

**Linguistic Relativity**  
*A Refutation of Claims to Futility*  
*In Modern Linguistic Relativity*

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The general theme of this paper was over Linguistic Relativity. This is the interdisciplinary field of work comprised mostly of Linguistics, from which it derives its subject matter and materials (that is the matter to be tested), and Psychology, from which it derives mostly methodologies for testing (psychological experimentation) and also from which it derives its domain matter, the mind. Over the years research in this field has had a bumpy ride, from grinding halts to miraculous accelerations, and at least one famous paper was responsible for one of linguistic relativity's last great hurdles.

In Pinker's famous *Mentalese* chapter, he makes bold claims about the nature of thought and the nature of language's possible interactions with it. The goal of the paper in general was to define an outlook of thought that he believed was concordant with modern views of the computational theory of mind. In essence he suggests that thinking is a reasoning process that operates very much like the processing of a computer. Symbols are represented/manifested for real world objects (or pre-processed chunks of information derived from some sort of sensory or intuitive knowledge), processed by 'dumb' operations, and ultimately they give way to new symbols that represent the results of the cognitive operation. Beyond this, Pinker, being the stickler for evolutionary psychology that he is, believes, as is consistent with modern psychology's perspectives, that the operations of all human minds are equal and alike. He believes that we come preprogrammed to do the types of higher level thinking that we do, and that other formal

symbol systems are simply unsuitable to taking up this task (language in particular) because of their inherent redundancies, deficiencies, and overall variety of forms. Whether or not Pinker was correct on the issues that he puts forward in this part of the paper, or, in general, whether or not Mentalese or for that matter any form of a computational theory of mind is an adequate representation of mental processes is not what is at stake in our paper; it is, instead, what he uses Mentalese to justify viz. that linguistic relativity is a farce and a fluke.

Pinker made a whole host of claims about the nature of linguistic relativity, most of which were highly unorganized and more often than not unscientific low-blows. These seem to be best organized into three separate categories of critique: viability, heterogeneity, and historical continuity.

The critiques of linguistic relativity's viability were mostly attacks on the overall methodology and theoretical soundness of experiments and writings within the field. He concludes that any experiments that had been done were invariably done wrong and the best of which to his knowledge, Bloom's 1981 book, had large methodological errors in participants sample and materials that led to untenable results. (Although we ought to give him a bit of leeway because in 1994 there was still very little LR research that had been rehashed, it is nonetheless interesting that Pinker had chosen to ignore John Lucy's highly praised twin books set which itself was an deep critique of prior LR research and a new implementation of revised methods and theories.) Furthermore, Pinker points to the triviality of any test of Linguistic relativity that had heretofore been proposed or experimented, including Kay & Kempton's successful results with color chips.

As for heterogeneity, Pinker seemed to be under the impression that a) all linguistic relativity implied linguistic determinism (language = thought and not language->thought) and b) that all theories of linguistic relativity must therefore proposed the same types of influences on thought. This was in fact his greatest criticism, for as evidence he submitted his theory of Mentalese. Judging from evidence of non-linguistic creatures (apes/monkeys, children, and non-linguistic adults) that demonstrated cognitive reasoning skills, Pinker judged that there must be some other underlying universal language of the brain that was innate and evolutionary which must account for this. On account of his confusion in proposing Mentalese as a 'solution' to LR, he further made the implicit argument that Mentalese could account for all proposed types of LR (as addressed in(b) above).

Lastly but most certainly not least, Pinker made a group of arguments directed to what he perceived was the heart of the 'problem', Benjamin Lee Whorf. He believed that Whorf and his ideas were the end all be all of theory in LR, although it is still not even clear what those were, let alone whether or not any of his evidence constitutes a single theory. In this way, Pinker acts like berating the obvious methodological errors of Whorf (never visited the Hopi) or attacking his views on translatability (even though it is now commonly accepted that Whorf may have been in the right on these issues cf. Lakoff (1987)) is a way to demolish the reasonability of the entire rest of the LR field.

Our goal in this literature review was to ask whether or not modern LR is really Whorfian/Deterministic/unscientific in nature. We are of the contention that modern LR does not fall prey to these criticisms of Pinker's so easily. In order to show this we review three modern LR theories: Dan Slobin's 'thinking-for-speaking', Dedre Gentner's 'relational language' and Kay & Kempton's color chip experiments. To begin with we will consider Whorf's research in the context of one very famous paper "The Relation of Habitual Thought and Language to Behavior."

Whorf begins by proposing a basic criteria for linguistic relativity. He asks:

(1) *Are our own concepts of 'space', 'time' and 'matter' given to us in substantially the same form by experience to all men, or are they **in part** conditioned by the structure of our own particular languages?*

(2) *Are there traceable affinities between (a) **cultural and behavioral norms** and (b) large scale linguistic patterns? (Carroll p.138)(emphasis added)*

We will first discuss the first criterion. While we do this it is important to keep in mind that he clearly specifies that *some* of our experiences ought to be influenced (and more specifically only those experiences of abstract domains cf. Whorf's *Science and Linguistics*), but from the get-go in no way does he claim that the interaction between language and thought should be wholly deterministic.

He proceeds to give a brief discussion about his work as an insurance claims investigator and how it seems that subtle naming tasks could deeply influence peoples actions, leading him to believe that the names had influenced people's reasoning about the world. The mechanism he proposes for this is called linguistic analogy (see Lucy 1992) and it is the hallmark of his LR theory. Whorf says that individuals of a category are not naturally identical (they may share one necessary trait but even that is not guaranteed), language by its own nature creates linguistic categories, and finally, if the content of a category is not investigated we can foresee that two remote physical situations may come to be seen alike. Tacitly, he proposes at least three levels of linguistic analogy and in this particular section he shows us how lexical linguistic analogy should operate. He gives us an example of a gas can labeled empty. In reality, the gas can was highly flammable because it contained gaseous fumes, but the situation normally suggested by empty is a situation in which normal contents, in this case flammable ones, are gone. The label empty had led workers to improperly deduce it was safe to smoke around the cans, leading to a fire in the warehouse. He cites many more examples like these but these are fundamentally weak because they are unlikely to be evoked in all speakers, as well as how/if the can was labeled.

From here he suggests that there may in fact be greater effects in the domain of grammar, since it is obligatory upon all members of a community and mandates a 'labeling' from users. Thus we are introduced to grammatical analogy. Herein, he discusses grammatical categories like plurality and their \*dispersement in both Hopi and English. In English, plurality is used alike for both physical and temporal situations, whereas in Hopi plurality is used only for objects. In this way temporal situations that cannot be plural are treated like a grouping of physical objects, a phenomenon he calls 'objectification' and which he proceeds to identify across other grammatical categories.

Finally he proposes linguistic analogy: the idea that grammatical categories could use analogical structure in order to spread their metaphorical (perhaps objectified) treatment of domains to other grammatical categories thus creating a unified language wide metaphorical treatment of a single domain, such as time or space. In this way, speakers are generally obliged to think (habitually) about situations as their languages designate.

After proposing these types of theoretical models, he moves to attempting to prove their reality. Whorf has a conception of LR that looks something like this [language -> thought -> culture]. He believes that language is the ultimate master of symbol systems and that it must somehow then control or exert influence on cultural symbols and the only way to do this is via an individual's

mind. In light of this he sets off looking for linguistic imprints on each respective culture and he finds what he believes to be hoards of evidence. This represents perhaps the biggest problem with his work on LR, his experimentation. We are now quite confident that language is not culture's symbolic master and that although there can be a *corollary* influence on one upon the other, no influence is guaranteed and no *causal* interaction has yet been defined, so for all he knows, cultural symbols may have caused the linguistic symbols. This does not so much invalidate his theoretical work but in general it nullifies his claims as a scientific theory. Another large criticism is that he does not specify the mechanism of habitual thought, beyond suggesting that it is in some way habituated. Without an explicit description of such a mechanism we cannot be sure that linguistic analogy would have any effect in our daily lives. What is important to keep in mind in the following sections is how divergent modern theories are in general in their claims of LR, utilizing more and different scientific methodologies and straying far from any discussion or reliance upon linguistic analogy or habitual thought.

As our survey of modern linguistic relativity continues, Dan Slobin presents the idea he describes as "thinking for speaking." "Thinking for speaking," is essentially the concept that a complete "mental image" exists in the minds of all people, however, the language we use guides our attention in such a way that the specific language determines what aspects of the mental image that we choose to attend to by using a special type of online processing. When we start examining the viability, heterogeneity, and historical continuation of the ideas presented by Slobin we can begin to make some clear assessments as it relates to modern linguistic relativity and Whorf's original hypothesis.

In order to make an accurate assessment of the validity of Slobin's claims, it is necessary to look at the implications of the conclusions he draws in juxtaposition to linguistic relativity as well as the methods he used to conduct his research. The principle idea Slobin examines is that the grammatical organization of a language directs us to attend to certain aspects of the universal mental images we possess. He further argues that complete images exist, to some degree, in all speakers and that how we attend to them pragmatically and schematically, in speaking, is what differs. From here, he leads us to his claim that there is a special online mental process carried out during speaking as aforementioned. This involves both knowing and understanding the pragmatic application of a language, as well as, picking out obligatory distinctions made within a particular language.

The experimental framework used by Slobin allows for objective observations of the use of language through varying grammatical structures and is very viable in a scientific sense. Slobin presented children and adults of varying age groups (ages 3-5, age 9, and adults) pictures from a picture-book, "Frog, where are you?" in order to elicit and observe responses. Slobin used this information to identify language-wide habitual patterns, in addition to, comparing the results from varying language typologies. The languages that Slobin used in his study were English, Spanish, German, and Hebrew. He analyzed these languages in relation to temporal description, spatial description, and in particular he compared the people of the different age groups in how often they used a certain grammatical structure of the given language. From this data he was able to show how children learn to think for speaking and finally, Slobin goes further to discuss the implications of how first-language thinking affects second-language speaking. Ultimately, Slobin concludes that, "each [language] is a subjective orientation to the world of human experience and this orientation **affects the ways in which we think while we are speaking.**"

Although Slobin only draws one explicit conclusion, through his claims and data, he also draws two other implicit claims. One of these claims is strongly supported by his observations, while the other is much weaker. The weaker of the two claims, in that the rhetorical grammar of a language affects thinking for speaking, highlights that only particularly pragmatic claims affect cognitive differences in online processing. Inversely, his other implicit claim is that the temporal structure of a language affects online processing for thinking for speaking in a very observable way.

The heterogeneity of Slobin's conclusions in relation to modern linguistic relativity is palatable and marked. Slobin takes a moderate standpoint in comparison to the classic theories of linguistic relativity. Essentially, what Slobin claims is that language does not determine thought, but that it influences how we attend to the world. Very similar to the common argument against linguistic relativity, Slobin shows that speakers can perceive and encode events beyond their language. He shows through his experiments that a complete (or at least a near-complete) mental image exists independent and outside the realm of language. Through the mechanism that language affects attention, events that are not encoded are ignored during speaking and that a speaker must think about how to speak within the pragmatic domain of the language. By isolating the factors of language that affect specific aspects of cognitive processing, Slobin is able to differentiate his claims from others in the realm of linguistic relativity.

Slobin makes a clean-cut distinction between himself and Whorf's theory of linguistic relativity. Compared to Whorf, Slobin made use of a well-formed experimental framework that allowed him to show how different languages *influence* thinking for speaking through the medium of how we attend to the world. Whorf in formulating his hypothesis integrated many novel ideas based on anecdotal observations, not based on a well-formed scientific investigation. What Slobin concludes is very different than what Whorf claimed in his hypothesis. In Slobin's paper, he explicitly says, "Whorf held that concepts have no existence independent of language." Slobin continued to make this distinction between himself and Whorf very clear. With this in mind, it is impossible to refute Slobin's conclusions by refuting the claims of Whorf, unless of course, if it were true that Whorf's claims embody all of modern linguistic relativity.

Professor Dedre Gentner's inquiry into human cognition titled '*Why We're So Smart*' is an effort to discover what exactly sets humans apart from other animal species that lends us our (relatively) advanced cognitive abilities like higher level reasoning, out-of-context thought, and the ability to use abstract representations. She has developed a theory that this distinguishing feature is

*'a relation of mutual causation between (our exceptional ability to learn by analogy and our possession of symbol systems) ... whereby our analogical prowess is multiplied by the possession of relational language'*

which as we see will reduce to the use of language to '*invite learning relational concepts and provides cognitive stability once they are learned*'.

In order to test this theory, Gentner assembled a test group comprised of children in three age groups. Three, four, and five year olds were invited to make object comparisons testing their ability to make relationship judgments. The experimental setup consisted of first presenting a child with three simple similar objects, such as three cups of increasing size. They were shown a 'winner' sticker that was placed underneath the middle sized cup in full view of the child. Next, the tester removed the three cups and placed another three objects (another three similar cups, though this time all three were larger than in the first set, still increasing in size) in front of the child and asked them to choose the object that had the sticker. This test of relational judgment required the child to see the relationship between the first three cups and relate them (correctly) by size, knowing that the 'middle' cup had the sticker. In the second case the middle cup would again have the sticker despite the fact that these were three new cups. Results showed that children were generally able to make the correct distinction in the second set with roughly 50% success for 3 year olds and 90+% success for 5 year olds. The experiment was then repeated using two different sets of objects; while the first set of objects were all similar (all cups of the same color, shape, only differing in size) these more *complex* objects would test more advanced relational judgments. In the more complex set the objects were much richer visually and were related seemingly only by size, and were not the same between the first and second sets as they were in the simple experiment. Again a sticker was placed under the middle sized object and the child was asked to pick the 'winner' object from the second set. Performance suffered considerably with the introduction of complex objects which was expected; 3 year olds now performed at baseline levels (random) and 5 year olds were succeeding at about 60%.

Once this initial experiment was completed with both simple and complex objects, Gentner's test of the use of relational language came into play; having established reference performance levels of children making relationship judgments, the test here was to see if performance would improve with the introduction of *relational terms*. Standard names for the objects like 'Freddy', 'Max', and 'Bobby' do not reveal much about the relationship between the objects but relational terms like 'Big', 'Little', 'Tiny' give some indication of relative size. The proctor in this new case gave the child labels for the three objects; since these were young children, 'daddy', 'mommy', and 'baby' were given in an effort to use commonly familiar terms for this age. These terms often carry the same size distinctions as 'Big', 'Little', and 'Tiny', which would provide the children with more information about the objects. After having been given these relational labels, children immediately performed at much higher levels; 3 year olds with relational terms were now correctly making relational judgments with complex objects with 80% consistency, which places their performance above that of 5 year olds without relational terms. This strongly supports Gentner's claims as the introduction of these terms makes us able to perform more complex analogical judgments at higher rates of success.

In our survey of modern linguistic relativity, Prof. Dedre Gentner brings a wealth of research to a largely ill-defined field. By investigating the viability, heterogeneity, and historical continuity of Gentner's methods and conclusions, one can better assess the breadth and academic status of modern linguistic relativity as relates to the Whorfian hypothesis. The experimental work done by Gentner is strong and well-documented. The testing done with young children was consistent and thorough, controlling variables and acknowledging patterns in results without presumption. The structure of the experiments also lends credibility to the theory that relational language promotes learning relational concepts; the solitary introduction of relational labeling allowed

children to correctly perform analogical analysis and retrieve memory at a higher consistency than those from whom relational terms were withheld. Because of this careful planning and use of simpler relational terms in the experiment designed around children, we find that Gentner makes a strong and valid argument for the introduction of relational language increasing (and sometimes enabling) performance in relational tasks attempted by children. However, to extend this theory to adults would require some inductive step in which we assume that the results of Gentner's experiments will repeat and that children will continue to develop *and rely on* relational mapping as they mature. This assumption is neither trivial nor unreasonable in nature, but Gentner does somewhat address this by showing that increasingly maturing children show better performance at each relational task. The assumption is also mitigated in scope perhaps by assuming that adults have reached a high level of performance when attempting complex relational matches.

The heterogeneity of Gentner's theories with respect to the field of linguistic relativity is distinct and well-formed. The broad definition of linguistic relativity certainly does not precisely capture the essence of Gentner's findings; Gentner eschews cultural motivations behind language affecting thought and strays from concluding that language confines thought. By constructing an organized and concise metric, she is able to isolate the effect that language has on the ability to make cognitive judgments. Thus we might state that Gentner makes the claim that relational language promotes our ability to learn by analogy (as a subset of thought), while avoiding making any sweeping claims on language bounding or thought or affecting perception.

Gentner also directly addresses the Whorfian hypothesis and makes clear that her stance is significantly different than that of the Sapir-Whorf view. The research and conclusions reached by Gentner are obviously within the realm of linguistic relativism and she herself makes note that *'language is neither a lens through which one forever sees the world, nor a control tower for guiding cognition, but a set of tools with which to construct and manipulate representations'*. Therefore, any deconstruction of the Sapir-Whorf hypothesis does not necessarily relate to Gentner's conclusions.-----

After investigation of literature by Profs. Slobin and Gentner, it has become clear to us the extent to which linguistic relativity is unbounded by the efforts of Whorf. Each brings a wealth of research immune to Pinker's implications and accusations. Theory, methodology/testing, and heterogeneity are substantially different from Whorf's original claims and as such are not susceptible to the same criticisms. Gentner goes as far to state specifically that her theory is separate from Sapir-Whorf in an effort to make it absolutely clear that her work is not derivative of Whorf. Basis of theory aside, it becomes obvious that even if the essence of Slobin and Gentner's work was Whorfian, their methodology and strong scientific justification holds up where Whorf might not have.

A last look at the three criteria established earlier (viability, heterogeneity, and historical continuity) will help assure us of our earlier conclusions. The viability of Gentner's claims is solid; she has been meticulous in controlling any variables and took enough trials to make sure any trends were nontrivial. Her claims follow logically from her experimentation and provides secondary observations that strengthen her argument; for instance, looking at children of different ages helps show that despite the fact that older children are generally more able to make

relational distinctions, the introduction of relational terms boosts the ability of the youngest beyond that of the oldest age group. Gentner herself has revealed the heterogeneity of her work; perhaps her claims are not as bold as Whorf's, but what she does predict is still an important and powerful theory for the field of linguistic relativity. Slobin solidifies the idea that the way we attend to the world while thinking for speaking is directly influenced by language. His experiments provide objective evidence to support his claims in such a way that cannot be refuted by simply disproving the Whorfian hypothesis. It is apparent that Slobin has introduced a new way of looking at linguistic relativity beyond the historical continuation of Whorf. Just like Pinker, Slobin states that mental images do exist independent of language, however, he points out that language does influence how we attend to these images, whereas Pinker states that this does not occur. Pinker's claims are interesting but largely irrelevant when applied to the work of Gentner and Slobin, perhaps because the latter two are no longer as occupied with proving that language -> thought in the grandest sense, but that there are still intriguing connections to be found with how language might *influence* thought. The point that all works are derivative and historically continuous from Whorf is also trivialized- while Gentner and Slobin both approach the issue of language interacting with thought, neither draw any assumptions or rely on Whorf's hypothesis.

From our brief overview of the modern academic arena of linguistic relativity, it is safe to say that the field is vibrant and well, unfettered by the strong claims of Pinker. Our investigation has revealed that the interplay of language and thought is much more complex than Whorf initially claimed and as such cannot be canned as Pinker has attempted. Even looking at two literary entries into this field is enough to tell us that not all LR theories are immediately invalid and certainly are not all Whorfian in nature. Attacking LR as deterministic and unscientific is a method of those unaware of the other work done in the field, and these criticisms alone show us that there is still much to glean.

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