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Laura Martin

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"Eskimo Words for Snow": A Case Study in the Genesis and Decay of an Anthropological Example

LAURA MARTIN
Cleveland State University

A common example purportedly documenting the inextricable linkage of language, culture, and thought refers to "Eskimo words for snow." According to this example, undifferentiated "Eskimo"[1] languages are credited with some variable number of unique words for snow and are compared to English, which has but one. As most commonly expressed, the example refers to the power that cultural interests or setting have on the structure of language (e.g., Pyles 1964:16). A somewhat more sophisticated version applies the putative Eskimo categorization of snow to theories of grammatical influence on perception (e.g., Smith and Williams 1977:143). Other examples of vocabulary elaboration are sometimes used for similar explanatory purposes, but none is as widely cited as this one. Such popularity is at once ironic and unfortunate because the evolution of the example, a curious sequence of distortions and inaccuracies, offers both a case study in the creation of an oral tradition and an object lesson on the hazards of superficial scholarship.

The earliest reference to Eskimos and snow was apparently made by Franz Boas (1911:25–26). Among many examples of cross-linguistic variation in the patterns of form/meaning association, Boas presents a brief citation of four lexically unrelated words for snow in Eskimo: *aput* 'snow on the ground', *qana* 'falling snow', *piqsirpoq* 'drifting snow', and *qimuqsuq* 'a snow drift'. In this casual example, Boas makes little distinction among "roots," "words," and "independent terms." He intends to illustrate the noncomparability of language structures, not to examine their cultural or cognitive implications.

The example became inextricably identified with Benjamin Whorf through the popularity of "Science and Linguistics," his 1940 article (see Carroll 1956:207–219) exploring the same ideas that interested Boas, lexical elaboration not chief among them. Although for Boas the example illustrated a similarity between English and "Eskimo," Whorf reorients it to contrast them (1956:216). It is a minor diversion in a discussion of pervasive semantic categories such as time and space, and he develops it no further, here or elsewhere in his writings.

Of particular significance is Whorf's failure to cite specific data, numbers, or sources. His English glosses suggest as many as five words, but not the same set given by Boas. Although Whorf's source is uncertain, if he did rely on Boas, his apparently casual revisions of numbers and glosses are but the first mistreatments to which the original data have been subjected.

Anthropological fascination with the example is traceable to two influential textbooks, written in the late 1950s by members of the large group of language scientists familiar with "Science and Linguistics," and adopted in a variety of disciplines well into the 1970s. One or both of these were probably read by most anthropologists trained between 1960 and 1970, and by countless other students as well during that heyday of anthropology's popularity.

In the first, *The Silent Language*, Edward Hall mentions the example only three times (1959:107–108, 110), but his treatment of it suggests that he considered it already familiar to many potential readers. Hall credits Boas, but misrepresents both the intent and extent of the original citation. Even the data are misplaced. Hall inexplicably describes the Eskimo

data as "nouns" and, although his argument implies quite a large inventory, specific numbers are not provided. Hall introduces still another context for the example, using it in the analysis of cultural categories.

At approximately the same time, Roger Brown's *Words and Things* (1958) appeared, intended as a textbook in the "psychology of language." Here the example is associated with Whorf and thoroughly recast. Brown claims precisely "three Eskimo words for snow," an assertion apparently based solely on a drawing in Whorf's paper. Psychological and cognitive issues provide still another context in Brown's discussion of a theory about the effects of lexical categorization on perception (cf. Brown and Lenneberg 1954).

Brown's discussion illustrates a creeping carelessness about the actual linguistic facts of the example; this carelessness is no less shocking because it has become so commonplace. Consider Brown's application of Zipf's Law to buttress arguments about the relationship between lexicon and perception. Since Zipf's Law concerns word length, Brown's hypothesis must assume something about the length of his "three" "Eskimo" "snow" words; his argument stands or falls on the assumption that they must be both short and frequent. Eskimo words, however, are the products of an extremely synthetic morphology in which all word building is accomplished by multiple suffixation. Their length is well beyond the limits of Zipf's calculations. Furthermore, precisely identical whole "words" are unlikely to recur because the particular combination of suffixes used with a "snow" root, or any other, varies by speaker and situation as well as by syntactic role (Sadock 1980).

A minimal knowledge of Eskimo grammar would have confirmed the relevance of these facts to the central hypotheses, and would, moreover, have established the even more relevant fact that there is nothing at all peculiar about the behavior or distribution of "snow words" in these languages. The structure of Eskimo grammar means that the number of "words" for snow is literally incalculable, a conclusion that is inescapable for any other root as well.

Any sensible case for perceptual variation based on lexical inventory should, therefore, require reference to distinct "roots" rather than to "words," but this subtlety has escaped most authors.[2] Brown, for example, repeatedly refers to linguistic units such as "verbal expression," "phrase," and "word" in a way that underscores the inadequacy of his understanding of Eskimo grammar. His assumption that English and "Eskimo" are directly comparable, together with his acceptance of pseudo-facts about lexical elaboration in an unfamiliar language, cause him to construct a complex psychocultural argument based on cross-linguistic "evidence" related to the example with not a single item of Eskimo data in support (1958:255). This complete absence of data (and of accurate references) sets a dangerous precedent because it not only prevents direct evaluation of Brown's claims but suggests that such evaluation is unnecessary.

As scholarship in linguistic anthropology, this treatment is wholly inadequate. It is particularly unfortunate, then, that this particular treatment was perpetuated and disseminated to a new generation of students in Carol Eastman's 1975 survey of linguistic approaches in anthropology, *Aspects of Language and Culture*. Eastman summarizes the Sapir-Whorf hypothesis, which she calls "the world-view problem," entirely by reference to the snow example, quoting Brown's "modifications" of Whorf's ideas (1975:76). Even more striking than the distortion of Whorf's writing and thinking, which is implicit in the association of him with it, is the powerful influence the snow example exerts even on an experienced linguistic anthropologist. With Brown's reference to "three words" only six lines away, Eastman still asserts that "Eskimo languages have many words for snow."

Thus is the complexity of the interrelations of linguistic structure, cultural behavior, and human cognition reduced to "Eskimo words for snow." These and other textbooks have disseminated mis-

interpretations of the example throughout the educated American population since the late 1950s. Boas's small example—ironically, one intended as a caution against superficial linguistic comparisons—has transcended its source and become part of academic oral tradition. Like folk beliefs about English vowels (Walker 1970), tenaciously held folk theories about Arctic snow lexicon are not easily contradicted. Unlike the vowel example, however, this folklore has not been promulgated by secondary-school teachers but by anthropologists and linguists who should know better and by professors in other fields who first learned it from them.

Textbook references to the example have reached such proliferation that no complete inventory seems possible, but examination of a representative set reveals several common features: lack or inaccuracy of citations; application of the example to diverse (and contradictory) theoretical purposes; wholesale reanalysis of the example and its history. Thus, according to a text on acoustics and speech physiology (Borden and Harris 1980:4f.), the Whorfian hypothesis "was based on comparative linguistic data which show that languages differ in the number of terms for such things as color or snow." Even a recent introductory anthropology text cites the example as typical of those upon which Whorf founded his conclusions about the effects of linguistic categorization on thought (Cole 1982:69). From time to time, linguists and anthropologists have attempted to restore a sensible interpretation and proper context to the example (e.g., Hymes 1967:213; Lyons 1981:306), but these efforts have probably only succeeded in increasing its visibility. References in serious texts are testimony to the example's widespread acceptance, but they are only the most easily traceable of its manifestations. Casual classroom use is startlingly frequent and much more often accompanied by apocryphal numbers, which usually range from about a dozen to more than one hundred.

Even if academic use were suddenly to cease, years of carelessness have taken their toll. Although awareness of the example is largely an artifact of higher education, the process of its transmission as a folk myth no longer depends on that context. The gradual filtering of the example into the educated lay population has established its vitality beyond university walls. Consider a diverse random sample of recent references: "many words" in the *Journal of American Photography* 3:1.19 (March 1984); "fifty" in Lanford Wilson's 1978 play *The Fifth of July;* "nine" in a trivia encyclopedia called *The Straight Dope: A Compendium of Human Knowledge* (Chicago Review Press, 1984), which includes a droll explanation for the variety: "[Eskimos] have a limited environment to talk about, so they have to make up a lot of words to fill up their conversations"; a *New York Times* editorial (February 9, 1984), citing Whorf in reference to a "tribe" distinguishing "one hundred types of snow"; *Time*'s July 1, 1985, comparison of the Beirut glossary of descriptive terms for shelling to the Eskimos' "many" words for snow; and the inevitable local television references to "two hundred words" during winter snow forecasts (e.g., WEWS-Cleveland, 1984).

How may we account for such remarkable persistence and ubiquity? No doubt exoticism plays some role. Arctic peoples, among the most easily recognized ethnographic populations, remain a poorly understood group about whom other easy generalizations are routine: they eat only raw meat, they give their wives as gifts to strangers, they rub noses instead of kissing, they send their elderly out on ice floes to die. We are prepared to believe almost anything about such an unfamiliar and peculiar group. (See Hughes [1958] for another example of scholarly misinterpretation of Eskimo culture.)

The context of such generalizations is not altogether negative. There is in them an element of respect for the creative adaptability of people who live in the almost unimaginably harsh Arctic environment. The tendency to inflate the numbers associated with the snow example is a reflection of admiration, not simply of linguistic creativity but of human varia-

bility and survival as well. Taken in this way, a self-evident observation—what is in our environment is likely to be reflected in our language—has become imbued with exaggerated meaning. Through repetition in print or in lecture, the snow example has become cloaked in scholarly importance. Its patina of sophistication reflects on the lecturer who appears to be in possession of specialized knowledge and impresses any listener to whom close attention to the details of language or culture may be a novel enterprise. Its "meaning" remains vague but seems generally simple: human beings are very different from each other. (Or, depending on the version of the example that is used and the theoretical matrix in which it is grounded, human beings are much the same.)

Students constantly seek such simplicities and are abetted in their quest by their teachers. Many facts about Eskimo languages are fascinating and even astonishing. However, providing the detail, the careful reasoning, and the technical sophistication required to draw conclusions about language or culture or psychology from those facts is a demanding task. Too often the search for shorthand and simple-minded ways to talk about the complexities of language and culture results in excessive reliance on inadequately detailed illustrations. In the case of the snow example, sheer repetition reinforces it, embedding it ever more firmly in folk wisdom where it is nearly immune to challenge. Whenever issues in language, culture, and thought are raised, a substantial proportion of listeners are unwilling to abandon the notion that "It's all just like Eskimos and snow."

Such a trivialization of the complexity inherent in linguistic structures, linguistic behaviors, and the relationships among them distorts the requirements of research into these relationships by implying that counting words is a suitable method of pursuing such investigations. It may not be excessive to speculate that, through this process, the example has come to substantiate for some the bias that these investigations are either impossible, irrelevant, or unscientific.

In this twisted form, the snow example returns to the academic context and is adduced as "proof" that Whorf's ideas were superficial or lacked insight (cf. Lehman 1976:267). At a time when Whorfian hypotheses are receiving renewed attention among serious scholars whose approaches to them are of exemplary rigor (e.g., Bloom 1981), it is especially unfortunate that the frivolousness of the snow example should continue to be so prominent and to obscure the true dimensions of such research problems. Relying increasingly on the dubious value of surveys and summaries instead of on original sources, even graduate students may never understand that Whorf's work—like that of other linguistic anthropologists—is not only not primarily concerned with snow words, but not even primarily concerned with vocabulary. Such misunderstandings are especially hurtful when they underpin much of the training given to today's students about the role of linguistic investigations in anthropology.

Certainly, we have little control over the processes of folklorization that can remove scholarly statements from their rightful context and cause misinterpretation. However, greater alertness to the dangers inherent in careless disregard for the essential requirements of responsible scholarship might have prevented the sorry evolution of the snow example within our own discipline. Now that we have its history before us, perhaps it is not too late to introduce yet another—and, we may hope, final—context for it: the cautionary tale that serves to remind us of the intellectual protection to be found in the careful use of sources, the clear presentation of evidence, and, above all, the constant evaluation of our assumptions.

Notes

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[1]Various debates exist over the proper terminology and classification for languages of the Arctic. What is usually referred to as the Eskimo language family encompasses several important dialect divisions, most prominently those of Yupik and Inuit-Inupiaq; for details regarding both linguistic classification and description, consult Woodbury (1984) and the extensive body of references cited therein. "Eskimo" is used here in reference to the snow example in recognition of the fact that those who perpetuate it, like those who originated it, fail to make any linguistically significant distinctions among speakers.

[2]There seems no reason to posit more than two distinct *roots* that can be properly said to refer to snow itself (and not, for example, to drifts, ice, storms, or moisture) in any Eskimo language. In West Greenlandic, these roots are *qanik* 'snow in the air; snowflake' and *aput* 'snow (on the ground)' (Schultz-Lorentzen 1927; cf. Boas's data). Other varieties have cognate forms. Thus, Eskimo has about as much differentiation as English does for 'snow' at the monolexemic level: snow and flake. That these roots and others may be modified to reflect semantic distinctions not present in English is a result of gross features of Eskimo morphology and syntax and not of lexicon. Any consequences that those grammatical differences may have for perception or cognition remain undocumented.

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Evolutionary Perspectives on Permanent Breast Enlargement in Human Females

FRANCES E. MASCIA-LEES
Social Science Division
Simon's Rock of Bard College

JOHN H. RELETHFORD
Department of Anthropology
State University of New York College at Oneonta

TOM SORGER
Institute of Aging
Temple University

Compared to the other primates, one unique characteristic of *Homo sapiens* is the existence of permanently enlarged breasts in human females. While several authors have attempted to account for the evolution of this anomaly, these explanations are invariably based on the problematic concept of breasts as sexual signals.

Morris's early account, for example, suggests that with the advent of bipedalism, female breasts acted to shift the interest of the male to the front by acting as a sexual signal that mimicked "the ancient genital display of hemispherical buttocks" (1967:75). More recently, Gallup (1982) has proposed that breasts signal ovulation, thus selecting for males who could synchronize copulation with ovulation. Short (1976) has suggested that as hominid females became increasingly constrained in their movements due to increased infant dependency, male parental investment became increasingly necessary. Breasts became objects of attraction ensuring pair-bonding even before the female reached maturity. Finally, Cant (1981) suggests that permanently enlarged breasts evolved as a signal to alert males to the nutritional status of females. Females who were better able to build up fat and maintain it would have more reserves to convert to parental investment during pregnancy and lactation. Breasts, with their high concentration of fat, would act to signal to males the potential parental investment of the female.

These scenarios are based on the assumption that permanently enlarged female breasts have arisen primarily through the process of sexual selection whereby males choose female mates based on their "attractiveness." Breasts are seen as attractive either because they mimic the buttocks, signal ovulation, or signal potential female parental investment. As Hamilton points out, such scenarios view females as subject to selection based on male erotic reactions (1984:658).

The validity of the concept of sexual selection to explain sexual dimorphism has generated considerable debate since Darwin developed this idea over a hundred years ago. Despite this controversy, Fedigan points out that,

> Indeed, one of the most curious aspects of the application of sexual selection principles in the behavioral sciences is that in spite of widespread discussions of the shortcomings of this theory, the major tenets still operate as hidden assumptions, or even axioms, in much of the writing on social behavior in animals. [1982:271]

In terms of these shortcomings, many authors (e.g., Fedigan 1982; Sayers 1982) have pointed to the ethnocentrism inherent in these kinds of explanations since they quite consistently use a recent pattern of sexual relations as a model for early hominid sexual interactions (Hamilton 1984). For instance, enticing males to contribute more in the way of parental investment is central to several of the theories reviewed above. Such enticement, gained through sexual appeal, is seen as necessary since this model contends that females invest more at the moment of conception than males due to the larger size of the ovum. Such a disproportionately large investment on the part of females portends greater parental invest-