference, he answered "shape." Alex also connected words together to communicate (and satisfy) his own curiosity, learning the words "carrot" and "orange" by essentially asking a researcher eating a carrot what color it was and what it was called. Alex's achievement amounts to a cognitive heresy, demonstrating that the neural threshold of consciousness is not limited to beings with human-sized brains. If a parrot with a brain the size of a pea can string words together to verbalize inner thoughts, exhibiting nearly as much intellect as a signing gorilla or a nodding dolphin, perhaps beings with brains (or nervous systems) commensurately less complex than a parrot's–millipedes, octopi, even oak trees and slime molds–are privy to Kipling's serving men as well.

Most scientific experiments presume a species' intellect is best demonstrated through its ability to respond to some form of human language; acting on words and accomplishing rote tasks in return for the necessities of food and companionship. When researchers are unable to fit an animal's oftentimes "round" response into the "square" superimposed structures they develop to facilitate analysis, they conclude that the animal who just failed their elegant, but human-focused language test lacks the ability to communicate symbolically. That may explain why success often seems anticlimatic: an adult dolphin or chimp whose communicative achievements mirror a three year old toddler, and whose personality traits include the toddlers' lack of discipline and inability to concentrate long on any one task. Despite her impressive 2000 word vocabulary, even the 26 year old adult gorilla, Koko–who has spent most of her life living and communicating with humans–is described by her tutor Francine Patterson as "having behavior much like a small child." Paradoxically, this same failure may explain why no test animal has ever been treated as a co-respondent or designer of a scientific experiment in interspecies communication.

The research might obtain different results if the methodology emphasized collaboration rather than animals mimicking human intellectual patterns. Clearly, a dialogue that adapted to both species' preferred syntax, vocabulary, behavior, and environment would demonstrate not only how and what an animal can learn, but what it already knows as well. Unfortunately, no animal, wild or captive, can possibly uphold the zealous control deemed so essential by the scientists who administer communication experiments. Yet only strict control produces replicable data, say researchers, and without it, scientific credibility evaporates. Journalist Wyatt Townley concludes: "It's a *Catch-22* situation. Relinquishing rigorous control nurtures communication even as it invalidates science."

sitemap

Encephalization

Research with captive cetaceans probably receives the most criticism. For instance, the signals used at Kewalo Basin are *hand* gestures, a curious choice that guarantees the handless dolphins can never develop a dialogue with their trainers. While boosters describe the sophistication of the syntactical commands, critics assert that the animals themselves can only achieve a single goal–the receipt of a fish to eat. Nor do dolphins have any natural motivation to manifest such commands as "fetch the frisbee to the hoop." More criticism is leveled over the real-world applications derived from the research. Navy scuba divers don luminescent gloves to train dolphins in the retrieval of ordnance underwater, a technique

perfected at Kewalo Basin. Animal rights advocates charge the navy of using dolphins for underwater surveillance where they are trained to attack on command. The Navy categorically denies it.

Horace Dobbs, who administers Project Sunflower, a British program that places severely depressed patients into the ocean with wild dolphins, believes that captive cetaceans have no inclination to reveal the depth of their intellect to captors who reward displays of ingenuity with dead fish and endless rounds of identifying objects. In a remark aimed to draw attention to what he believes is interspecies slavery, Dobbs calls captive dolphins "dumb niggers", who mask their keen intellect as a basic survival strategy. Gregory Bateson, who spent some years attempting to communicate with captive dolphins, wrote that the world is not a collection of things and functions devoid of association, but a dynamic web of relationships bound together by communication. He asserted that dolphin language research would never succeed so long as it denied the full spectrum of social behavior and communication. Kathleen Dudzinski, who has studied wild dolphin behavior in the Bahamas and Japan comments that delphinids "employ posture, context (behavioral activity), contact, vocalizations, and other external referents (e.g., age, sex, associate ID's, bubbles and more) to convey information. Just because they may also understand the concepts of syntax and grammar does not mean they use (or need) it in their daily lives." Other biologists focus more on procedure than behavior to describe John Lilly's Project Janus as "bad science". Lilly relied on computers to provide an imprecise transposition of already inscrutable whistles. Unfortunately, without digital transposers, the human ear can discern only 20% of the sounds dolphins make.

Despite these shortcomings, there are some important reasons bottlenose dolphins remain a favorite subject for captive communication research. Along the coast of North America, several populations of bottlenose dolphins inhabit near-shore, shallow environments. This preferred habitat makes them the easiest and least expensive species to capture. That also explains why they adapt so well, and breed so successfully, in shallow swimming pools. Their large brain assures a deep well for future researchers to draw inspiration. In 1863, Thomas Huxley postulated that the more complex a species brain, the more evolved it is. Using the best evidence of his time, he concluded that the human species has the largest brain and is therefore the most intelligent. In 1960, H.J. Jerison proposed encephalization–the ratio of brain volume to a body's surface area–as a better criterion for measuring intelligence in species. Jerison placed the human species at the top of his hierarchy. John Lilly undermined both conclusions by showing that the brains of several odontocete species are both larger and more encephalic than any human's. However, recent research has found the tissue in dolphin brains lacking a crucial layer that, at least in humans, contains many neuronal connections.

Whatever the implication of that shortcoming, the dolphin brain evolved to its present capacity at least fifteen million years ago. If Huxley, Jerison, and Lilly are to be taken at their word, then fifteen million years ago the dolphins had evolved an intelligence greater than humans have today. Today, Lilly refutes captivity and quotes James Thurber to describe the knowledge he feels we should be seeking from dolphins.

The Charged Border

Scientists who study cetacean vocalizations in the wild, point to the beluga whale as a potentially better candidate for communication studies. Belugas were called sea canaries by 19th century whalers for the way they chirp and chortle among their own kind. Almost all beluga calls are audible to a human ear. They are also among the few cetacean species to naturally vocalize in air. Becky Sjare, a Canadian biologist who made an extensive study of beluga vocalizations, concluded that the species produces more different kinds of sounds than any other whale or dolphin. Listening to them vocalize to one another at Lancaster

Sound in the Canadian High Arctic, their discourse reminded me of a raucous party heard through the walls of an apartment building. I intuited that the revelers were indeed talking coherently to one another, although individual words could not be discerned.

The species is notoriously uncooperative at learning the standard fare of oceanarium antics like jumping through hoops. Of nine beluga whales born in captivity only two have survived even a week. The video of one such birth and death, at the Tacoma Washington Point Defiance Zoo, had the look and feel of a mercy-killing administered by its mother. Another otherwise untrainable beluga confined for years in a tiny pool at the Vancouver aquarium, spent hours a day making faces through the glass at children who made faces in response.

The Charged Border that exists between humans and cetaceans casts an ethical tension over language experiments with captive cetaceans that Penny Patterson and Irene Pepperberg never needed to address. In the dolphin lab at Kewalo Basin Hawaii, two graduate students accused the program director Louis Herman of cruelty to animals. Late one night they bundled the two dolphins into a pickup truck and freed them into the Ocean. One student was eventually found guilty of stealing the research center's property. Herman announced that such highly-trained animals could never survive in the wild; yet by admitting that, he inadvertently demonstrated how exploitation damages an animal's native intelligence. The two dolphins had been taught many ingenious signals although, having land animals as teachers, they never learned about currents, predation, or how to relate to other dolphins.

As someone who has played music with several different cetacean species over a twenty-five year period–including bottlenose dolphins and beluga whales–I wonder if their complex vocalizations are actually closer to music than language. Acoustic information may just as easily be communicated through sonic algorithms based on melodies, harmonies, and rhythm as by words. Like nineteenth century railroad workers employing the cadences of a work song to perform a group task, certain whistles may provide a rhythm for scattered pod members to roll across the surface in synchrony as I have witnessed orcas do in the straits of British Columbia. And like the whistling language of Basques shepherds, vocalizations certainly help pod members keep in touch with one another across distance. If my interpretation is credible, then attempting to translate a delphinid's musical/symbolic calls into English may be as futile an endeavor as trying to translate a Beethoven symphony into English.

Some cognitive scientists believe that a species' ability to acquire language gauges that species' intelligence. The connection may be false, because intelligence itself defies a universal definition. Webster's defines the term as the ability to learn or understand from experience, to acquire and retain knowledge. Yet street intelligence in the Los Angeles Barrios must be graded differently than the intelligence displayed in the physics labs of UCLA just a few miles away. The question has even been asked whether more intelligent people get higher or lower marks on intelligence tests.

If cognitive scientists can not pin down the capability in humans, they are much further from forming a valid definition that includes animals. The nature philosopher, Michael Fox, may offer the most workable, if not transcendent definition when he writes, "a lot of people confuse intelligence with trainability. I turn it all around and say, there's no one more intelligent at being a butterfly than a butterfly." According to Fox, controlled scientific experiments in animal cognition are ultimately flawed because they judge animal intelligence only in terms of species-specific assumptions about *human* intelligence. Louis Herman's experiments, for example, focused on the dolphins' ability to reflect a human proficiency to apply information to a task.

This flaw also hinders cognitive science's best known test for determining a species'

sentience, (defined as the capacity for feeling or perceiving consciousness). A researcher anesthetizes an animal and then paints a spot on its body not visible to self-examination. Upon awakening, the animal is placed in front of a mirror and then shown the spot in its reflection. A species is considered self-aware if it reaches to touch the mark on itself rather than on the mirror. Until very recently, only the great apes passed the test. Naturally, much fanfare resulted in 1991 when the Hawaiian-based, *Project Delphis*, coaxed a bottlenose dolphin to observe a blemish on itself after first observing it in a mirror and by doing so, became the first non-primate to attain membership on "the sentient list". Animal Rightists have concluded with some irony, that in order to be deemed sentient, the dolphin was first captured, caged, isolated, drugged, marked, and interrogated to teach its experimenters something akin to a declaration that the sky is blue. Alex the parrot is not officially considered sentient, although he learned the word "gray" after bidding a researcher to tell him, in plain English, the color of his own reflection in a mirror.

Animals are wise beyond the systems of language we impose upon them, intelligent beyond our training regimens, creative beyond the behavioral tricks we watch them perform. The most conscious forms of communication–Koko's fib, for instance–are circular and transparent. While it is happening, both parties simply feel it and are thus able to respond intelligibly. Sentience can not be properly measured any more than creativity can be measured. Or love. This conclusion suggests that animal intellect–the outward expression of sentience–may be an issue of philosophy more than science. Is the creator of a complex tool such as the atom bomb, more intelligent than the creator of a simple tool, the spider web? The web is eminently utilitarian, a wonder of design, light on resources and, most notably, has insured the survival of its creator for a hundred million years. It harms nothing besides the spider's immediate prey. It is easily reconstructed when damaged. If the architect of the atom bomb is deemed more intelligent than the architect of the spider web, the obvious next question sounds like something out of Alice in Wonderland:

Is it more intelligent to be less intelligent? And if so, what does it make of the parrot's dream?

The Nonlocal Mind

Some visionary scientists argue that both sentience and communication are universal in nature, operating as one aspect of "nonlocal" mind. As in John's sperm whale dream, the brain may not be the seat of the mind but, rather, the conduit of consciousness, what the Hindu mystic, Yogananda, referred to as a radio receiver linking us to some as yet poorly understood external cosmic record where all knowledge and wisdom reside. Every species possesses the ability to tap into any part of it, although the size of an animal's receiver limits how much can be held at once. When a parrot is taught to think like a human, it also learns to tap into the human part of the nonlocal spectrum.

This is not only the dream of mystics. Nonlocal communication was investigated in the 1930s by Einstein in an unsuccessful attempt to unravel the means by which quantum mechanics is able to predict the interaction between sub-atomic particles far beyond (even light years beyond) each other's normal sphere of influence. Several modern consciousness researchers including biologist Rupert Sheldrake, MD Larry Dossey, and philosopher Ken Wilbur have studied nonlocality in an attempt to understand such disparate phenomena as species morphogenesis, instinctual behavior, disease remission through prayer, and the basis of herbal knowledge. The investigator of psychic phenomena, Russell Targ, pleads for humility when he states that contemporary science possesses neither the tools nor the methodology to explain the true nature of separation between organisms. The Gaia Hypothesis postulates that some as yet unknown communication linkage among species is responsible for stabilizing the chemical composition of the Earth's atmosphere for a billion years. For Gaia to be true, communication must be the norm rather than the exception in

nature.

This view, an alternative to orthodox science, is the basis of a growing ethical and ecological perception of nature. In many ways, it takes up a very old cause and recasts it as conservation biology, deep ecology and other terms familiar to its adherents who hardly offer a unified front: artists, animal rights advocates, scientists, philosophers, mystics, healers, ministers, telepathic pet owners. What they share is a compassionate, humble relationship with all organisms on Earth, rejecting the anthropocentric society for a biocentric one, scrutinizing nature's many "parts" not as objects, but as relations, extended family, each with a unique gift. The animals deserve our empathy, our compassion, and our ear, but that doesn't mean any of them will ever talk to us in English. Nor are they human beings in animal suits.

Many who hold this view side with Gaia by asserting that communication is far more common in nature than biology warrants. Whether it occurs at any given moment has less to do with methodology than with a sensitivity to listen. It depends on how willing we are, as individuals and as a culture to seek out the unknown, push beyond the quantifiable, and adopt new ways for studying the possibilities. Orthodox scientists contend that this view is anthropomorphic. But perhaps their criticism is a handy obfuscation that serves to uphold a dogma that keeps humans above and separate from the rest of nature. Transparent communication is nurtured best in an atmosphere of mutual respect; if that means "attributing human characteristics to an animal", then so be it.

Those who promote the interdependent perspective are not unscientific, they stretch the boundary of science. While the old guard of interspecies communicators works to keep data free from personal interjection, the new guard pursues goals that are experiential, ethical and shamanic. By reporting back to the greater culture, they hope to reconnect ethos to mythos, culture to nature. The difference between the two approaches emerges as a distinction of kind rather than degree.

The practices of traditional culture confirm the virtues of interdependence. Native people observed other species closely, seeking practical insight to help meet their own life challenges. Unhampered by the hierarchal organization that positions one species above or below another, they had great freedom to learn from every species. By contrast, our anthropocentric society has not yet learned that the prevailing "separate but not equal" worldview is killing the planet and us along with it.

Today, technological hubris prompts many to declare we can control nature. Fortunately, a growing number of ecologically-minded people recognize that our own society must develop a conciliatory relationship with nature if we are to survive. Although the anticipated drift toward biocentrism–defined as life lived with nature (not humans) at the center–seems wildly revolutionary to some, its goal is mild in practice, mostly insisting that each one of us meet nature halfway.

Examining this drift closely, we notice cetaceans swimming at the center of a human cultural adjustment. As the Industrial Revolution was fueled on the bodies of whales, and the environmental movement gained impetus from a passionate crusade to save-the-whales, so today a growing number of people are being persuaded to let both the symbol and the social behavior of cetaceans inspire and guide them toward ecological community. Some in the cultural avant-garde believe cetaceans serve as a harbinger for a new totemic spirituality. Yet no matter how this seminal totemism/biocentrism/Gaia consciousness eventually informs the greater culture, all the signs indicate that the charged border will remain a hotbed of influence in the years to come.

This excerpt is from a chapter in Jim Nollman's book, The Charged Border: Where Whales and Humans Meet. (curently out of print in English, but soon to be published by *At Verlag* in German).