# Do only humans have culture?

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## Culture **Club**

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In the Gulf of Maine, one group of humpback whales has added its own personal touch to the species' usual "bubble cloud" feeding routine. While other humpbacks exhale mightily underwater in order to envelop schools of prey in clouds of bubbles that confuse the living daylights out of them, humpbacks in this clan also slam their tail flukes onto the ocean's surface, engulfing the prey in a chaos of roiling water. Since one clever humpback launched the tail thing in 1981, the practice has spread to about half the population in the area, as youngsters learn it from their mothers. No other humpbacks on earth have such a tradition. On the other side of the world, a group of killer whales has its own calling card: those around Argentina and Antarctica teach their young to intentionally beach themselves, the better to catch sunbathing seals. And back north, off Vancouver Island, a few pods of killer whales have developed a unique meeting ritual. When one pod encounters another, each lines up in formation for 10 to 30 seconds—and only then, with niceties out of the way, do they approach and mingle. Again, nowhere else do killer whales engage in such pleasantries. Thanks to these observations and more, described in an upcoming paper in the journal Behavioral and Brain Sciences, "there is growing evidence of culture in dolphins and whales," says marine biologist Hal Whitehead of Dalhousie University in Canada.

In other words, these are not just stupid animal tricks. Although "culture" evokes images of grand opera and Gothic architecture, of Shakespearean sonnets and Rembrandt portraits, in fact the term has a simpler meaning. Scientists define it as behavior, skills or knowledge—a way of life—that you share with and acquire from others of your species, but that differs from the way of life practiced by those of your kind living elsewhere. It's what we mean when we say Japanese culture is different from Brazilian. And crucially, the behavior is neither acquired genetically (if you're a monarch butterfly, flying to Mexico for the winter doesn't count as culture) nor compelled by the environment (if you're a chimp, sleeping in trees rather than on the ground in areas patrolled by leopards doesn't count either). By this yardstick, researchers are finding evidence of culture in chimps and macaque monkeys, in killer whales, humpbacks and birds—throwing into doubt the centuries-long contention that humans are the only cultured creatures. There is "so much resistance to the idea of animal culture," says primatologist Frans de Waal in his new book, "The Ape and the Sushi Master," "that one cannot escape the impression that it is an idea whose time has come."

The funny thing about animal culture is that evidence for it has existed for years, but scientists failed to recognize what they had. Only when researchers began comparing notes could they be sure that behavior of creatures at their own field site was not common to all members of the species (the way, say, every baboon troop has a dominance hierarchy). But now all the researchers studying wild chimpanzees have put their heads—and 151 years of observations from seven sites—together. Pooling data on how chimps dig for termites, gather ants, scoop out marrow, use leaves for seats and engage in other behaviors, they identified 39 traditions that qualify as cultural variations.

The behaviors range from ways of greeting to ways of eating, tool use to courtship gambits. Only in the Tai Forest of Cote d'Ivoire and Bossou in Guinea do chimps carefully select flat stones to use as anvils on which to crack rock-hard coula nuts with pieces of wood. Only the chimp communities at Mahale and Gombe, both in Tanzania, fish for termites with flexible strips of bark; only those at Gombe, Mahale and Kibale in Uganda customarily perform rain dances, dragging branches and slapping the ground and charging when a heavy rain falls. Together, the 39 cultural variants are so specific that if you see chimps mash parasites against their forearms, hammer nuts and remove bone marrow from monkeys they've killed, you know you're looking at a community in the Tai Forest. In each case, the tradition has persisted for generations, strong evidence that it is transmitted from adults to offspring rather than reinvented with each brood. In the Tai Forest, for instance, wide-eyed infants clumsily handle a nut or a stone, watch the adults, practice hitting and only after three years manage to crack a nut atop an anvil stone. And killer-whale mothers push their youngsters up a beach and down, directing them toward prey, and even throw prey toward them until they get the point.

Such "social learning," a requirement of culture, first showed up on the southern Japanese island of Koshima. In 1953, primatologists saw an 18-month-old macaque they had named Imo carry a sweet potato to a stream. She washed off the grit (which can be murder on teeth)—and as her playmates watched her, they, too, began washing potatoes. Within three months Imo's mother and two of her friends were

washing spuds, and soon other young macaques, their siblings and mothers were, too. Only older males, who tend not to hang with females and kids, failed to pick it up. In 1956 the clever Imo figured out another trick: to separate wheat thrown onto the beach from sand, she carried fistfuls of the sand-and-wheat mix to the sea, sprinkled it on the surface—and easily scooped off the wheat, since sand sinks first. Soon most monkeys on the island picked up this habit, too. Both continue to this day. "Persistence of habits beyond the life of the initiator is one of the characteristics of culture," notes de Waal.

The elaborate thatched nests built by New Guinean bowerbirds—doorways rimmed with berries, iridescent beetle wings or flowers—may also be an expression of culture. The color and placement of their decorations vary from region to region but are fairly consistent within an area. At Bossou in Guinea, but nowhere else, chimps spread leaves on the wet ground to sit on. And only the chimps in a forest in Sierra Leone carefully place smooth sticks over the thorns of kapok trees, so they can move around the canopy to gather fruit without getting impaled. At least three generations of bottlenose dolphins off Brazil have taught their young to drive fish into fishermen's nets, executing a balletic "rolling dive" to indicate where the men should cast their nets, and then feed off the fish that the nets stun. Other dolphins in the area have no such tradition, evidence that it is neither species-wide nor imposed by environmental conditions.

Another defining feature of culture is that it sometimes serves (with apologies to art lovers) no apparent purpose. On Mount Arashiyama outside Kyoto, Japanese macaques have acquired the useless habit of rubbing or striking together small stones. The tradition has taken hold within this troop and this troop alone, persisting for decades and passed on to every infant.

"We had long thought that culture marks us as distinct," says chimp re-searcher Andrew Whiten of the University of St. Andrews in Scotland, where he runs the chimp-culture Web site chimp.st-and.ac.uk/cultures. "But now we look across the animal kingdom and find whole suites of traditions that we must recognize as cultures." If culture is not uniquely human, then neither is it some deus ex machina that descended from on high. Culture, instead, evolved. What fosters it? Intelligence matters, of course—there had to be a first monkey to figure out potato washing. But just as crucial is having young stay with their mother for years, giving them time to learn the group's ways. And so is the presence of females who live beyond their peak reproductive years. Freed of child rearing, they serve as the institutional memories of their community, the embodiment of a unique and characteristic culture. Call it the grandma factor.