

Thought And Language (Part I) *Matthew Carmody*

Introduction

Some stories are too good to be true. One often finds however that the best-remembered stories, pieces of advice or “factoids” are those that are too good to be false. Superstitions, urban myths and conspiracy theories can tempt even the most rational of thinkers. A factoid that emerged around a hundred years ago and grew to the status of received wisdom in the second half of the twentieth century was the very large number of words Eskimos have for snow.

How many? Franz Boas, the source of the myth, said four. Benjamin Lee Whorf, of whom much more in a moment, upped the figure to around seven. Roger Brown, a strong critic of Whorf, put the figure at three in his much-read fifties work *Words and Things*. The linguistic anthropologist Carol Eastman plumps for just “many”. So far, nothing too wild. It is when we step outside the academic sphere that we find the really impressive claims. There are fifty words for snow according to the playwright Lanford Wilson, one hundred according to an editorial in the *New York Times* and a bewildering two hundred, if a certain Cleveland weather forecaster is to be believed. On the other hand, Schultz-Lorentzen’s *Dictionary of the West Greenlandic Eskimo Language* gives just two.¹

What has this got to do with language and thought? There are some who would argue as follows. Eskimos live in an environment where snow-phenomena play a greater role in their life than ours.² By “snow-phenomena” I mean various manifestations of frozen water, such as snow, snow-flakes, ice, blizzards and so on. I shall continue to talk in terms of “snow” but “snow-phenomena” shall be understood. Their language reflects this in their fine categorisation of different words for snow. For example, *aputitaq* means *snow patch*, *nittaalaaqat* means *hard grains of snow* and *siku* means *sea-ice*.³ But there’s more. It is not simply that they have more words for snow. Their finely-categorising language causes them to have a finer set of concepts than we have. They never think about snow. They lack that concept. They can only think about snow patches and hard grains of snow and sea-ice and so on. Finally, this finer structure of concepts affects the way they experience the world. Where we would just see snow, Eskimos would see a rich variety of different types of snow. We English-speakers are “snow-blind” in the way that some people are colour-blind.

In fact, no-one I know clearly gives the following argument. It is an amalgam of different thoughts on how language is superior to thought because language shapes thought and perhaps experience too. Many people do argue that language is the dominant partner in the language-thought relationship. Others argue that thought comes first and language is the outward reflection of thought. This is not a simple dispute where only one side can be right. The picture is rather more complicated. In this essay, I intend to tease apart different claims so as to present a clear map of the terrain. I shall be looking in particular at the famous Sapir-Whorf hypothesis. In a future essay, I shall continue the exploration by considering the thoughts of modern philosophers, such as Wittgenstein, Davidson and Fodor.

What's In A Word?

How many words are there in this sentence? You should find eight. How did you tell? You counted strings of letters separated by white space. Had I spoken the sentence, you would also have counted eight because you hear the word boundaries. You might think that spoken word boundaries are a form of white space, such as a momentary pause that would show up on a spectrograph. You'd be wrong. Word boundaries have only a "phenomenal" existence. Real boundaries appear between syllables and the greater the contrast in syllables, the longer the pause as your vocal apparatus changes. The longest boundaries can often appear within words. For example, in "please stop tickling my feet", there are two (relatively) long moments of silence between (to put things phonetically) "pleeze" and "top" and between "myf" and "eet".

This should not be too surprising. First, if you hear a sentence in a language you don't speak, you are usually uncertain where the words begin and end. Furthermore, like many languages, English contains oronyms. Oronyms are pairs or multiples of expressions that are phonetically identical but syntactically distinct. In the sentence "*I scream for ice-cream*" or "*I love you on the isle of view*", the italicised expressions are pronounced the same but correspond to different words. To know how many words correspond to the sounds, you have to know not just the language but the context.

Long before people started writing, people were aware of the boundaries of words in languages such as English, Latin and Greek. Words can be identified because they are the meaningful elements that compose a sentence. A word is something that can be taken out and replaced with another. You can find alternative words for each of the seven words in "Bernard sees a badger in his garden". Indeed, you don't need the white space. You can read and count the words in the following sentence quite easily:

Emmawoodhousehandsomecleverandrichwithacomfortablehomeandhappydispositionseemedtounitesomeofthebestblessingsofexistenceandhadlivednearlytwentyoneyearsintheworldwithverylittletodistressorvexher.⁴

The need to mark word boundaries so clearly is little more than a thousand years old. Look at old biblical manuscripts, inscriptions on *ostraka*, the Rosetta stone, cuneiform-studded tablets and so on and you will find yourself staring at a seemingly unbroken sequence of characters.

Why did no-one feel the need to mark word boundaries? We tend to forget that the art of reading silently developed a long time after reading aloud. Texts would have been read out and the words heard rather than seen. (It would still often require practice with a text before reading it aloud in order to be aware of possible ambiguities and difficult strings of characters – good sight-reading was rare.)⁵ Punctuation was initially developed to facilitate preparation for reading a text out rather than in one's own private company. Early Christian monks developed a writing method known as *per cola et commata*, where the text was divided into lines of sense or paragraphs. After the seventh century, points and dashes were developed as sentence boundaries: today's full stop. Commas and semi-colons followed. By the ninth century, silent reading in monasteries had become sufficiently common for the words to be prised apart to aid reading further.⁶

Linguists do not regard words as the smallest meaningful units, however. These units are called *morphemes*. In the sentence “John walks slowly to the shop”, there are six words and eight morphemes. The words of interest are “walks” and “slowly”. They each contain two morphemes: “walk” + “-s” and “slow” + “-ly”. The morpheme “-s” is added to the stem “walk” to indicate that the subject of the verb is in the third person singular and that the tense is present indicative. The morpheme “-ly” is added to an adjective to convert it to an adverb.

Linguists define an analytic/synthetic spectrum for languages.⁷ Analytic languages have few morphemes per word. English is quite analytic. Most English words can't be broken down into smaller parts. We have just seen how we can break down some verbs and adverbs. We can also break down words like “incommunicable” into “in”, “communic[ate]” and “able”. Most European languages are more synthetic. Many more words are composed of more than one morpheme. For example, in French, the verb “to give” varies its ending depending on person, tense and mood: “Je donne”, “Tu donnais”, “Il donnât”, “Nous donnerons”, “Vous donneriez”, “Il donnèrent”. In Polish, nouns change their ending depending on whether they are the subject, direct object or indirect object (amongst other possibilities):

“Marek chodzi”	-	Mark walks (Mark is the subject)
“Anna widzi Marka”	-	Anne sees Mark (Mark is the direct object)
“Anna daje Markowi list”	-	Anne gives Mark a letter (Mark is the indirect object)

At the other end are polysynthetic languages, where each word contains a very high number of morphemes.⁸ Turkish is a good example. Consider the following sentence:

“Evlerimizden gelmiyordum” – “I was not coming from our houses”

The structure is as follows:

ev + ler + im + iz + den: “house” + plural + first person possessive + possessor pluraliser + “from”
gel + mi + yor + d + um: “come” + negative + progressive (tense) + past (tense) + first person.

The Inuit and Yupik languages are likewise highly polysynthetic and there simply is no theoretical upper limit on the length of the word.⁹ Consider the following sentence-word in standard Inuit:

“Angyarpaliyugngayugnarquq” – “He can probably make big boats”

The structure here is:

Angyar + pa + li + yugnga + yugnar + quq: “boat” + “big” + “make” + “be able” + “probably” + third person singular indicative intransitive.

It turns out that many of the so-called “words” for snow are simply compounds. *Aput* is considered a root word for snow, snow static on the ground. You can see how *aput*

is compounded in *apusiniq* (“snowdrift”), *aputitaq* (“snow patch”) and *aputiminaatsiaq* (“a piece of snow”) – *minaatsiaq* is simply the word meaning “a piece”. *Aput* also features in *aput masannartuq* (“slush”) and *aput sisurtuq* (“avalanche”).¹⁰

Whereas we say “hard snow”, “wet snow”, “soft snow”, the Inuit are effectively saying “hardsnow”, “wetsnow” and “softsnow”. The number of snow-related words is in principle limitless. The important question is therefore not how many words the Inuit have for snow but how many *semantically unrelated root expressions*.

A first problem here is to decide what expressions are in the right field, in this case the field of snow. Alongside words relating to the stuff itself, frozen H₂O, there are words for forms of the stuff, such as icebergs, located forms of the stuff, such as mountain-caps, events involving the stuff, such as snowstorms, qualities of the stuff, such as the quality of being slushy, the stuff in a mode of behaviour, such as drift-snow, the stuff used in a certain way, such as snowman, times when the stuff is expected, such as winter, and so on.

It should come as little surprise that the second problem is essentially unanswerable. Some expressions are centrally snow-related, some less so, some peripherally, some barely related at all, some clearly not at all. The wider we cast our net, the more words we will find it contains. But we shall also find the same thing if we do the same for English. We could include, alongside *snow* and *ice*, the words *sleet*, *slush*, *blizzard*, *hardpack*, *powder*, *rime*, (*hoar*) *frost*, *avalanche*, and *mogul*.

If we could answer this question, we’d then have the question of determining semantic unrelatedness. Just because two words are spelled differently, this doesn’t mean that they don’t have a common semantic history. The words “glamour” and “grammar” both come from the same word “gramarye” (in use about 1320). It meant “learning”. It developed one way into learning about language and then into “rules of language”. It developed another way into “magic” because the learning undertaken by the learned classes included magic and astrology, and then into “enchantment” and then into its modern meaning. Furthermore, just because two words look similar, it doesn’t mean that they do have a common semantic history. The word “set” meaning *to put firmly into place* comes ultimately from the Germanic verb for to sit. The word “set” meaning a collection ultimately comes from the Latin word “secta” meaning *a following* (from which we get the word *sect*).

We might suggest that two words are semantically unrelated if you could understand one but not the other. What about “snow” and “snow-storm”? Someone could understand “snow” but not “snow-storm” if they didn’t understand “snow”. Yet someone could understand “snow-storm” but not “snow” if they didn’t realise it was made up of two words.

So we could try: A and B are semantically unrelated if someone could know all the parts of A and not understand B and vice versa. The fact that A and B may share a history is irrelevant. What matters is how many terms an ordinary language user can pick up to describe something and not an etymologist. Working this way, we find that there are fewer than ten unrelated words for snow-phenomena, no more (or not significantly more) than we can find in English.

The Size Of The Lexicon: Words And Concepts.

We've just seen how the hypothesis derives spurious plausibility from the difficulties of saying what a word is. We will now question the significance of having many words or few words.

Let us understand by "word" for the moment what we would call a word in English, namely an expression that typically contains one morpheme and which is a noun ("badger"), adjective ("curious") or verb ("dance") so as to rule out the whole-sentence words of polysynthetic languages. A word is part of a language. Alongside words, we have concepts. Concepts are the ingredients of thoughts. As long as we are careful not to press the analogy, we may think of concepts like mental words and thoughts like mental sentences. If I have the concept of *badger*, then I have some capacity to think about badgers. This may minimally consist in an ability to identify them and to know a little about them. (Looking ahead, we shall consider the view that there's really no difference between thought and language. Thinking is just speaking silently inside your head. For the moment, though, we shall separate thinking and speaking.)

Suppose now that the Inuit had a good many semantically unrelated words for snow. Would this show that they had a good many concepts for snow? No. In theory, they could have many synonyms for "snow". It often happens that languages contain synonyms when speakers of different dialects or languages or different social levels merge. English contains many pairs where one is from Anglo-Saxon and the other from Latin: *follow/pursue*, *eat/consume*, *hang/suspend*...and so on. Perhaps the many words for snow would just be the pooling of the few words from each of the previous languages that merged to make today's Inupiaq.

It is admittedly rare to find one concept expressed by many words in the same language. Why bother to have so many words? So let us suppose that our Inuit have many words for snow and they correspond to many concepts for snow. The difference in words/concepts may be understood as amounting to the following. Suppose "maq" and "laq" are words for different types of snow (what we would call "recently-fallen snow" and "snow on branches".) A speaker could understand "maq" and not "laq" and vice versa. Would this be an interesting result?

No. The fact is that richer vocabularies are found all the time just when there's a need to introduce precision. The medical profession has over time introduced many names for the different parts of our bodies. Printers have invented many new fonts and given them names. Sailors have invented many different types of knots and names for them. The Inuit, but also skiers and meteorologists, may have many different words for snow and snow-conditions.

The original story also claimed that words are invented in response to one's environment. As the above examples show, this is a perfectly general and unsurprising phenomenon. Perhaps, though, there are two claims that need to be separated:

1. Languages can develop more fine-grained vocabularies without any conscious effort by speakers.
2. Languages can develop more fine-grained vocabularies through conscious effort by speakers.

Sailors, printers and doctors illustrate (2), as people had to think up terms. People or committees do however not invent the majority of words. They somehow come into being by themselves, which is what is stated by (1). Let's suppose for the sake of argument then that the Inuit speak a language in which many words for snow have evolved.

This wouldn't show that the language has evolved this many words because of the snowy nature of their environment. It could be a coincidence. One piece of evidence for this is that we do not find a surprising number of words for snow (or myths about them) in the languages of other people who live in similar conditions. A second piece of evidence is that there are examples of languages that seem entirely indifferent to distinctions we think would matter. For example, in Papua New Guinea live people in a rich, multi-coloured tropical environment who only have two words for talking about colours. (The same is true for people in parts of Africa.) Some languages lack words for numbers beyond three or four and yet it seems obvious that numbers matter to everyone (consider keeping track of children and livestock and what seems necessary for the fair exchange of goods).¹¹

With the problems of the word "word" and the environmental influence issue out of the way, we get to the main question of whether a difference in language causes a difference in the way we think about and experience the world.

Sapir, Whorf and the Linguistic Determinism Hypothesis

The claim that language shapes thought is known as the Sapir-Whorf Hypothesis, after Edward Sapir (1884-1939) an anthropologist and linguist who studied the languages of the native North American peoples and his student and colleague, Benjamin Lee Whorf (1897-1941). However, the idea goes back to the beginning of the 18th century and is particularly associated with the philosophers Johann Georg Hamann (1730-88), Johann Gottfried Herder (1744-1803) and Wilhelm von Humboldt (1767-1835). They were challenging the view that we might capture as the *Language-Independence of Reality*:

(LIR) There is a single, determinate and structured reality that is the subject of experience and thought in the same way by speakers of different languages, different languages being merely different ways of talking about the same thing.

Let us be as clear as possible about what we mean by "experience" and "thought".

To say that you and I experience the world the same way is to say that the colours, tastes, sounds, smells and feels you have are the ones I have and vice versa. We have the same "phenomenal worlds": if you were in my head, you'd feel the world in just the same way. Now, we have to modify this immediately to take account of the fact that (i) you and I might have different sense-organs and (ii) we can train our sense

organs. If you are born with a better nose, then you can distinguish more smells. If I train to be a wine-taster, I will learn to distinguish more tastes. So, let us therefore say that we experience the world in the same way so long as we have similar sense-organs and that we could each learn to make finer discriminations.

To say that there is a common world that is the subject of thought is to say two things: the *Mind Independence of Reality* and the *Common Conceptual Framework Thesis*

(MIR) There is a structure to the world that the world has by itself and not because our minds have imposed a structure on it.

(CCFT) We each develop or can develop the same concepts with which to capture the world and develop the same concepts to make categorisations not written into the structure of the world.

(MIR) expresses the common-sense thesis that there's a world out there we take notice of. If all human life disappeared tomorrow, there would still be badgers and blackberries and Ben Nevis. (MIR) and (LIR) are very similar: what (MIR) says about thought, (LIR) says about language.

(CCFT) says firstly that everyone's mind has the same capacity to lock onto the structure of the world. So, everyone can learn that there are badgers and blackberries. When I learn to identify badgers as a distinct feature of the world, I have the *concept* of a badger. Perhaps the Inuit don't have that concept because there are no badgers in Alaska. Nevertheless, they could gain that concept if they moved to a badger-rich environment. (CCFT) says secondly that there are concepts that we do invent to categorise reality and that we have equal abilities to learn them. Whereas it seems obvious that water and weasels are just parts of reality there for us to take notice of, students and sequins are not. We have invented the concept of a student and the concept of a sequin. They exist because of institutions and practices we have developed and not because the world gave them to us.

In short, some concepts reflect what's in the world and some we invent to go further and categorise where the world doesn't. In both cases, (CCFT) says that we each have the same capacity to learn the same concepts. Once again, we shall observe that this requires us to have the same minds and sense-organs. A blind person cannot form the same concept of red as I can. So long as you and I are built the same way, then, we have the same concept-forming capacities.

Hamann, Herder and von Humboldt were then claiming that language structures how you experience and think about the world. Sapir writes:

Human beings do not live in the objective world alone, nor alone in the world of social activity as ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression for their society. It is quite an illusion to imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of solving specific problems of communication or reflection (1929, p. 209).

Our language affects how we perceive things:

Even comparatively simple acts of perception are very much more at the mercy of the social patterns called words than we might suppose. ...We see and hear and otherwise experience very largely as we do because the language habits of our community predispose certain choices of interpretation (p. 210).

It shapes how we think about the world:

The fact of the matter is that the 'real world' is to a large extent unconsciously built up on the language habits of the group. No two languages are ever sufficiently similar to be considered as representing the same social reality. The worlds in which different societies live are distinct worlds, not merely the same worlds with different labels attached (p. 209).

Whorf writes:

We are thus introduced to 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. ...The relativity of all conceptual systems, ours included, and their dependence upon language stand revealed (1956, p. 214ff)

We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds--and this means largely by the linguistic systems in our minds (p. 213).

From their writings, it is customary to distinguish two hypotheses, a stronger and a weaker, or the Linguistic Determinism Hypothesis and the Linguistic Relativism Hypothesis.

(LDH) Your language completely determines how you think about the world.

(LRH) Your language influences how you think about the world.

In Polish, there is no verb "to go". If I say, "John went to the shops", I have to consider how he got there: on foot, with a vehicle, by air or by sea:

"John poszedł do sklepów" John went ON FOOT to the shops
"John pojechał do sklepów" John went BY VEHICLE to the shops
"John popłynął do sklepów" John went BY WATER to the shops
"John poleciał do sklepów" John went BY AIR to the shops.

If the LDH is correct, then Poles cannot think of motion in general but only specific motion. What would this mean? It would have to mean that they couldn't grasp our general concept of motion. For if they could learn our general concept, then they would be thinking about the world in a way not available in their language. Of course, they can do this just because they can learn English. Furthermore, as perhaps you have realised, if the LDH were true, I couldn't have explained the Polish verbs because their fundamental divisions of motion are not captured by basic words in English.¹²

So (LDH) must entail the Impossibility of Translation Thesis (IT):

(IT) Unless two languages dissect the world in exactly the same ways, neither language can be translated into the other.

English speakers can learn Polish and vice versa. Either this means that our languages do dissect the world in the same way or (IT) is false. Since we know they do dissect the world differently, (IT) is false. Since (LDH) entails (IT), (LDH) is false. The intertranslatability of languages shows that (LDH) is false.

Before turning to (LRG), we shall consider a weaker version of (LDH). Instead of saying that *any* difference between a pair of languages means that they are not intertranslatable, we shall consider the thesis that where two languages differ over how they dissect some part of the world, they are not intertranslatable with respect to that part. I'll call this the Local Impossibility of Translation Thesis:

(LIT) Where two languages work differently in some field, there can be no translation between them with respect to that field.

The extent to which communication will be possible depends on how many fields we overlap on. Let's distinguish a vertical axis and a horizontal axis of categories. Consider the categories: WEASEL, OTTER and STOAT. These are low-level categories into which fall animals of a very particular type. Moving up a level, we'd have a common category for all of them: MUSTELID. Moving up again, we'd have MAMMAL, then ANIMAL, then LIVING OBJECT then OBJECT. (We've missed out many possible intermediate stages). The vertical axis is from high-level or very general categories to low-level or very specific categories. At any level, we can think horizontally of categories of the same granularity. For example, perhaps CUP, MUG and GLASS are on the same level as WEASEL, OTTER and STOAT. MUSTELID is alongside HOUSEHOLD DRINKING VESSEL, MAMMAL alongside DRINKING VESSEL, ANIMAL alongside CONTAINER and then we're back to a common OBJECT.

We can then say that if two languages overlap on categories a long way down the vertical axis, then they are largely intertranslatable. Let us suppose there is a language, SMINGLISH, which agrees with us that there are objects and living things and mammals but divides up the mammals into categories that we somehow can't get our heads around (which is why we can't translate them). Not much of a problem. If there is a problem with many other low-level categories, it gets a bit worse. For example, suppose they divide up household kitchen objects, birds, items of clothing and so on in a different way as well as mammals. But if they disagree with us on dividing up animals into MAMMALS, BIRDS and FISH (say), we can understand them to a much lesser degree.

Where would it end? Well, what are the basic categories? Philosophers have wondered about this. Aristotle famously produced ten basic categories. Amongst these are **substance**, **property**, **location** and **time**. A substance is a particular thing belonging to a kind, such as Socrates (a man) or Jaws (a shark). A property is a feature of a thing. Properties of Socrates are that he is short, snub-nosed, clever and

fond of arguing. If a language didn't divide the world into objects and kinds and properties that have locations in time, we would surely be at a loss to understand it.

Whorf claimed that many North American native languages do differ from us over the most basic categories.¹³ He argued that the Nootka language has a basic category of event.¹⁴ Where we have a basic division of subject and predicate – “the water falls” – they have a word that captures the event – “waterfalling”. The literal translation of how to say “the boat is grounded on the beach” is, Whorf said, “it is on the beach pointwise as an event of canoe motion”: we are to think of a pointy-canoe-happening.

Of the Hopi, Whorf wrote that their language contains “no words, grammatical forms, constructions, or expressions that refer directly to what we call ‘time’, or to past, or future or enduring or lasting.” This showed that they did not think in terms of a linear notion of time where past and future meet at a present. How do they see the world? It is hard to say. Whorf suggests that there is a difference between an actual world of real happenings and future or mythical worlds of unreal happenings.

Unfortunately, Whorf was guilty of two faults. First, it is claimed he spent very little time or no time with actual speakers of the language. He merely analysed written recordings of their language. Of course, people do this with long-dead languages like Etruscan and Hittite but nothing beats real communication for narrowing down possible interpretations.

The more serious mistake, which was spotted soon after Whorf's revelations, was that he was guilty of failing to provide a proper argument. He argued that the Hopi must think differently because their language expresses things differently. But so long as you just rely on language, you can't rule out the possibility that they think like we do but use a different form of words. To rule this out by pointing to the oddity of their language would of course be to argue in a circle.¹⁵

But then how could we find out what they thought except by their language? We can watch what they do. If we find that Hopi speakers plan meetings, keep calendars and have sundial-style timekeeping devices, then that suggests they have a similar concept of time to us. This is exactly what more recent research has shown. In general, a lot of research has been done since Whorf into the languages of the native peoples of North America and it is almost always damning of Whorf's outlandish speculations as to the metaphysical frameworks of these unfamiliar peoples.

A second way to find out is to ask them in a different language. There are speakers of these languages who are bilingual with English. It turns out that they tell us that they see the world pretty much the same way that we do.

People learn different languages and we have no example of any language not being translatable into any other. Even if we accept that languages overlap most of the way down, we might still wonder if there are particular islands of untranslatability in different languages. Of course, the greater the overlap, the harder this will be. Suppose that Paul uses a word “glyr” in his native language and tells that he can't explain what it would be in English. Given that we can understand so much of each other says, I can ask him all sorts of questions about what a glyr is. It would be very

strange if I could not get a very good idea of what a glyr is given all the enquiries I could make.

It is a commonplace to say that you can't translate a novel from language to another because nuances are lost in translation. But in asking about what a glyr is I am in effect learning a word in Paul's language. The best we can in search of non-translatability is to find words that express concepts that are very hard to learn. The English word "posh" is a good example of a word foreigners find hard to master. This is because the word relates to a very particular segment of people and society and someone who is unfamiliar with the social fabric of Britain across the last one hundred years will not really grasp the meaning. But this impediment is not an insurmountable one, as is shown by the existence of fluent speakers who have mastered the term.

Current evidence suggests that human beings have a window in which first language learning is possible. If a child goes beyond the age of ten without being exposed to people speaking a language, it will find it hard or impossible to learn to speak thereafter. I am a native English speaker and perhaps I have learned some features of English in that window that no-one who learns English as a second language in school can latch onto. It may be that there are certain nuances that only native speakers are sensitive to.

I say "perhaps". The evidence suggests that people can master English as a second or third or even fourth language. It may be that it is much harder to master all the nuances if you have missed the window. But this is no different from saying that it is very hard to master some words without knowing a lot about the culture and history of the people.

So far, we have no reason to believe that different languages lead people to think so differently about the world that they cannot understand one another. We have established a very unexciting linguistic relativity thesis:

Linguistic Relativity of Expressions: Different languages categorise the world different ways via different words. (cf. Polish verbs of motion)

Alongside differences of words, we should likewise note an equally unexciting relativity of syntax.

Linguistic Relativity of Syntax: Different languages categorise the world different ways via differences of syntax (cf. gender / mood differences.)

I shall illustrate this with a couple of examples

A first example concerns gender. In many European languages, you have to pay attention to the gender of a word. The French for "book" is "*le livre*" not "*la livre*" (the latter means *a pound*, as in *a pound of sausages* or *three pounds fifty pence*). Books are masculine in French but feminine in Polish ("book" = "książka"). It is neuter in German ("book" = "das Buch"). But speakers don't "see" anything masculine, feminine or neuter about them. In Polish, the words for "baby"

("niemowlę") and "child" ("dziecko") are neuter, yet speakers are quite aware of whether they are dealing with a boy or a girl.

A second example concerns mood. The mood of a verb concerns the relationship it has with reality. The indicative mood "I am boiling an egg" presents a fact whereas the interrogative mood "Am I boiling an egg?" asks whether something is a fact and "Boil an egg!" asks for reality to be a certain way. In French, there's a subjunctive mood that is used in a wide range of circumstances where you want to express uncertainty, possibility, wishes, concerns and obligations. If I say, "I know John will come" and "I doubt John will come", I use the same verb form in English. In French, it is different. When I say that "I know John will come", I am in effect stating a fact, and we use the indicative form of the French verb "venir": "Je sais que John *viendra*." When I say "I doubt that John will come", I use the subjunctive because I am conveying uncertainty: "Je doute que John *vienne*."

In the Tuyuca language of Brazil and Columbia, there's an "evidentiality" mood.¹⁶ When you convey information, you have to modify the verb to show how you came to know the information. For example, these are all variants of what we would express as "He played soccer".

1. díga apé-wi (I saw him play soccer): visual
2. díga apé-ti (I heard him but didn't see him play soccer): non-visual
3. díga apé-yi (I have evidence that he played soccer (e.g. footprints) but I didn't see him play): apparent
4. díga apé-yigi (I got the information from someone else): second-hand
5. díga apé-híyi (It is reasonable to assume he played soccer): evidential.

Yet despite the need to use words a certain way, the same ideas are available to all. It is just that where someone languages use a little suffix, others have to use a whole clause.

Speakers of Nootka and Hopi do have grammatical categories that seem odd from an Indo-European point of view but that is as deep as it goes. In the case of Hopi, the anthropologist Malotki, showed that "Hopi speech contains tense, metaphors for time, units of time (including days, numbers of days, parts of the day, yesterday and tomorrow, days of the week, weeks, months, lunar phases, seasons, and the year), ways to quantify units of time, and words like "ancient", "quick", "long time" and "finished"". The author of that sentence, Steven Pinker, wonders how Whorf managed to miss so much evidence and suggests that "his limited, badly analysed sample of Hopi speech and his long-time leanings towards mysticism must have contributed."¹⁷

Linguistic Relativism: Colour, Place, Number

Is there any theses left concerning how thought might shape language worthy of investigation? There are.

- (EDGE) Does "having a word for it" give you the edge of people who don't have a word for it?
- (NLT) Is language is necessary for thinking?
- (ERT) Does language extends the range of thoughts?

(NLT) and (ERT) will be examined in the second part of this paper. In this final section, I'll introduce some recent evidence in favour of edge.

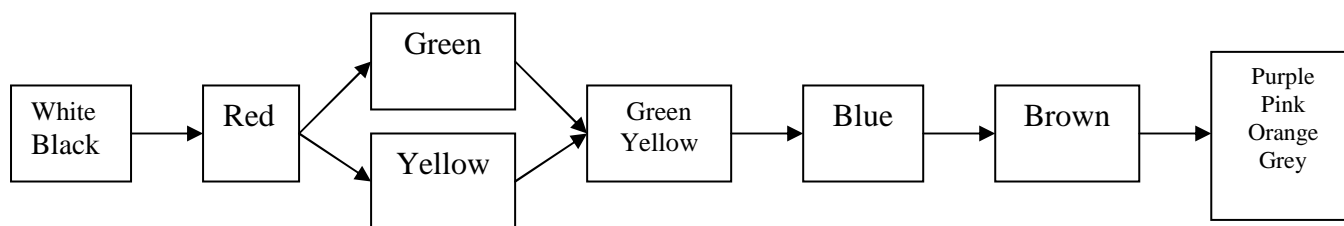
One promising area to test the Sapir-Whorf thoughts in is the understanding of colour terms. The colours form a complex space of with no obvious boundaries: red fades into orange and then into yellow, for example. Do all languages nevertheless share similar colour words that impose some structure on the space?

As noted above, there are languages with only two colour words. The Jalé of the Highland group of Papua New Guinean languages which has "sil" and "hóló". The Dani of Western Papua New Guinea have "mili" and "molo". It is not easy to translate these terms. In the past, people have offered "cool/dark/black" and "warm/light/white". We might do better with "black/green/blue" and "white/red/yellow". If we look to a language such as Tiv, a Bantoid language of Nigeria, we find three colour words: "ii", "pupu" and "nyian". The areas of colour space that these pick out are roughly: "ii" – dark shades, especially dark blues, greens and greys; "pupu" – lighter shades, especially blues, greens and greys; "nyian" – reds, yellows and browns.

We can find languages with four colour terms, then five, then six...Where does it end? In one sense, nowhere. Look at a catalogue of paint-colours to see thousands of colour names: "Coventry blue", "Otter brown", "Quiet obsidian" and so on.¹⁸ Even without special names, you can generate lots of colour expressions by stringing together terms: "sky blue", "bottle green" and so on. If we look for basic, semantically unrelated terms, something surprising happens. At least, this is what was claimed by Berlin and Kay in 1969.¹⁹ They examined speakers of twenty different languages in the San Francisco areas. They showed them a chart that displayed a spectrum of colours. In effect, speakers had two tasks. They had to consider their basic colour words. In English, these would be words like "red", "green" and "blue". Speakers had to identify the reddest red, the bluest blue, and so on. Such colours we call the focal colours. Speakers then had to circle the colours that fell under their colour terms: to circle all the reds, the blues, and so on.

Berlin and Kay claimed that their survey of languages showed that there were at most twelve basic colour terms. They then argued that there was a distinct pattern to what colours a language would choose to name. Any language with two terms made a division between blacks/greens/blues and whites/reds/yellows. A language with three terms introduced a term that covers reds/red-browns and red-yellows. A language with four terms will *either* introduce a word for greens *or* for browns. A language with five colour terms will have words for both greens and browns. In other words, *no* language with three colour terms would have a basic term covering the greens, for example. Furthermore, they found that speakers agreed on focal colours. A language with three and a language with twelve will have a word for "red". Speakers will agree on what they consider to be focal red.

Below is the diagram illustrating the various stages. (Note that this diagram is based on the original study. The development pattern has been substantially revised by subsequent studies.)



Berlin and Kay argued that this was evidence that all people share the same perceptual systems and the relativistic idea that the colours could be divided up in theory any old way was false.²⁰ Their research was developed by the psychologist Rosch Heider in 1972.²¹ Rosch looked the Dani people, whose language has just two colour terms. She wanted to know whether the Dani were nevertheless sensitive to the same focal colours as English speakers. She taught them new words for different colours. She found that the Dani were much better at using new colour words for focal colours than for non-focal colours. The implication was that the Dani found some colours more memorable than others and these were the same colours that we found memorable. This in turn implied that our ability to find these colours easier to identify was *not* due to the fact that our language has words for them, for the Dani did just as well without words for them. In conclusion, it is not language but the design of our perceptual systems that determines how we divide up the colours.

Since these and similar results, many people have undertaken research, half of which argues for a relativism and against the Berlin-Kay-Rosch “universalism” and half of which argues for the reverse. A proper survey cannot be undertaken here. What is noticeable is that no-one really disputes the view is that, given the large number of possible ways languages could divide up the colours, the number of actual ways is very small. No language exists where beige is a basic colour. Red is a very important colour category in every language. What is disputed is whether speakers with few language terms really are more sensitive to the same focal colours as us. Some studies claim to have shown that speakers with no word for blue (for example) are no better at identifying or remembering our focal blue than non-focal blues. In other words, it does help to have learned the English word “blue” because it will have created a concept *blue*.

In the 1990s, evidence was put forward for a language-based difference in our understanding of spatial relations.²² There are three ways we can specify location:

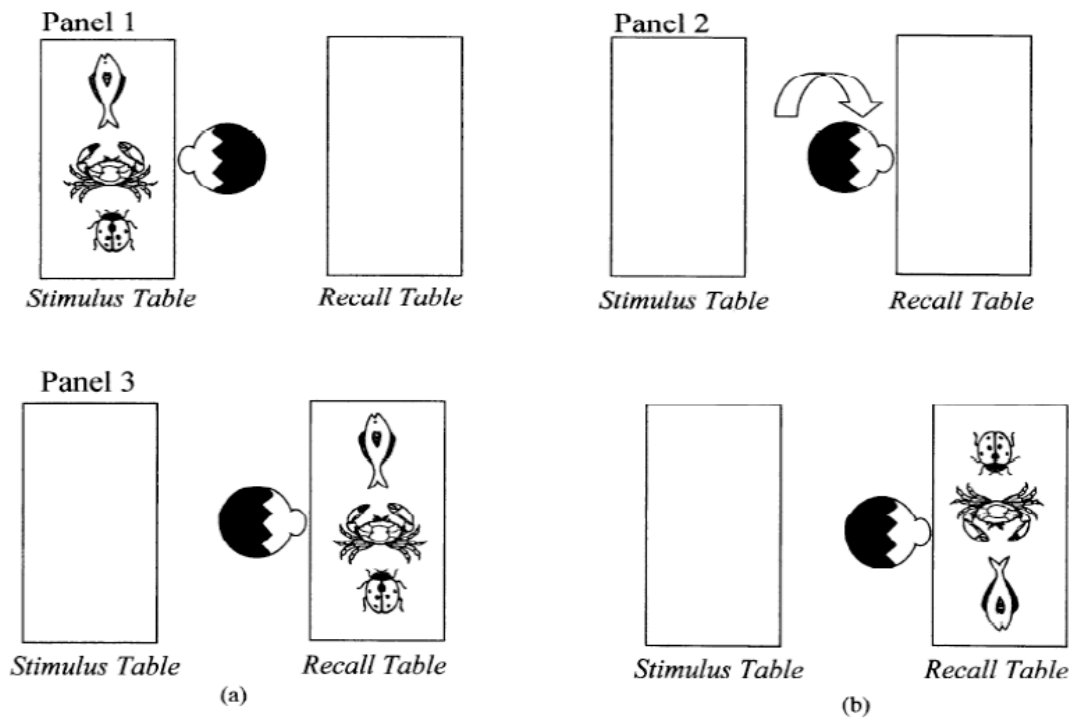
- Intrinsic: location of object A is given by reference to an intrinsic feature of object B: *the card is **in front of** the house.*
- Relative: location of object A is given by reference to the speaker’s position: *the car is **to the left of** the tree.*
- Absolute: location of object A is given by reference to an invariant system of co-ordinates: *the car is **to the north of** the garage.*

Suppose I put three objects on a table in a row: a spoon, a sock and a sausage. If I asked you to describe the position of the spoon, you would say that it is on the left or to the left of the sock. You would not say that it is to the west of the sock. This is because English-speakers use relative spatial terms. This is not a universal preference. For example, in the Tzeltal-speaking Tenejapa community in Mexico and the

languages Longgu and Arrandic, speakers use an absolute system. The Tenejapans have a three-term system: “downhill” (\approx north), “uphill” (\approx south) and “across” (\approx east/west).

The Tenejapans were compared to Dutch speakers, who use a relative system like us, via the following experiment, a diagram for which is below.²³ You are sitting on a swivel chair facing a table on which are three plastic animals: a ladybird, a crab and a fish. As you see things, the animals are lined up behind each other in a row, all pointing to the right (Panel 1). You are asked to memorise what you see. You are then spun round 180° to face a empty table (Panel 2). You are given the plastic animals and told to make the table the same as the previous one. (Speakers who asked what was meant by “the same” were not given any help.)

If you imagine yourself doing this, I expect you find that you would line up the animals in the same order, again pointing to the right (Panel 3b). The Tenejapans lined them pointing to the left. They had memorised the absolute direction in which the animals were pointing (let us say *north*) and re-created that order on the other table (Panel 3a).



Does this show that a difference of language causes a difference in how we conceive of spatial relations? If so, it wouldn't be a big one. The results have however been challenged.²⁴ The Tenejapan were tested outside, where they could use their environment to know what was north and south, just by being aware of the incline of the land. The Dutch speakers were tested in a laboratory with no windows (at least, no uncovered windows), so that they couldn't see the world outside. Experiments on English speakers inside a similar laboratory showed that they behaved like the Dutch. Experiments conducted when speakers could look outside or conducted actually outside were much less clear. Some speakers did switch to an absolute system, fixing their co-ordinates by salient landmarks. It may be that speakers in an environment where there are landmarks use them to create a co-ordinate system and that it is only

when there are no useful reference points do relative systems come in. The Tenejapan have not developed relative terms because they live in a village on a hill and therefore have the incline of the land as a fixed, free and obvious marker.

Finally, it has been suggested that languages with few or no number words have speakers who are poor at distinguishing numerical quantities over three or four.²⁵ It has been argued that the language of the Pirahã people of the Lowland Amazonia region of Brazil. They have the following quantity words: “hói” (\approx one/small size or amount), “hoí” (\approx two/somewhat larger size or amount) and “baagi”/“aibai” (\approx many).²⁶ The following experiment was conducted. The experimenter sat one on side of a table and the Pirahã subject on the other. A stick running east-west divided the table into two. The experimenter would line up on his side a number of objects (batteries) in a row. The subject would then have to produce the same number of objects (nuts) on his side. The data showed that they were able to do this for numbers 1-3, poorer for 4-8 (correctly done about 75% of the time) and unable to do it for numbers beyond 8 (correctly done 0% of the time). Other matching experiments confirmed this limit. A further experiment worked as follows. Subjects watched as the experimenter put a number of nuts, one by one, into a can. The experimenter then removed the nuts, one by one, asking after each removal whether there were any nuts left in the can. The data here showed that subjects were scoring only just about 50% for numbers 2 and 3, with a correctness rate of 25% for 5-9.

The interpretation offered was that, lacking number words, Pirahã speakers lacked number concepts. It has been suggested that the data supports the opposite conclusion: lacking number concepts, they lack number words. They lack number concepts because they have no need for them. There are only around 200 speakers living in small villages of 10-20 people, who rarely have contact with outsiders and use “primitive pidgin systems for communicating in trading goods without monetary exchange”. Their relative success with numbers 1-3 can be put down to the “subitising module” of the human brain. It has been argued that we are able to immediately apprehend or “subitise” the numerosity of collections of one, two, three and possibly four objects without needing to count because our brains are designed this way.

Conclusion

The debate over whether some form of linguistic relativism continues. Does having a word for it make things easier? One can argue that in having a word, one has a public label for a concept and hence that language cannot add anything. You can't name what you aren't somehow already aware of. Nor can it help with re-identification. My ability to re-identify something publicly with “that's a badger!” requires me first to have identified it as falling under the concept of a badger.

On the other hand, language may make things easier by introducing a finer grain. Suppose I live in an environment where I am the only mammal. If badgers, weasels, squirrels and so forth were introduced to my environment, I would be aware of some differences between these new creatures. Would I make the distinction between a squirrel and a weasel? Perhaps not. Perhaps I would treat them as the same kind of animal. By learning that there are (say) twenty names for the new creatures, I would know that I have to be more discriminating if I am to learn to name the animals properly. Words would not make any new differences appear. In collapsing the

squirrel/weasel distinction, it would not be that I didn't see any differences but that I didn't attend to the differences as differences. In the same way, when I tell you that the small plastic sheath at the end of your shoelace is called an *aglet*, I make you notice something that you could and did see before but didn't attend to. It is rather that words would make me more discriminating.

In the next paper, we shall consider whether thought is possible without language or whether language is necessary for thought. On the one side, we have those promoting a *communicative conception* of language, according to which thought is primary and language is the means by which it is made public. Locke, Russell, Fodor and Chomsky take this view. On the other side, we have the *cognitive conception* of language, according to which language is necessary for thought because language is the vehicle or medium of thought: we think in language. Here we shall find Wittgenstein, Davidson, Dennett and McDowell. As you may have realised, this positions suggest that animals and young children cannot have thoughts because they don't have language. As we shall see, proponents of this position accept this consequence.

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References and Further Reading

Berlin, B & Kay, P. (1969) *Basic Color Terms: Their Universality and Evolution*.

Boas, F. (1911) Introduction to *The Handbook of North American Indians, Vol. I, Bureau of Ethnology Bulletin 40, Part 1*. Smithsonian Institute, Washington, D.C. Reprinted by Georgetown University Press, Washington D.C. (c.1963) and by University of Nebraska Press, Lincoln, Nebraska (1966)

Brown, P., & Levinson, S. C. (2000) Frames of spatial reference and their acquisition in Tenejapan Tzeltal. In L. Nuccie & G. Saxe & E. Turiel (Eds.), *Culture, thought and development* (pp. 167-197). Mahwah, NJ: Erlbaum

Brown, R (1958) *Words and Things*. The Free Press, New York

Carroll, J. (1956) *Language, Thought & Reality: Selected Writings of Benjamin Lee Whorf*. MIT Press: Cambridge, MA.

Eastman, C. (1975) *Aspects of Language and Culture*. Chandler, San Francisco, CA. 3rd printing, Chandler & Sharp, Novato, CA. (1980)

Everett, D. (2005) On the absence of number and numerals in Piraha, MS. Abstract at <http://lings.ln.man.ac.uk/info/staff/DE/pirahanumerals.pdf>

Fortescue, M. (1984) *West Greenlandic (Croom Helm Descriptive Grammars)*. London: Croom Helm

- Gordon, P. (2004) Numerical Cognition without Words: Evidence from Amazonia (<http://faculty.tc.columbia.edu/upload/pg328/GordonSciencePub.pdf>). *Science*, 306, 496-499
- Heider, E. Rosch (1972a) Universals in color naming and memory. *Journal of Experimental Psychology* 93: 1-20
- Heider, E. Rosch (1972b) Probabilities, sampling and the ethnographic method: The case of Dani colour names. *Man* 7: 448-466
- Heider, E. Rosch and Olivier, D.C. (1972) The structure of the color space for naming and memory in two languages. *Cognitive Psychology* 3: 337-354.
- Jacobson, S. (1984) *Yu'pik Eskimo Dictionary*. Alaska: University of Alaska (Alaska Native Language Centre)
- Lennenberg, E. H. (1953) "Cognition and Ethnolinguistics". *Language*, 29, 463-471
- Levinson, S. C. (2000) "Frames of reference and Molyneux's question: Cross-linguistic evidence." In P. Bloom & M. Peterson & L. Nadel & M. Garrett (Eds.), *Language and space* (pp. Chap. 4). Cambridge, MA: MIT Press.
- Levinson, S. C., & Brown, P. (1994) "Immanuel Kant among the Tenejapans: Anthropology as empirical philosophy". *Ethos*, 22(1), 3-41.
- Li, P. W., & Gleitman, L. R. (2002) Turning the tables: language and spatial reasoning. *Cognition*, 83(3), 265-294
- Lyovin, A. (1997) *An Introduction to the Languages of the World*. Oxford: OUP.
- Malotki, E. (1983) *Hopi Time: A Linguistic Analysis of Temporal Concepts in the Hopi Language*. Berlin: Mouton.
- Manguel, A. (1997) *A History of Reading*. London: Flamingo (HarperCollins)
- Martin, L. (1986) "Eskimo Words for Snow: A Case Study in the Genesis and Decay of an Anthropological Example", *American Anthropologist* 88/2, pp. 418-23
- Nettle, D. & Romaine, S. (2000) *Vanishing Voices: The Extinction of the World's Languages*.
- Pederson, E., Danziger, E., Wilkins, D., Levinson, S. C., Kita, S., & Senft, G. (1998) "Semantic typology and spatial conceptualization". *Language*, 74(3), 557-589
- Pinker, S. (1994) *The Language Instinct*. Harmondsworth: Penguin
- Pullum, G. (1991) *The Great Eskimo Vocabulary Hoax and Other Essays*. Chicago: University of Chicago Press.
- Sapir, E. (1929) "The Status of Linguistics as Science," *Language*, 5; 207-214

Schultz-Lorentzen, C. (1927) *Dictionary of the West Greenlandic Eskimo Language, Meddelser om Grønland* 69. Reitzels: Copenhagen

¹ All the data above come from Martin (1986) and Pullum (1991), pp. 159-171.

² "Eskimo" is considered by some to be an outdated term today, "Inuit" being the proper term. It is true that some Inuit find "Eskimo" an offensive term as it comes from an Algonquin word that means "eaters of raw flesh" (the Algonquin speakers being the peoples abutting the Inuit to the south-west on the American mainland). However, one should note that the people traditionally called "Eskimo" are now divided into two groups: the Inuit, whose language is Inuit-Inupiaq or Inuktitut from which the various words for snow are predominately drawn, and the Yupik. These two languages form one branch of a family, the Eskimo-Aleut family. For more on the ethnography, visit http://college.hmco.com/history/readerscomp/naind/html/na_011300_eskimo.htm

³ See Fortescue (1984) and Jacobson (1984).

⁴ The sentence is the opening line of Austen's *Emma*.

⁵ Of St. Ambrose, a fourth-century bishop of Milan, St. Augustine relates in admiration: "When he read, his eyes scanned the page and his heart sought out the meaning, but his voice was silent and his tongue was still. Anyone could approach him freely and guests were not commonly announced, so that often, when we came to visit him, we found him reading like this in silence, for he never read aloud." (From Augustine's *Confessions*, Quoted in Manguel (1997)).

⁶ See Manguel (1997), pp. 48-50 for more detail.

⁷ Note that this analytic/synthetic distinction has nothing to do with the analytic/synthetic distinction whose existence is a key disputed topic in the philosophy of language, an analytic sentence being true/false solely in virtue of the meaning of its parts and form, such as "a vixen is a female fox" and a synthetic sentence being true/false in virtue of the meaning of its parts, its form and extra-linguistic reality, as with "there is a vixen in your garden".

⁸ See Lyovin (1997) pp. 1-28 for more information.

⁹ Polysyntheticity is a feature of many Native American languages.

¹⁰ See Fortescue (1984) and Jacobson (1984).

¹¹ Refs for all three.

¹² This is an example only used for illustration of a bad thesis but, nevertheless, one might wonder whether English has distinct verbs after all: go, drive, swim/sail, fly. It does, but the point is that you can still use "go" instead: "I went to the shops", "I have to go to Bristol tomorrow", "I went up and down the Thames", "I went around the world last year."

¹³ For more on Whorf and strong criticism, see Pinker (1994), pp. 55-67.

¹⁴ Pinker mistakenly takes some of the data to be from Apache. It is in fact from Nootka.

¹⁵ Lennenberg (1953) and Brown (1958) are the standard references for the first criticisms of Whorf.

¹⁶ Nettle & Romaine (2000), p. 60.

¹⁷ Pinker (1994), p.63

¹⁸ I should point out that I have made these names up.

¹⁹ Berlin and Kay (1969).

²⁰ They didn't imply that we draw the boundaries in the same place. A language with three colour terms will include much more under "red" than English.

²¹ Rosch (1972a), (1972b); Rosch & Olivier (1972)

²² Levinson, S. C., & Brown, P. (1994), Brown, P., & Levinson, S. C. (2000), Levinson, S.C. (2000), , Pederson, E., Danziger, E., Wilkins, D., Levinson, S. C., Kita, S., & Senft, G. (1998).

²³ The diagram is copied from some notes for a linguistics course by Professor Philippe Schlenker: they are available at <http://www.linguistics.ucla.edu/people/schlenker/LING1-LN-2A.pdf>

²⁴ Li, P. W., & Gleitman, L. R. (2002)

²⁵ Gordon (2004).

²⁶ The translations as one/two/many are given by Gordon (2004). The others are from Everett (2005). Whereas Gordon implies that have two number words, Everett is clear that they have no number words but just vague quantity words.