

# The Pirahã people: Defiance of linguistic laws

With only eight consonants, three vowels, and no concept of space and time, this Amazonian language is like no other

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Discovered by phonetics expert Professor Dan Everett of Manchester University in 1977, the Pirahã tribe of Brazil has perhaps the most unusual language among the nearly 6,000 found on Earth.

Free from concepts of time, colour, or specific quantity, the mind of the Pirahã people appears to have been frozen in time—representing man in a simpler state.

Everett has put much effort into understanding the Pirahã language and culture for the past 25 years. As one of very few outside the tribe who have managed to tackle this mysterious language, Everett constitutes a significant percentage of Pirahã speakers; the population of this unique Amazon tribe consists of only a few hundred people.

The language of the Pirahãs is extreme: It is limited to eight consonants for men, seven for women, and only three vowels. It does not contain concepts for counting or simple arithmetic—Everett notes that the Pirahãs convey varying amounts through approximation.

## Immediate experience

Perhaps most intriguing is the fact that

**'The Pirahã people communicate almost as much by singing, whistling, and humming as they do using consonants and vowels.'** —Prof. Dan Everett

Everett found that the Pirahãs don't use recursive phrases. In other words, they don't insert phrases within each other to combine different ideas to form a single sentence.

Everett thoroughly tested about 20 Pirahãs and found that none of them used a recursive clause. According to Everett, the Pirahãs only talk and think in terms of direct experience. The kind of referencing that occurs in recursive phrases just isn't a part of their thinking.

"[For the Pirahãs,] sentences ... cannot be uttered acceptably in the absence of a particular pair of animals or instructions about a specific animal to a specific hunter. In other words, when such sentences are used, they are describing specific experiences, not generalizing across experiences. It is of course more difficult to say that something does not exist than to show that it does exist, but ... in the context of my nearly three decades of regular research on Pirahã, it leads me to the conclusion that there is no strong evidence for the existence of quantifiers in Pirahã," writes Everett in his 2005 paper for Current Anthropology, "Cultural Constraints on Grammar and Cognition in Pirahã."

Despite Everett's extensive study of this tribe, his claim regarding a lack of recursion in the language has many colleagues doubting his conclusions. The qualities of the Pirahã language, as described by Everett, fly in the face of what many linguists consider a universal law of all languages.

According to the very influential linguist Noam Chomsky, recursion is something that has proved innate to all human thought throughout the world. Many insist that this infallible lingual law is supposed to apply to absolutely all languages (except, of course, Pirahã).

But Everett had only come to this conclusion over time. While he had sensed a lack of recursion in the language early on, for years Everett had been a devoted Chomskyan lin-

guist himself, and attempted to fit his findings within this framework. Yet try as he might, he found that many aspects of the Pirahã language did not adhere to the Chomsky model.

"... Some of the components of so-called core grammar are subject to cultural constraints, something that is predicted not to occur by the universal-grammar model. I argue that these apparently disjointed facts about the Pirahã language—gaps that are very surprising from just about any grammarian's perspective—ultimately derive from a single cultural constraint in Pirahã, namely, the restriction of communication to the immediate experience of the interlocutors," states Everett.

## Rethinking linguistics

According to Everett, the deceptively simple language of the Pirahãs is not an indicator of a mental failing—curiously, the tribe sees all other languages to be quite ridiculous. While their language may seem simple from our perspective, Everett says that they just use different means to convey concepts and emotions. He states that the Pirahãs have a complex verbal morphology and system of accents that give the language its expressive colour.

"The Pirahã people communicate almost as much by singing, whistling, and humming as they do using consonants and vowels," he writes.

Another surprising fact is the absence of myth, ritual, symbolism, or any other anthropological characteristic that relates the Pirahãs to other cultures throughout history. For the Pirahã people, there does not exist any creator God or moment of creation; nothing was ever created because it always existed.

Their concept and experience of time reduces it to the absolute present. In fact, there are no members of the community interested in tracking the records of grandparents, much less older ancestors. To the Pirahãs, once something is outside of direct experience, it ceases to exist. They don't even seem to have any storytelling.

With no colour, no time, and no need for recursive sentence structure, could it be that for the Pirahã people, further detail would seem needlessly redundant? Or do these concepts simply not fit into the Pirahã worldview?

Everett says that the Pirahãs see other languages as laughable, and show no desire to pursue "Portuguese (or American) knowledge but oppose its coming into their lives. They ask questions about outside cultures largely for the entertainment value of the answers."

Since various defenders of Chomsky's doctrine do not share Everett's opinions, could the Pirahã tribe simply represent a state of intellectual development that modern linguistic laws fail to understand?

## Martian soil appears able to support life

LOS ANGELES (Reuters)—"Flabbergasted" NASA scientists say that Martian soil appears to contain the requirements to support life, although more work would be needed to prove it.

Scientists working on the Phoenix Mars Lander mission, which has already found ice on the planet, said preliminary analysis by the lander's instruments on a sample of soil scooped up by the spacecraft's robotic arm had shown it to be much more alkaline than expected.

"We basically have found what appears to be the requirements, the nutrients, to support life whether past, present, or future," Sam Kounaves, the lead investigator for the wet chemistry laboratory on Phoenix, told journalists.

"It is the type of soil you would probably have in your back yard, you know, alkaline. You might be able to grow asparagus in it really well. ... It is very exciting for us."

The 35 cubic feet of soil was taken from about 1 inch below the surface of Mars and had a pH, or alkaline, level of 8 or 9. "We were all flabbergasted at the data we got back," Kounaves said.

Pressed on whether there was still any doubt that life existed on Mars in some form, Kounaves said the results were "very preliminary" and more analysis was needed.

But he added: "There is nothing about the soil that would preclude life. In fact, it seems very

friendly ... there is nothing about it that is toxic."

The \$420 million Phoenix lander touched down in the north pole region of Mars on May 25 after a 10-month journey from Earth. It is the latest NASA bid to determine whether water—a crucial ingredient for life—ever flowed on the planet and whether life, even in the form of mere microbes, exists or ever existed there.

Scientists say they had definitive proof that ice was on the planet after eight dice-size chunks were seen melting away in a series of photographs.

Analysis of soil placed in the spacecraft's wet chemistry laboratory showed it to be less acidic than many scientists expected. It also contained traces of magnesium, sodium, potassium, and other elements, they said.

When told the pH levels, one colleague "jumped up and down as if he had the winning lottery ticket," mission soil analysis specialist Michael Hecht told a telephone news conference.

"It is a huge step forward," Hecht said, adding that the "wet chemistry" technique, which involves mixing Martian soil with water brought from Earth, was aimed at discovering what native Martian microbes might be able to live, survive, and grow in the soil.

The mission scientists said levels of salt were reasonable and the calcium levels appeared to be low, but they warned that the composition of the soil could change at deeper levels below the surface.

They also would not be drawn on what form of life the Martian soil might have supported.



**LIFE ON MARS:** Recently examined soil samples suggest the possibility of Martian life. PHOTOS.COM

## Brain scientists discover why adventure feels good

LONDON (Reuters)—Scientists have identified a primitive area of the brain that makes us adventurous—a finding which may help explain why people routinely fall for "new" products when shopping.

Using brain scans to measure blood flow, British researchers discovered that a brain region known as the ventral striatum was more active when subjects chose unusual objects in controlled tests.

The ventral striatum is involved in processing rewards in the brain through the release of neurotransmitters like dopamine.

Scientists believe the existence of this age-old reward mechanism indicates that there is an evolutionary advantage in sampling the unknown.

"Seeking new and unfamiliar experiences is a fundamental behavioral tendency in humans and animals. It makes sense to try new options as they may prove advantageous in the long run," said Bianca Wittmann of the Wellcome Trust Centre for Neuroimaging at University College London.

Being daring, however, also carries risks. Some choices could be dangerous and, in the modern world, selecting the new may, for



**BIG ADVENTURE:** Scientists have pinpointed an area of the brain that is stimulated when people choose new and unusual items. PHOTOS.COM

instance, make consumers susceptible to marketing hype.

The positive feedback system in the brain could also contribute to some common vices.

"In humans, increased novelty-seeking may play a role in gambling

and drug addiction, both of which are mediated by malfunctions in dopamine release," said Nathaniel Daw, now at New York University, who also worked on the study.

The findings were published online in the journal *Neuron*.

## Wrong names for fish complicate conservation

OSLO (Reuters)—About a third of all types of fish and other marine life have been wrongly named by scientists, complicating efforts to conserve what could be a million marine species.

Inaugurating a World Register of Marine Species ([www.marinespecies.org](http://www.marinespecies.org)), they said the breadcrumb sponge, found in the North Atlantic in many shapes and colours, held the record for misleading synonyms with 56 Latin names.

"Convincing warnings about declining fish and other marine species must rest on a valid census," Mark Costello of the University of Auckland, co-founder of the register, said in a statement.

The register, trying to sort out a tangle of multiple Latin names for marine organisms from whales to plankton, has validated names of 122,500 species after eliminating 56,400 aliases, or 32 percent of all names reviewed.

"For 250 years, scientists have been describing species in the oceans but there is no complete list," said Ward Appeltans of the Flanders Marine Institute and data manager of the register. "We are now creating that list."

Experts at the register estimate that 230,000 species are known to science and that three times more are yet to be found, giving a final total that could exceed a million. The register hopes to give an overview of known species by October 2010.

New species get a two-word Latin name as their formal identity. But scientists often wrongly believe they have found a new species and give a new name.

The oldest name usually takes precedence, as with the breadcrumb sponge's name *Halichondria panicea* given in 1766. Later names for the same species include *Alcyonium manusdiaboli* in 1794 or *Trachyposilla glaberrima* in 1931.

## Over-fishing

Getting names right is a condition for managing resources in the seas, where many species

are facing threats from over-fishing, pollution, and climate change. Current high food prices could put more pressure on fish stocks.

"If fish are transported it's very important that customs know exactly what's in the boxes," Appeltans said. "If you want to protect endangered species you need to ... be able to identify the species."

A type of marine snail once used in the cosmetics industry, for instance, was found to be the same as one listed under another name as endangered, he said.

Among species with misleading names, the basking shark, the world's second largest fish after the whale shark, has 39 aliases in Latin, Appeltans said.

"The register ... will change the way people think about biodiversity and naming species," said Ron O'Dor, senior scientist of the Census of Marine Life.

The register is linked to the census, a 10-year effort to map life in the oceans. So far the census has added 110 validated species to the list and expects to add thousands more.

In remote parts of the oceans, such as off Antarctica, more than 80 percent of organisms caught are unknown to science especially smaller creatures such as worms, mollusks, or crustaceans.



**CATALOGING:** The basking shark has 39 different Latin names. WIKIMEDIA COMMONS

## GadgetTechWeekly

### Nokia Supernova

In an effort to make a phone that fits everyone, Nokia is set to unveil the Supernova series. It comes in four different models—7610, 7510, 7310, and 7210—each offering consumers a new level of personalization with colours, covers, and surfaces.

The phones feature a slide design and a selection of exchangeable Xpress-On covers in vibrant colours such as wasabi green, candy pink, electric blue, and mushroom gray. Individualization can be even more specific with help from the Theme Colourizer, which allows you to pick from virtually any colour imaginable for key illumination and wallpaper.

For some extra dazzle, the Supernova features captivating light effects with a display that remains hidden until lit. Unlike most cell phones, colours and covers on the Supernova can change as you see fit. It easily coordinates with any outfit, making this phone the ultimate accessory.

While the Supernova will get noticed for its stylishness, it still offers all the features users expect from the latest cell phones. You can choose from a 2- or 3.2-megapixel camera with dual LED flash and a 4x or 8x digital zoom, as well as instant messaging and image sharing. You can also enjoy music as well with the built-in FM-radio and MP3 player.

Price: TBA

Web site: [www.nokia.com](http://www.nokia.com)



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