

# Living without Numbers or Time

By Rafaela von Bredow

**The Pirahã people have no history, no descriptive words and no subordinate clauses. That makes their language one of the strangest in the world -- and also one of the most hotly debated by linguists.**



Pirahã's doing fieldwork: "In the end, not a single one could count to ten."

During one of his first visits to Brazil's Pirahãs, members of the tribe wanted to kill Daniel Everett. At that point, he wasn't even a "bagiai" (friend) yet and a travelling salesman -- who felt Everett had conned him -- had promised the natives a lot of whiskey for the murder. In the gloom of midnight, the Pirahã warriors huddled along the banks of the Maici and planned their attack.

What the tribesmen didn't realize, however, was that Everett, a linguist, was eavesdropping, and he could already understand enough of the Amazon people's cacophonous singsong to make out the decisive words.

"I locked my wife and our three children in the reasonably safe shed of our hut and immediately went to the men," Everett recalls. "In one move, I snatched up all of their bows and arrows, went back to the hut and locked them up." He had not only disarmed the Pirahãs -- he had also startled them -- and they let him live. The next day, the family left without any trouble.

But the language of the forest dwellers, which Everett describes as "tremendously difficult to learn," so fascinated the researcher and his wife that they soon returned. Since 1977, the British ethnologist at the University of Manchester spent a total of seven years living with the Pirahãs -- and he's committed his career to researching their puzzling language. Indeed, he was long so uncertain about what he was actually hearing while living among the Pirahãs that he waited nearly three decades before publishing his findings. "I simply didn't trust myself."

Everett sensed his findings would be controversial. Indeed they were: What he found was enough to topple even the most-respected theories about the Pirahãs' faculty of speech.

The reaction came exactly as the researcher had expected. The small hunting and gathering tribe, with a population of only 310 to 350, has become the center of a raging debate between linguists, anthropologists and cognitive researchers. Even Noam Chomsky of the Massachusetts Institute of Technology and Steven Pinker of Harvard University, two of the most influential theorists on the subject, are still arguing over what it means for the study of human language that the Pirahãs don't use subordinate clauses.

Indeed, the debate over the people of the Maici River goes straight to the core of the riddle of how homo sapiens managed to develop vocal communication. Although bees dance, birds sing and humpback whales even sing with syntax, human language is unique. If for no other reason than for the fact that it enables humans to piece together never before constructed thoughts with ceaseless creativity -- think of Shakespeare and his plays or Einstein and his theory of relativity.

Linguistics generally focuses on what idioms across the world have in common. But the Pirahã language -- and this is what makes it so significant -- departs from what were long thought to be essential features of all languages.



Graphic: The Piraha people's home

The language is incredibly spare. The Pirahã use only three pronouns. They hardly use any words associated with time and past tense verb conjugations don't exist. Apparently colors aren't very important to the Pirahãs, either -- they don't describe any of them in their language. But of all the curiosities, the one that bugs linguists the most is that Pirahã is likely the only language in the world that doesn't use subordinate clauses. Instead of saying, "When I have finished eating, I would like to speak with you," the Pirahãs say, "I finish eating, I speak with you."

Equally perplexing: In their everyday lives, the Pirahãs appear to have no need for numbers. During the time he spent with them, Everett never once heard words like "all," "every," and "more" from the Pirahãs. There is one word, "hói," which does come close to the numeral 1. But it can also mean "small" or describe a relatively small amount -- like two small fish as opposed to one big fish, for example. And they don't even appear to count without language, on their fingers for example, in order to determine how many pieces of meat they have to grill for the villagers, how many days of meat they have left from the anteaters they've hunted or how much they demand from Brazilian traders for their six baskets of Brazil nuts.

The debate amongst linguists about the absence of all numbers in the Pirahã language broke out after Peter Gordon, a psycholinguist at New York's Columbia University, visited the Pirahãs and tested their mathematical abilities. For example, they were asked to repeat patterns created with between one and 10 small batteries. Or they were to remember whether Gordon had placed three or eight nuts in a can.

The results, published in *Science* magazine, were astonishing. The Pirahãs simply don't get the concept of numbers. His study, Gordon says, shows that "a people without terms for numbers doesn't develop the ability to determine exact numbers."



Psycholinguist Peter Gordon: Are we only capable of creating thoughts for which words exist?

His findings have brought new life to a controversial theory by linguist Benjamin Whorf, who died in 1941. Under Whorf's theory, people are only capable of constructing thoughts for which they possess actual words. In other words: Because they have no words for numbers, they can't even begin to understand the concept of numbers and arithmetic.

But then, coming to terms with something like Portuguese multiplication tables would require the forest-dwellers to acquire some basic arithmetic. The Warlpiri -- a group of Australian aborigines whose language, like that of the Pirahã, only has a "one-two-many," system of counting -- had no difficulties counting farther than three in English.

But the Pirahãs proved to be completely different. Years ago, Everett attempted to teach them to learn to count. Over a period of eight months, he tried in vain to teach them the Portuguese numbers used by the Brazilians -- um, dois, tres. "In the end, not a single person could count to ten," the researcher says.

It's certainly not that the jungle people are too dumb. "Their thinking isn't any slower than the average college freshman," Everett says. Besides, the Pirahãs don't exactly live in genetic isolation -- they also mix with people from the surrounding populations. In that sense, their intellectual capacities must be equal to those of their neighbors.

Eventually Everett came up with a surprising explanation for the peculiarities of the Pirahã idiom. "The language is created by the culture," says the linguist. He explains the core of Pirahã culture with a simple formula: "Live here and now." The only thing of importance that is worth communicating to others is what is being experienced at that very moment. "All experience is anchored in the presence," says Everett, who believes this carpe-diem culture doesn't allow for abstract thought or complicated connections to the past -- limiting the language accordingly.

Living in the now also fits with the fact that the Pirahã don't appear to have a creation myth explaining existence. When asked, they simply reply: "Everything is the same, things always are." The mothers also don't tell their children fairy tales -- actually nobody tells any kind of stories. No one paints and there is no art.

Even the names the villagers give to their children aren't particularly imaginative. Often they are named after other members of the tribe which whom they share similar traits. Whatever isn't important in the present is quickly forgotten by the Pirahã. "Very few can remember the names of all four grandparents," says Everett.

The scientist is convinced that linguists will find a similar cultural influence on language elsewhere if they look for it. But up till now many defend the widely accepted theories from Chomsky, according to which all human languages have a universal grammar that form a sort of basic rules enabling children to put meaning and syntax to a combination of words.

Whether phonetics, semantics or morphology -- what exactly makes up this universal grammar is controversial. At its core, however, is the concept of recursion, which is defined as replication of a structure within its single parts. Without it, there wouldn't be any mathematics, computers, philosophy or symphonies. Humans basically wouldn't be able to view separate thoughts as subordinate parts of a complex idea.

And there wouldn't be subordinate clauses. They are responsible for translating the concept of recursion into grammar. Renowned US psychologist Pinker believes that if the Piraha don't form subordinate clauses, then recursion cannot explain the uniqueness of human language -- just as it cannot be a central element of some universal grammar. Chomsky would be refuted.

The logical way forward now would be to try to prove that the Pirahã can actually think in a recursive fashion. According to Everett, the only reason this isn't part of their language is because it is forbidden by their culture. The only problem is nobody can confirm or deny Everett's observations since no one can speak Pirahã as well as he does.

Despite this, several researchers -- including two Chomsky colleagues -- will travel this year to Maici to try and check parts of his claims. But for some, it's already getting too crowded in the jungle. "I'm concerned the Pirahã will simply become one more scientific oddity, to be exploited and analyzed right down to their feces," complains Peter Gordon.

This article is freely available at:

[www.spiegel.de/international/spiegel/0,1518,414291,00.html](http://www.spiegel.de/international/spiegel/0,1518,414291,00.html)