

February 12, 2005

Come Together NYC
Apexart, 291 Church Street
New York, NY

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From the Arctic to the Amazon, Whorf Rides Again (The Whorfian Fallacy Revisited)

1. Introduction

Everyone has heard that the language of Arctic-dwelling Eskimos has many, many more words for snow than English. Although demonstrably false and thoroughly debunked (Pinker 1994; Pullum 1991), the viral Eskimo myth is often cited by proponents of what I will call the Whorfian fallacy: the erroneous notion that language determines human thought, or "molds" human perception of reality (Carroll 1956). An article recently published in the journal *Science*, entitled "Numerical Cognition Without Words: Evidence from Amazonia" (Gordon 2004), now claims to provide real evidence in support of Whorf's idea. In this talk I will briefly discuss why the facts reported in this article, despite being true, are no better evidence for Whorf's persistent fallacy than the Eskimo myth.

2. About those Eskimos

The myth about Eskimo words for snow is like an unstoppable virus.¹ Biologists and linguistic scientists have generally failed to take this myth seriously, although some have debunked it (Pinker 1994; Pullum 1991). The Eskimo myth is often repeated to college students in the social sciences and humanities,² and it even makes its way into textbooks. For

1 Pullum (1991) memorably compared "the Great Eskimo Snow Vocabulary Hoax" to the H.R. Giger-designed Alien creature that has plagued Sigourney Weaver through a series of films.

2 I heard the myth repeated during a large undergraduate sociology lecture (what we called a "cow class" because there were over 100 students). I rushed Pullum's (1991) article to the unfortunate professor; he retracted the Eskimo myth in a subsequent lecture, but re-emphasized the Whorfian fallacy it was intended to illustrate. Oh well.

example, the myth is perfectly summarized in this excerpt from an introductory psychology text (Bootzin et al. 1991: 296):³

...English has a single word for snow, but Eskimos--who live in an environment where snow is very important--have more than twenty distinct words for different types of snow. If language determines our perception, the Eskimo who looks out on a fresh snowfall perceives the white substance differently--in perhaps more subtle variations--than does an English-speaking American.⁴

The Eskimo myth is false, on its face, for at least the following reasons:

❄ There isn't just one group of "Eskimos," and the term is sometimes considered derogatory by the Arctic natives to which it refers. The Inuit (literally 'the people') consist of several related groups of indigenous Arctic peoples. Those who survived European colonialism, and their descendents, live in what is now Alaska, Russia, Greenland, and Canada. However, Inuit cultures will not survive global warming, which is devastating the Arctic ecosystem (Corell 2004; Parrott 2005).

❄ There's not just one "Eskimo language." The Inuit speak a group of related language and dialects in the Inuit-Aleut family, including Inuktitut, Inupiaq, Inuinnaqtun, Kalaallisut, Yupik, Yuit, Aleut, and more.

❄ The Eskimo myth never makes clear what definition of 'word' should be used to count the number of snow vocabulary items being compared in each language. For example, should the definition of countable words for snow in English include all six of *snow* (noun), *snow* (verb), *snows*, *snowed*, *snowing*, and *snowy*? This issue is even more significant for the languages of the Inuit-Aleut family, which are 'polysynthetic' or highly inflected (see e.g. Baker 2001). Counting inflected forms separately would result in hundreds of 'words' for anything in such languages.

❄ Even if we agree not to count inflected or homophonous forms as "distinct" words, it is clear that English has far more than one word for "different types of snow." Consider: *snow*, *snowfall*, *snowflake*,

³ Like Pullum's (1991), this textbook was randomly selected and very earnest.

⁴ One may wonder, what about an English-speaking American from northern states where heavy snow is common? What about an English-speaking Canadian?

snowdrift, snowball, slush, sleet, powder, snow pack, crust, snow slide, flurry, snift, snow fort, sugar snow, mogul, etc. There are many, many more. See for yourself at the One Look Reverse Dictionary, which lists hundreds of "distinct" English words related to snow (<http://www.onelook.com/reverse-dictionary.shtml>).

❄ Dictionaries and grammatical descriptions of Inuit languages--compiled by linguists and other knowledgeable researchers--have listed between 2 and 12 "distinct" words for snow (Pinker 1994; Pullum 1991).

3. The Whorfian Fallacy

The Eskimo myth is most commonly cited by proponents of what I will call the Whorfian fallacy.⁵ This idea is known by several different names:

- ❄ The Whorfian Hypothesis
- ❄ The Sapir-Whorf Hypothesis
- ❄ Linguistic Determinism (or, the 'strong version')
- ❄ Linguistic Relativity (or, the 'weak version')

Whorf's many descriptions of his idea include this one (Carroll 1956: v):

...a new principle of relativity, which holds that all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated.

Our textbook describes Whorf's fallacy as "the theory that language determines how we perceive and understand the world" (Bootzin et al. 1991: 296, emphasis in original):

Linguistic determinism, the idea that language determines thought, was eloquently expounded by Benjamin Lee Whorf

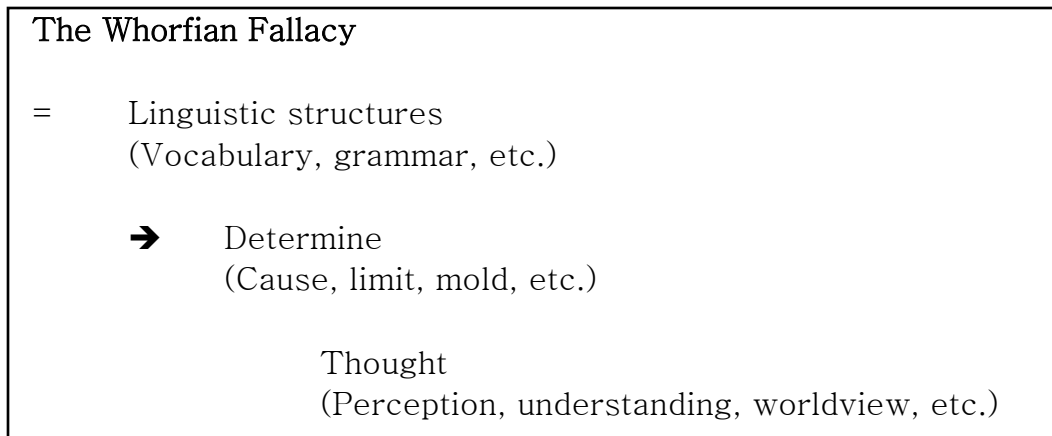
⁵ Ironically, Whorf never wrote about the Inuit or their languages. His ideas were primarily based on amateur studies of Native American languages, especially Hopi. One of his admirers writes that Whorf found Hopi "the most subtle and expressive...and compiled a Hopi dictionary, as yet unpublished. If he seems sometimes more affectionate than coldly scientific about his Indian tongues, it is easy to forgive him" (Carroll 1956: ix).

[(Carroll 1956)] some fifty years ago. When children acquire a language, Whorf believed, they simultaneously acquire a world view, because what their language allows them to talk about determines the way in which they perceive the world. Whorf concluded that people speaking different languages must therefore think about the world differently.

Cameron (a sociolinguist) phrases Whorf's fallacy as a question (1999: 153):

...what if our ways of perceiving and understanding the world are determined by the structures of the languages we speak?

The Whorfian fallacy can be schematized in the following form:



4. The Eskimo Argument

Time constraints prevent my arguing against the content of Whorf's fallacy here.⁶ Instead, I will focus on a logical problem that afflicts purported "evidence" for the fallacy. As noted above, the Eskimo myth is offered as an argument supporting Whorf:

⁶ Whorf's fallacy cannot be stated as a testable scientific hypothesis, in my view. For rigorous arguments and empirical evidence against stronger and weaker versions of the fallacy, see Pullum (1991), Pinker (1994), and references cited. Cameron (1999) lucidly discusses the enduring attraction of Whorf's fallacy.

The Eskimo Argument

= Large snow vocabulary in Eskimo language

→ Causes

Eskimos to perceive snow in "subtle variations"

Why are Eskimos thought to have such a large number of words for snow in the first place? Our textbook (Bootzin et al. 1991: 296) claims that "The importance of snow in the lives of Eskimos has given rise to [many] words for it in their language," and goes on to say that (1991: 298):

Subtle qualities of snow may be important for Eskimos...but those of us who live in more temperate climates need only one term to designate it. When an aspect of the environment becomes very important, words are added to the language to enhance communication....

This addition results in a very different argument; its form is precisely the reverse of Whorf's fallacy:

The Origin of Eskimo Snow Vocabulary

(Because snow is so important in their environment)

Eskimos perceive snow in "subtle variations"

→ Causing

Large snow vocabulary in Eskimo language

The Eskimo argument is now rendered completely circular at best (at worst, it is an argument against Whorf):

The Eskimo Argument + Origin of Vocabulary = Circular

Large snow vocabulary in Eskimo language

→ Causes

Eskimos to perceive snow in "subtle variations"

→ Causing

Large snow vocabulary in Eskimo language

Therefore, even if the Eskimo myth were true it couldn't be evidence for the Whorfian fallacy.

5. Amazonian Numbers

An article recently published in the journal *Science*, entitled "Numerical Cognition Without Words: Evidence from Amazonia," claims to provide real (as opposed to mythical) evidence in support of the Whorfian fallacy (Gordon 2004: 496, 498):

At issue here is the strongest version of Benjamin Lee Whorf's hypothesis that language can determine the nature and content of thought. ... The present study represents a rare and perhaps unique case for strong linguistic determinism.

Gordon--an associate professor of speech and language pathology at Teachers College, Columbia University--made three trips to the Amazon where he studied the indigenous Pirahã culture (2004: 496):

They live along the banks of the Maici River in the Lowland Amazonia region of Brazil. They maintain a predominantly hunter-gatherer existence and reject assimilation into mainstream Brazilian culture. Almost completely monolingual in their own language, they have a population of less than 200 living in small villages of 10 to 20 people. They have only limited exchanges with outsiders...trading goods without monetary exchange and without the use of count words.

The Pirahã language has an extremely limited vocabulary of number words (2004: 496):

The Pirahã counting system consists of the words: "hói" (falling tone = "one") and "hoí" (rising tone = "two"). Larger quantities are designated as "baagi" or "aibai" (= "many").

Gordon conducted various experiments to test whether adult members of the Pirahã are able "to perceive numerosities that extended beyond the limited count sequence." Granting all the facts as reported, they apparently cannot. Gordon concludes that (2004: 498):

The results of these studies show that the Pirahã's impoverished counting system limits their ability to enumerate exact quantities when set sizes exceed two or three items.

6. The Amazonian Argument

The form of Gordon's argument is identical to that of the Eskimo argument:

The Amazonian Argument

= "Impoverished" number vocabulary in Pirahã language

→ Causes

Pirahã's limited ability to perceive large numbers

Again, why do the Pirahã have such an "impoverished" number vocabulary in the first place? Because "they maintain a predominantly hunter-gatherer existence" and conduct what little trade they engage in "without monetary exchange and without the use of count words." In other words, counting is unimportant in the lives of the Pirahã and numbers are not an important aspect of their environment. Thus:

The Origin of Pirahã Number Vocabulary

(Because numbers are so unimportant in their environment)

Pirahã have a limited ability to perceive large numbers

→ Causing

"Impoverished" number vocabulary in Pirahã language

Now we have come full circle:

The Amazonian Argument + Origin of Vocabulary = Circular

"Impoverished" number vocabulary in Pirahã language

→ Causes

Pirahã's limited ability to perceive large numbers

→ Causing

"Impoverished" number vocabulary in Pirahã language

7. Conclusion

Gordon (2004) characterizes his study as a "rare" and even "unique" argument for "strong linguistic determinism." Gordon's study is indeed a great improvement on the Eskimo myth, since the reported facts are not simply false. However, Gordon's argument suffers from the same flaw contained in the Eskimo myth, rendering his facts useless as evidence for the Whorfian fallacy.

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