

Does the World Look Different in Different Languages?

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Review of *Through the Language Glass: Why the World Looks Different in Different Languages*, Guy Deutscher, New York:Metropolitan Books, 2010, 304 pps.; and *The Language Hoax: Why The World Looks the Same in Any Language*, by John McWhorter, Oxford: Oxford University Press, xx+180 pps.

Whorfianism is the theory that the linguistic features of a person's native language affect the way that he thinks. The theory has had a checkered history. Vague statements of the kind were made often by scholars and philosophers of language during the eighteenth and nineteenth centuries. In the 1930's Benjamin Whorf, after whom the theory is named, made claims that were much more specific and much more radical; in this review, we will call this version of the theory "Classic Whorfianism". Over the next fifty years, Whorf's claims were thoroughly demolished, and the theory seemed to be entirely dead. Recently, however, a number of researchers have found pretty convincing experimental evidence for some influence of language on non-linguistic cognitive activities; this research programme is known as "Neo-Whorfianism". Popular science writers and journalists have greeted these results with great enthusiasm, and in some cases have exaggerated their scope and significance; following McWhorter, in the book under review, we will call this "Popular Whorfianism".

Looking at the titles of the two books under review — Guy Deutscher's *Through the Language Glass: Why the World Looks Different in Different Languages*, and John McWhorter's response, *The Language Hoax: Why The World Looks the Same in Any Language*, — and particularly at the diametrically opposed, categorical claims in the two subtitles, the reader might well expect to find a fierce, no-holds-barred conflict on opposite sides of the question: like Chomsky vs. Kissinger on US foreign policy, say, or Dennett vs. Chalmers vs. Tononi on consciousness. Nothing of the kind. In fact, Deutscher and McWhorter are very largely in agreement. They entirely agree in excoriating Whorf: Deutscher calls him a "con man" and gives an extended account of his theories and errors ; McWhorter entirely agrees but wastes little space repeating this. They presumably agree about the misrepresentations in Popular Whorfianism. McWhorter is very much troubled by Popular Whorfianism, and decries it at length; Deutscher largely ignores it, but certainly has no desire to see the scientific results of Neo-Whorfianism overstated or misinterpreted. They even largely agree about the significance of Neo-Whorfianism: They both view the results, so far, as fascinating, but limited in scope. They have their differences, certainly, about the specific interpretation of particular Neo-Whorfian results. They differ more profoundly in terms of their hope and expectations for the future: Deutscher hopes and expects that further researches will show more powerful and deeper influences of language on thought; McWhorter hopes and expects that these influences will continue to be minor.

Despite his combative subtitle, McWhorter's roars at Neo-Whorfianism in general and at

Deutscher in particular are as gentle as any suckling dove. He writes (p. 3)

I seek out [Neo-Whorfian] articles . . . and read them with great joy. As far as I can assess, they are composed with great care, enviable imagination, and thorough training. In my teaching, I regularly note that new Whorfian work has shown some modest effects that one might to know about.

He praises Deutscher’s book for its “responsible” discussion and its “truly gorgeous” writing (p. xv).

In terms of scientific content, the most important part of both books is the discussion and evaluation of the body of Neo-Whorfian experiments, and that will be the focus of the central, and most important, part of this review. However, Neo-Whorfianism occupies less than half of either book; and the other things that Deutscher and McWhorter have to say are also very much worth discussing. So this review proceeds as follows. Section 1 reviews the three flavors of Whorfianism: Classic Whorfianisms in section 1.1; Neo-Whorfianism, in considerable detail, in section 1.2; and Popular Whorfianism, briefly, in section 1.3. Section 2 discusses other aspects of the two books. Section 3 has some concluding remarks.

1 Forms of Whorfianism

We begin by discussing the three forms of Whorfianism.

1.1 Classic Whorfianism

Deutscher gives an extensive and detailed account of the development of Whorfian-style conjectures from the seventeenth through the early twentieth centuries. These were mostly vague, rarely if ever getting down to analysis of specific linguistic features, and sometimes mixed with nineteenth-century style racism. A few typical quotations:

[One can infer] significant marks of the genius and manners of people and nations from their language. — Francis Bacon (1623) quoted in Deutscher p. 3.

The genius of a nation is nowhere better revealed than in the physiognomy of its speech. — Johann Gottfried Herder (1812) quoted in Deutscher p. 3

The difference between languages is not only in sounds and signs, but in worldview. Herein is found the reason and ultimate goal of all the study of language. — Wilhelm von Humboldt (1820) quoted in Deutscher p. 135

Differences in language inevitably imply differing outlooks on the world. — Heinrich von Treitschke (1894) quoted in McWhorter, p. xix.

The theory was revolutionized in the early twentieth centuries by Edward Sapir and his student Benjamin Whorf, who studied Native American languages. Sapir and Whorf claimed that speakers of these languages had a radically different view of the world from speakers of European languages; and moreover, that this difference in view was the *effect* of the linguistic differences.

Sapir, for instance, contrasted the English sentence “The stone fell” with the translation into Nootka (spoken on Vancouver Island) which combines a verb meaning the motion of a stone with an element meaning “down” (Deutscher, p. 139). “[Such concrete examples of] incommensurable analysis of experience in different languages make very real to us a kind of relativity that is generally

hidden from us by our naïve acceptance of fixed habits of speech. . . . This is the relativity of concepts, or, as it might be called, the relativity of the form of thought.”

Sapir’s student Benjamin Whorf, continued Sapir’s studies of Native American languages, and extended his theory. In particular, Whorf claimed that the Hopi language had no words denoting time, and that this absence had major implications for their mind-set.

What surprises most is to find that various grand generalizations of the Western world, such as time, velocity, and matter, are not essential to the construction of a consistent picture of the universe. — Benjamin Lee Whorf, *Science and Linguistics*, quoted in Deutscher p. 133.

After long and careful analysis, the Hopi language is seen to contain no words, grammatical forms, constructions, or expressions that refer directly to what we call “time”. — Whorf, (1936) “An American Indian Model of the Universe”, quoted in Deutscher, p. 135.

Later writers, building on Whorf, took these claims even further. For instance in 1958, Stuart Chase wrote that, though the English language makes it impossible for “us laymen” to understand the scientific concept of time as a fourth dimension. But “a Hopi Indian, thinking in the Hopi language, has less trouble with the fourth dimension than do we.” (quoted in Deutscher, p. 143).

However, among psychologists and linguists the theory is largely discredited, though as we shall see, it survives in popular Whorfianism. The theory, in fact, has problems of many different kinds. The most straightforward problem is that Whorf’s claims about Hopi are simply false. Ekkehart Mahoni, who, unlike Whorf, did actual fieldwork with the Hopis, begins his 677 page treatise *Hopi Time*, by juxtaposing the second quote above from Whorf with the following passage from spoken Hopi:

pu’antsa pay qavongvaqw pay su’its talavay kuyvansat, pàasatham pu’ pam piw maanat taatanya

Then indeed, the following day, quite early in the morning at the hour when people pray to the sun, around that time then, he woke up the girl again.

The second problem is that the evidence for the influence of language on world-view is circular, since the only way of determining the world view is to by considering the language itself. One can therefore ask whether linguistic differences in fact amount to a different world view, or whether they are just different forms of expression. Deutscher compares the seemingly strange way of expressing “The stone fell” in Nootka, analyzed by Sapir, with the English expression “It rains” or “It is raining”. Here, too, the object and its falling are combined in the verb; but there is no evidence that English speakers think of the falling of rain as being ontologically different than the falling of a stone. Absent a way of determining world-view that is separate from linguistic features, the claim that linguistic features affect world view would seem to be tautological.

The final problem is that the entire notion of a world view is ill-defined. What do we mean by a world view, and what does it mean to say that two people have the same world view or different world views? Of course people differ in their beliefs, and in their perceptual abilities, but neither of those constitutes a difference in their underlying conceptual framework. Davidson [2] rejected “the very idea of a conceptual scheme” as incoherent; if there *are* no conceptual schemes, then language can hardly be affecting them.

One way and another, Whorfianism was pretty well dead by the 1980’s. But then it rose again, like a phoenix from the ashes, or like a zombie from the graveyard, depending on your point of view.

1.2 Neo-Whorfianism

As far as I can judge, “Neo-Whorfianism” is not the name of a theory. It would, I think, be a mistake to view the experiments I describe in this section as supporting or refuting some specific claim, which will eventually be accepted or rejected. Rather, “Neo-Whorfianism” is a research programme aimed at finding various non-obvious effects of features of language on cognition. In particular, it is by no means clear that the various phenomena that I will describe in this section are in fact closely related.

I certainly cannot attempt anything close to a complete survey of the Neo-Whorfian literature, but I do want to describe a substantial variety of results, both because they are inherently interesting and because the range of phenomena involved is an important aspect of the state of the research enterprise. I will limit myself to results reported in one or both of the books under review that seem to me strong and important. The results largely fall into separate categories in terms of the linguistic feature involved.

1.2.1 Spatial Relations

In a small number of languages, including the Australian language Guugu Yimithirr, the Mexican language Tzeltal, and the Namibian language Hai||om, the position of an object is always specified in terms of absolute geographic directions such as “north” and “south” rather than in terms of relative position (called “egocentric” directions) such as “in front”, “behind”, “left” and “right”. For instance, a speaker of Guugu Yimithirr will say, “Look out for the ant just north of your foot.” This applies even to pictures in a book.

Suppose the book is facing top side north. If a man is shown standing to the left of a woman, speakers of Guugu Yimithirr will say, “the man is to the west of the woman.” but if you rotate the book top side east, they will say, about exactly the same picture, “the man is to the north of the woman.” (Deutscher, p. 167)

It has been demonstrated that speakers of these languages differ markedly from speakers of languages that mostly use egocentric directions in a number of respects. First, necessarily, since their language requires them to always know the absolute direction, they become extraordinarily adept at keeping track of the absolute direction and remembering absolute directions over time. Deutscher (p. 173) describes an incident in which “one speaker . . . was blindfolded and spun around twenty times in a darkened house. Still blindfolded and dizzy, he pointed without problem in the [specified absolute] direction.” He describes another incident in which a particular speaker was recorded telling the same anecdote of how a boat he was in capsized in a whirlpool, so he jumped into the water and swam three miles to shore. Naturally, the spatial relations were all described in terms of the cardinal directions: he jumped into the water on the western side of the boat, he saw a shark swimming northward, and so on. By chance, the same speaker was recorded telling the same story two years later; however, on the second occasion he was sitting facing east, whereas on the first, he was seated facing north. Not only were all the directions in his story the same, but his hand gestures, in the second telling, were rotated by ninety degrees from how they were performed in the first telling.

Similar differences have been obtained under controlled experimental conditions. If an English speaker is shown an arrangement of objects on a table in one room and asked to arrange objects in the same way on a table in another room facing the opposite way, then he will arrange them in the pattern that is the same relative to the way he is facing. A Tzeltal speaker will arrange them in the pattern that is the same relative to the absolute directions.

The question, though, is to what extent, this is due to the language as such and to what extent it is due to the environment, as argued by both McWhorter and Steven Pinker [5]. According to Deutscher, the Kgalagadi tribe live in an environment similar to the Hai||om, but speak a language with egocentric relations, and give egocentric solutions to rotation problems, suggesting that language, rather than environment, is the cause of the difference. According to McWhorter, the Tzotzil lie in the same environment as the Tzeltal, but speak a language with egocentric relations, and they give absolute solutions to rotation problems, suggesting that environment, rather than language, is the cause of the difference. (Deutscher does not mention the Tzotzil and McWhorter does not mention the Hai||om or the Kgalagadi.)

1.2.2 Color

Languages differ dramatically in the number of words that they possess. Some languages have only “black” and “white”; some have “black”, “white”, and “red”; some have “black”, “white”, “red”, and “yellow” and so on. Moreover, languages draw the boundaries between the basic color words along different boundaries in the spectrum.

The theory of color words is quite complicated and imperfectly understood, and the history of the theory of color words is very complicated; more than half of Deutscher’s book is an account of this history. I will discuss some of this in section 2.1. However, only a small part of this discussion is actually Neo-Whorfian.

The strongest Neo-Whorfian result on color discussed in the two books¹ (McWhorter (p. 7) describes it as “top-class”) is an experiment reported by Winawer et al. [6] Russian has no word corresponding to the English “blue”; the word “*goluboj*” means light blue, and the word “*siniy*” means dark blue. Experimental subjects were shown a sequence of tableaux consisting of one blue square on top and two blue squares on the bottom and were instructed to see which of the bottom squares were the identical color as the top square. Russian speakers were faster, by 124 milliseconds on average, at carrying out the task when the non-matching pair crossed the boundary between *goluboj* and *siniy*; English speakers showed no such effect. Moreover, if subjects were asked to do this task while carrying out an interfering task, such as reciting a random string of numbers they had memorized, then the difference between Russian and English speakers disappeared, validating that the difference was indeed due to the language facility being engaged.

The experiment is pretty much indisputable evidence for an effect of language on a non-linguistic cognitive task. However, as McWhorter justly observes, a 124 millisecond difference in matching colors hardly amounts to seeing the world differently. The question is whether this small measurement is all the difference that there is between the color perception of Russian vs. English speakers, or whether it is the experimentally verifiable tip of a much larger iceberg.

1.2.3 Gender

Many languages associate gender with all kinds of inanimate or abstract objects, and numerous experiments have attempted to demonstrate that this affects how speakers think about the objects. One of the most impressive experiments of this kind is that of Boroditsky, Schmidt, and Phillips (2002) (discussed in Deutscher, p. 213; not mentioned in McWhorter). Subjects were given a sequence of pictures of objects and asked to memorize a specified personal name for the object. The task proved to be easier if the gender of the name matched the gender of the object word in their language. For instance, in Spanish, “apple” (“*manzana*”) is feminine whereas “bridge” (“*puento*”)

¹Curiously, neither book discusses the results on color discrimination among the Himba of Namibia reported by Goldstein, Davidoff, and Roberson [3].

is masculine. Accordingly, Spanish speakers found the list of names easier to remember if the apple was named “Patricia” and the bridge was named “Claudio” than if the apple was named “Patrick” and the bridge was named “Claudia”.

1.2.4 Long Time vs. Much Time

McWhorter describes the following Neo-Whorfian experiment (Casanto 2010) with particular enthusiasm (it was too recent for inclusion in Deutscher). In English, French, and Indonesian, durations are characterized in terms of length (“a long time”, “a short time”) whereas in Spanish, Italian, and Greek they are characterized in terms of magnitude (e.g. “mucho tiempo”).

[S]how an English speaker . . . a line slowly lengthening toward an end point on a screen, and then a square slowly filling up from bottom to top, and she’s better at guessing how long it will take the line to hit the end than for the square to be full. Yet a Spanish speaker is better with the square filling up than the line reaching its end! — McWhorter, p. 5.

What is amazing to me here is that anyone ever thought to try this. The linguistic difference seems very minor and the relation between the relation and the cognitive task seems quite indirect.

1.2.5 Mass nouns vs. count nouns

Another experiment that McWhorter (p. 22) describes with enthusiasm and Deutscher omits is that of Imai and Gentner (1997). The way in which Japanese attaches numbers to nouns is different from English; roughly speaking, Japanese always uses a mass noun construction, analogous to “two pounds of meat” rather than a count noun construction, like “two hamburgers” (see McWhorter for a more precise account). In Imai and Gentner’s experiment subjects were shown three objects; for example, a C-shaped mass of Nivea lotion, a C-shaped mass of Dippity-Do hair gel, and a collection of small drops of Nivea; or a porcelain lemon juicer, a wooden lemon juicer, and some pieces of porcelain. Subjects were then asked to group two of them together. Japanese children generally did the grouping on the basis of material (the porcelain juicer with the porcelain pieces), whereas American children group by shape (the two juicers). Other languages that form plurals like Japanese were also tested, with the same outcome.

1.3 Popular Whorfianism

Whorfianism is a theory that elicits a surprising amount of excitement and strong feelings; the Neo-Whorfian results have therefore been extensively reported in the media. As frequently happens, the power and significance of the results has all too often been over-hyped in the popular media and even in the scientific media. McWhorter has a strong visceral reaction to these exaggerations and misrepresentations; in a characteristically vivid metaphor, he compares his reaction to one such article to finding “ice cream that has been in the freezer next to leftover linguini and clams, such that into the initial glow of strawberry or chocolate drifts a stray hint of garlic.” The main purpose of McWhorter’s book, in fact, is to combat popular misimpressions.

Certainly some of the examples McWhorter cites are pretty awful. The specific event that seemed to him like garlic ice cream was the coverage in the media of studies by Peter Gordon of the Pirahã tribe of the Amazon. The results in themselves were remarkable and important. It was previously known that there are languages in which the only number words are “one”, “two” and

“many”; but the Pirahã have no number words at all, not even “one”. However the significance of this discovery was hugely overstated. McWhorter writes (p. 34)

[I]t was perplexing to see one publication after another exclaiming how counterintuitive it was that a group of people who don’t have numbers, don’t count things, and aren’t good at it if you try to make them do it. “Tribe without names for numbers cannot count” (*Nature*, August 19, 2004). “Experts agree that the startling result provides the strongest support yet for the controversial hypothesis that the language available to humans defines our thoughts,” (*New Scientist*, same day).

As McWhorter says, the headline in *Nature* is about as surprising as writing “Illiteracy prevents writing,” or “Tribe without cars doesn’t drive.” McWhorter cites numerous other examples of comparable hype and over-excitement in the media.

On the web, things get much worse, not surprisingly. McWhorter does not stoop to discuss such intellectual muck, but if you Google, say “Hopi quantum theory” you can easily find recently-written (or copied) accounts of how the world-view of the Hopi language anticipates the view of quantum theory with eerie precision.

2 The two books

In addition to Whorfianism in its various forms, the two books have much else that is worth discussing.

2.1 Deutscher

Deutscher’s book is actually more an intellectual history than a presentation of current science; certainly in terms of space, if not of emphasis.

The first half of Deutscher’s book has to do with the history of the study of color words across languages. This is quite intricate; Deutscher does a splendid job of laying it out clearly. The chief landmarks of this theory, as Deutscher describes it, are these:

- 1858: William Gladstone (the prime minister, during a period when he was out of office and in opposition) publishes *Studies on Homer and the Homeric Age*. In that, he observes that Homer rarely uses color words, other than “white” and “black”; that he uses few different color words; and that, when he does use color words, they often seem strange e.g. “violet sheep”. He conjectures that the ancient Greeks had defective color vision, which has improved over the generations.
- 1867. Lazarus Geiger makes analogous observations about other ancient texts including the Hebrew Bible and the Indian Vedic poems. He observes that languages gain color words in a fixed sequence: First black and white, and then, in sequence, red, yellow, green, blue, and violet.
- Late nineteenth century. It is discovered that many primitive languages have very limited color vocabulary.
- 1898. W.H.R. Rivers determines that the peoples who speak these languages are not measurably inferior to Europeans in their ability to discriminate colors.

- 1900-1969. The accepted wisdom is that the division of the spectrum into colors is an arbitrary cultural choice.
- 1969. Brent Berlin and Paul Kay publish *Basic Color Terms*, validating Geiger's sequence (with small variations), and demonstrating that many aspects of color judgment are in fact invariant across cultures.
- 1969 - present. Berlin and Kay's results have been validated as substantially but not universally true.

One of the most remarkable aspects of this study has to do with the blue sky. The sky, it turns out, is never described as blue in Homer, the Bible, or the Vedic hymns. The native people who Rivers studied described it as black. Deutscher did an experiment with his own daughter Alma²; in talking with her, he was careful never to mention the color of the sky, but from time to time would ask her what color is the sky.

Alma recognized blue objects correctly from the age of eighteen months ... But ... she would just stare upwards in bafflement whenever I asked her about the sky, and her only answer was a "what are you talking about" look. Only at twenty-three months of age did she finally deign to answer the question and her answer was ... "white". It took another month until she first called the sky "blue".

Another chapter in Deutscher discusses the comparative complexity of language. The claim that all languages are equally complex has been repeated in linguistics textbooks for forty years. Apparently, there is no actual data to support this claim, not least because there is no useful measure of the overall complexity of a language. Deutscher traces the origins of this claim back to Charles Hockett's 1958 textbook *A Course in Modern Linguistics*. In Hockett's book, the statement is specifically described as an impressionistic claim, but, as the claim was repeated, that qualification was lost.

Leaving aside the ill-defined question about overall complexity, Deutscher discusses four relations between the sophistication of a society and the complexity of its language. Languages of more sophisticated societies tend to be characterized by (a) larger vocabularies; (b) simpler morphology; (c) larger sound systems (number of different phonemes); (d) greater use of subordinate clauses. (McWhorter has a much shorter discussion; he mentions (a) and (b), but not (c) or (d).) These, it should be noted, are statistical correlations, not reliable rules; there are large exceptions. The explanation of (a) is obvious and not disputed. Deutscher proposes a number of interrelated explanations for (b); he finds these fairly satisfying; I myself have doubts. He proposes a quite tentative explanation for (d); and he says that no good explanation of any kind is known for (c).

As an intellectual history, Deutscher's book is in general very fine: erudite, thoroughly researched, clear, and entertaining.

The book has two significant flaws as history, though. The first is that Deutscher occasionally oversimplifies, in ways that satisfy the expectations and gratify the vanity of a 21st century reader contemplating the benighted past. He writes, for instance (p. 131)

The prevailing prejudice toward the study of non-European languages that Edward Sapir gently mocked in 1924 was nothing to poke fun at a century earlier. It was simply accepted wisdom, not just for the "ordinary man of intelligence", but among philologists themselves. that the only languages worthy of serious study were Latin and Greek.

²Alma Deutscher, incidentally, is an extraordinary musical prodigy. That sounds redundant, but I mean that she is extraordinary even among musical prodigies. See <http://www.almadeutscher.com>.

This was not remotely true in 1824, the year when Champollion published his interpretation of hieroglyphics, based in part on his knowledge of Coptic, and 38 years after William Jones conjectured (1786) a common Indo-European ancestor of Sanskrit, Greek, Latin, Persian, Gothic, and the Celtic languages, and stated that the Sanskrit language was “more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either.” In fact it was hardly true in 1674, 250 years before Sapir. Scholars from the Renaissance onward were obsessed with language, and many went considerably beyond Greek and Latin. Many scholars, including Newton, knew Hebrew; some knew Aramaic or Arabic. In 1647, Marcus van Boxhorn proposed a common ancestor for Latin, Dutch, Greek, Persian, German, and the Slavic, Celtic, and Baltic languages; presumably he knew at least something of all these. Professorships in Arabic were established at Cambridge in 1632 and at Oxford in 1636. Martino Martini published a grammar of Chinese in 1653. It is true that until Humboldt (1826) only a few scholars, such as Du Ponceau and Pickering, had a serious interest in the native languages of the Americas, southern Africa, and the Pacific Islands; but that is a quite different statement.

Another flaw in Deutscher’s book is that he exaggerates the degree to which scientists working on problems he approves of were heroic iconoclasts standing up against the dogmas of the scientific establishment. For instance, in his discussion of the assertion that all languages are equally complex, he twice states that there was a “taboo” against considering any other view. “Taboo” is a strong word. Were the proponents of other views unemployable? Were they denied tenure? Were they publicly mocked or denounced? Did they have unusual trouble publishing their papers? What he demonstrates is that the claim that all languages are equally complex, once published, was lazily repeated from one textbook to the next; at a stretch, one might call this a “doctrine” or perhaps even a “dogma”; but that certainly does not establish the existence of any kind of “taboo” against the contrary opinion.

2.2 McWhorter

McWhorter’s book is more narrowly focused on Whorfianism, particular Popular Whorfianism, than Deutscher’s; there is much less extraneous material. There is one additional point that he does develop at substantial length. He claims that the only substantial effects of culture on language are the obvious ones. That is, obviously a culture with no automobiles will not have a word for automobile; a culture in which no one counts will have no word for numbers; a culture in which there are very strict social gradations may well have multiple words for “you” depending on social level, and so on. But, he says, the characteristics of language that do not have this kind of obvious relation to social structures — morphology, syntax, evidential markers, gender, and so on — are completely random, arising like bubbles. He gives many examples of similar linguistic features arising in cultures that are very different; e.g. differences in how language deal with gender do not seem to be correlated with cultural sexism. McWhorter does make an explicit exception of the relation of societal complexity to morphological simplicity, for which he gives essentially the same explanation as Deutscher. To my ears, McWhorter’s claim, as a general rule, has the ring of truth, but of course null hypotheses are always very difficult to prove.

2.3 Political Correctness

Like most issues involving multicultural comparisons, one can play the political correctness card on either side of the Whorfian question. The proper view to be taken of other cultures is one of the great Kantian antinomies of our era. On the one hand, the claim that non-English speakers think the same as English speakers is cultural imperialism that imposes our standards on the rest of the world, and fails to respect their differentness. On the other hand, the claim that non-English

speakers think differently entails that some of them think less well; McWhorter argues, specifically, that Whorfianism would entail that Chinese speakers are stupider than English speakers. Both authors play this card; McWhorter in particular with great energy and at length (31 pages). Any reader of this review who has not been living under a rock for the last fifty years can fill in the details for themselves.

3 Bottom Line

Bottom line for the books: If you are interested in the subject and you have the time, it is definitely worthwhile to read *both* books. Their value in combination is considerably greater than individually.

If you have only time to read one, then the choice depends on what you are looking for. If you are just looking for a really well-written book with solid intellectual content, then you can't go wrong either way. If you are looking for intellectual history, then by all means read Deutscher. If you are looking specifically for a good grasp on Neo-Whorfianism, then I would give a very slight edge to McWhorter.

There is a substantial body of Neo-Whorfian research that is not covered in either book, so there is certainly room for a third, more complete book. According to amazon.com, Lera Boroditsky, who is a leading Neo-Whorfian researcher, is working on a book entitled *7000 Universes: How the Language We Speak Shapes the Way We Think*; hopefully that will fill the gap.

Bottom line for the theory: Clearly, we are not currently in a very satisfying state. We have a number of experiments that show pretty clearly that in some cases features of a native language has minor effects on some cognitive processes. That is all we know with any certainty. As regards broader claims, we are severely hampered by the facts that we don't know exactly what a "conceptual framework" or a "mind-set" is, or how to test it experimentally in a way that is independent of language; and we often don't know where to draw the line between the effects of culture and the effects of language, given that culture and language are in practice tightly intertwined.

The most important immediate question, it seems to me, is whether Neo-Whorfian experiments can be constructed that actually do show a significant effect on the way people see the world. This is not an inherently meaningless objective; there are all kinds of experiments that manipulate how people see the world, and there are all kinds of observations that show that different people see the world differently. A few examples: The subjects in the "Invisible Gorilla" experiment of Chabris and Simons [1] do not see the gorilla even though they are looking straight at it. How a picture is seen can be affected by a caption or by other contextual features [4]. Someone unfamiliar with chess looking at a position in chess sees a patterned board with some oddly shaped wooden pieces; a novice chess player sees pawns, bishops, and so on; an expert sees threats and opportunities. Someone who hears a foreign language spoken which he does not know hears (probably mishears) a sequence of sounds, and often cannot hear key phonological distinctions; someone learning the languages hears the words, and works out the meaning; someone who knows the language fluently often does not even hear the words, he just hears the meaning. In all these cases, it seems to me more accurate to say that the people see or hear different things, than that they see/hear the same thing and interpret it differently.

In the case of vision in particular, it is often the case that they will see different things, even at the level of the retinal image. Vision is an active process, where people rapidly focus on different points, which are judged to be important. An expert looking at a chess board is likely to have different eye movements from a non-expert; thus there is no level at which they see the same thing. One can plausibly conjecture that the same might apply to speakers of languages with absolute spatial directions; since they must always keep track of their current orientation, it is likely that they

are, unconsciously, looking at quite different things from the speaker of languages with egocentric directions.

Thus, how people see the world is affected by all kinds of characteristics of their circumstances and mental state. There is certainly nothing inherently implausible about the claim that features of their native language are among those characteristics. The difficulty is in designing an experiment where large differences in how the world is seen correspond to differences in linguistic features, and where no other explanation is possible.

The question, then, remains: Do the Neo-Whorfian effects that have been documented reflect *important* aspects of cognition, or are they merely second-order effects? Does the interaction between non-verbal and verbal aspects of cognition rely *deeply* on language-specific features or only superficially? I do not see how we can find out, with any certainty, until we have attained a much better understanding of language and cognition generally.

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