

What if...

What if parents never tried to teach children to talk? Would they still learn how?

What if a child never heard language at all—like a child raised by wolves? Would s/he learn to talk?

If a child raised by wolves did learn to talk, what language would s/he speak?

What if a group of children were raised by wolves? Would they learn to talk? What language?

What if a group of adults were stranded for years on a remote island, and no two spoke the same language? What language would they end up using to communicate?

What if, someday, there were world peace and a single world government—would everyone speak the same language?

What if you were suddenly transported to the year 2106—would you be able to understand the speech of people around you? How about in 3006?

What might you expect to be the same or different about English 100 or 1000 years from now?

What if we made contact with aliens? Would we be able to learn their language? Would they be able to learn ours?

Koko.org - Koko's World - Talk To Koko

http://gorilla.org/world/talk_aol.html

PENNY: We're in Koko's kitchen area. She's sitting with me in the kitchen. There are toys all around a refrigerator, television, big gorilla doll on the floor stuffed animals, video tapes. So it's got a lot of stuff including a harmonica which she pushed it away, doesn't want to play with that. Ok. Oh, I have some things that you might want to wear, Koko. Here. I gave her a couple of fabric bracelets... she's looking at them. She's putting it on her head because actually these are things people wear on their pony tails.

KOKO: Fake.

PENNY: She signed 'fake.' She's pulling one of them and it's not fitting her hair.

KOKO: Hat that toilet. Good tell-you-hurry.

PENNY: It's a toilet hat? No, it's a nice hat. Pretty.

KOKO: Fake stink tell-you-hurry.

PENNY: 'Fake flowers.' She said they were 'fake flowers.'

AOL: Does she have hair? Or is it like fur?

PENNY: She has hair. You have hair, right Koko?

KOKO: Fine (on head at 'hair' position). Drink XXX give-me.

PENNY: She signed 'fine' on her head.

KOKO: Fine (at brow) you-hurry.

PENNY: She has 'fine hair,' she said. It's beautiful!

KOKO: Lips good hurry-you.

AOL: How big is she?

PENNY: She's about 5 feet tall and weighs about 300-310 lbs. She has a big tummy! What else can I say about you, Koko?

AOL: Koko tell us what you look like in your words?

PENNY: These people on the phone would like to know what you look like.

KOKO: This. (Indicating flower on scrunchie).

PENNY: Oh, that does...

KOKO: This...stink. This. (Indicating flower on scrunchie).

PENNY: ...have a 'flower' on it. She's showing me there's a flower...'that flower there'... one of the scrunchies has a big sun flower on it. That.

KOKO: That. (Indicating sunflower on scrunchie.)

KOKO: That fine eat know give-me. (Koko scratches her face.) Eat. (Koko scratches her face again.)

PENNY: 'Eat know' K-N-O-W 'eat' so she wants a little more of the snack, apparently.

KOKO: Obnoxious.

PENNY: Was that a tiny 'obnoxious' sign? There was a little suggestion of maybe - are you tired?

KOKO: Sleep lie-down. This (indicating red scrunchie) red red hurry.

PENNY: 'That red red,' to the scrunchie that's red.

KOKO: Good sip give-me.

PENNY: I think it's about dinner time for her now.

Jim Darling has struggled for 25 years to crack the code of the humpback song. The vocalization, uttered only by males, is perhaps the longest and most elaborate known among animals. Its formal structure is built from a succession of themes, or melodies, that have a striking range of tones from piccolo chirrups to low-pitched foghorn blasts. Some scientists say they can detect rhymes. Considering how much time and energy go into producing this submarine aria, most people assumed the purpose must be to lure mates. That theory took a blow in 1997, when Darling, a Whale Trust researcher, and Flip Nicklin discovered that singers in the 'Au'au Channel were drawing not the opposite sex but other males.

Darling and the rest of the Whale Trust team have been using an underwater speaker to play recordings of the song. The first experiments appear to confirm that females aren't attracted to the singing, whereas males seem eager to investigate the source. Maybe the song isn't for wooing but for broadcasting a challenge, as when a bull elk bugles across the mountainsides. If so, you would expect a contest to erupt when another male comes to check out the claim.

Yet when a new male joins a singer, Darling notes, the two whales often circle each other without obvious aggression. They may even swim off together like bachelor buddies, often to join other whales. Perhaps singers are recruiting male allies to help find a female and displace the primary escort at her side. If the female tries to bolt, a fast-swimming, flipper-banging competitive group may then take shape.

Or maybe the songs are far more than simple calls to allies or rivals. Hit tunes and national anthems could be better analogies, for all we know. All the humpbacks within one region, the North Pacific, for instance, sing the same song.

parting ways

This yearling will leave its mother within weeks. She has already shown it the way to the northern feeding grounds. On the next journey, the young whale will be on its own.

Only an expert like Darling can detect minor variations among subpopulations, such as the humpbacks wintering off Hawaii and those off the Philippines. Yet researchers have found that the humpback populations in other parts of the world sing distinctly different songs. The songs also change over time—from one year to the next, and even over a single breeding season.

A decade ago, the humpbacks in the channel ended their song with a rising series of whoops just before coming up for breath. The next year, the finale switched to a series of ribbits. Two years ago the song had only four themes, down from as many as eight in earlier years, and even a novice could pick out a new growly tone dominating a particular section. As of 2006, there were six themes, one with a recently added flourish of four loud squeaks, and the final noises before surfacing were more like a buzz.

Lately, researchers listening in on humpbacks along northern feeding grounds have picked up singing during late autumn and again in spring and even early summer. Navy hydrophones deployed on the sea bottom detect humpbacks singing during their long migrations as well. Could it be that the whales sing to establish their identity as a group or possibly as individuals? That they are telling others about who they are and where they come from? Or sharing lore about the currents and fish and maybe the stars?

Years of study lie ahead. "Why do I do it?" Darling wonders aloud. "Human beings like puzzles. I want to know. Period."

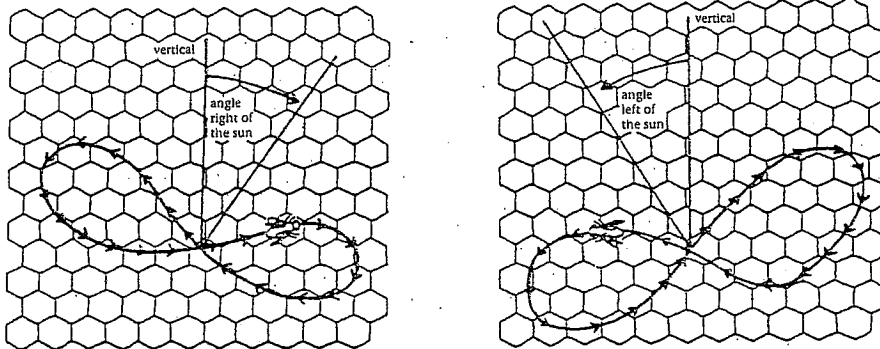
And perhaps the urge to know goes both ways. Nicklin recalls snorkeling some distance from a humpback when it approached within a few yards. Curiosity about humans is not uncommon among humpbacks, especially young ones. But this adult animal gently carried Nicklin toward its eye with a fin. Who's to say this wasn't a case of a fellow big-brained mammal reaching out in wonder and curiosity, as in the electric moments when a chimpanzee or gorilla first touched a researcher's hand? □

▶ **Humpback Ballet** Witness the underwater grace of these sea giants at ngm.com/0701.

We will begin by discussing honey bees. When a forager bee returns to the hive, if it has located a source of food, it does a dance that communicates certain information about that source to other members of the colony. The dancing behavior may assume one of three possible patterns: round, sickle, and tail-wagging. The determining factor in the choice of dance pattern is the distance of the food source from the hive. The round dance indicates locations near the hive, within 20 feet or so. The sickle dance indicates locations at an intermediate distance from the hive, approximately 20 to 60 feet. The tail-wagging dance is for distances that exceed 60 feet or so.

In all the dances, the bee alights on a wall of the hive and moves through the appropriate pattern. For the round dance, the bee's motion depicts a circle. The only semantic information imparted by the round dance other than the approximate distance from the hive to the food source is the quality of the food source. This is indicated by the number of repetitions of the basic pattern that the bee executes and the vivacity with which it performs the dance. This feature is true of all three patterns. To perform the sickle dance, the bee traces out a sickle-shaped figure eight on the wall. The angle formed by the open end of the sickle intersecting with an imaginary vertical line down the wall of the hive is the same angle as the angle of the food source from the sun. Thus, the shape of the sickle dance imparts information about the approximate distance, direction, and quality (see (1)).

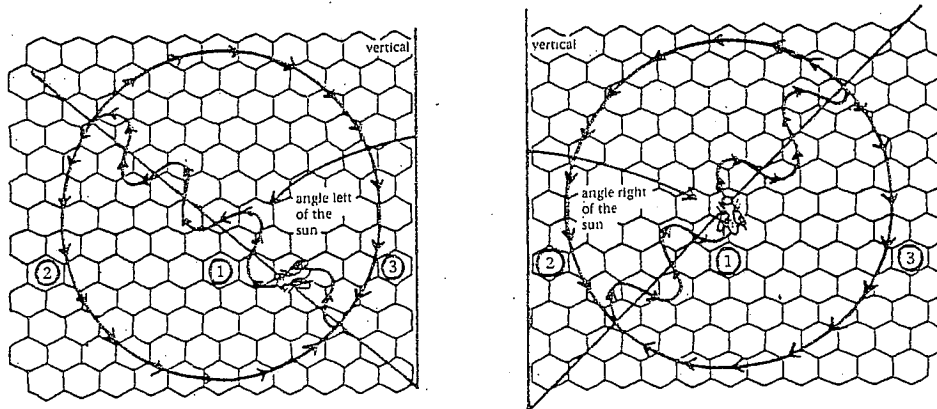
- (1) The sickle dance. In this case the food source is 20 to 60 feet from the hive.



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In the tail-wagging dance, the bee's movement again describes a circle, but this time the circle is interrupted when the bee cuts across the circle doing a tail-wagging action. The tail-wagging dance imparts all the information of the sickle dance (in this case it is the angle between a vertical line and the tail-wagging path that communicates the angle to the sun), with one important addition. The number of repetitions per minute of the basic pattern of the dance indicates the precise distance: the slower the repetition rate, the greater the distance (see (2)).

- (2) The tail-wagging dance. The number of times per minute the bee dances a complete pattern (1-2-1-3) indicates the distance of the food source.



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the tail-wagging dance, the bee's movement again describes a circle, but this time the

The bees' dance is an effective system of communication that is capable, in principle, of infinitely many different messages. In this sense the bees' dances are infinitely variable, like human language. But unlike human language, the communication system of the bees has limited semantic value: the topics that bees can communicate about are limited. For example, an experimenter forced a bee to walk to a food source. When the bee returned to the hive, it indicated a distance 25 times farther away than the food source actually was. The bee had no way of communicating the special circumstances or taking them into account in its message. This absence of **creativity** makes the bees' dance qualitatively different from human language.

The bees' dance gives us a chance to illustrate another very interesting property that every natural human language of the world possesses, as previously discussed in Files 1.4 and 14.1. This property is the arbitrariness of the linguistic sign. When we say that a linguistic sign is arbitrary, it means that there is no inherent connection between the linguistic form and its corresponding linguistic meaning. What about the bees' dance? What are the forms of the signs, and to what meanings do they correspond? Are the relationships arbitrary or non-arbitrary? Consider the tail-wagging dance. One form is the vivacity of the dance, with a corresponding meaning 'quality of food source.' The relationship is arbitrary, for there is nothing inherent about vivacity that indicates good or bad quality. Because the relationship is arbitrary, there is no *a priori* way of telling what the form means.

What about distance? The question here is more complicated. Remember that the slower the repetition rate, the greater the distance. On the surface this relationship may seem arbitrary, but let's use a little physics to reword the relationship: the longer it takes to complete the basic pattern, the longer it will take a bee to fly to the source. Thus, we see that this sign is in some sense non-arbitrary. Similarly, the direction-determining aspect of the dance is obviously non-arbitrary; since the angle of the dance mirrors the angle to the food source. Therefore, we see that bee dances have both arbitrary and iconic (non-arbitrary) components to their signs.