VERBAL MINDS

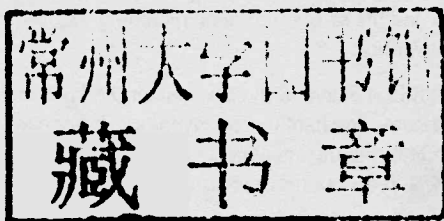## LANGUAGE AND THE ARCHITECTURE OF COGNITION

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Verbal Minds
Language and the Architecture of Cognition

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1 Introduction: Language as the Key Factor to Human Singularity

The natural human interest in self-understanding has traditionally pointed to language as the most distinctive human trait. Many other features are also uniquely human. Some are anatomical: a big brain in proportion to the body, a lack of a tail, and a larynx with special phonetic capabilities. Some traits involve distinctive activities: religion, mathematics, art, and sport, for example. However, when it comes to making sense of human singularity, it seems that many of those specificities are not basic, but they became possible through achievement of more basic ones, such as language.

Of the several features uniquely human, then, language has been most consistently chosen as the key to understanding the human mind and to providing the building blocks necessary for achieving other specificities in human cognition: abstract/propositional thought, recursivity, decoupling of current situation, creativity, and conscious control (Chomsky, 1988; Macphail, 1996). To put it in some distinguished scholars' words: language is thought to be what makes us "smart" (Gentner, 2003; Spelke, 2003); or, at least, it is an important element of human intelligence, if not the only one (Premack, 2004). Maybe the influence of language depends in its turn on a more basic structural novelty that makes both human language and thought possible (Penn et al., 2007). Human cognition is characterized by its flexibility and creativity, which gives rise to, and is molded by, cultural diversity. Cultural diversity, in its turn, feeds back into cognitive diversity through the socialization process that takes place during the long period of human development. Language, as a symbolic system of communication and also of representation, is thought to play a critical role in making possible this interplay of individuality and sociality.

It is not so clear how language influences human cognition, however. The issue of the kind of role of language on human thinking—from which the cultural and behavioral novelties of human culture are thought to stem—is a polarizing one: while some people take it as obvious, others regard it as of marginal interest. For some thinkers, the constitutivists, the relationship is so intimate that thought is not even conceivable in nonlinguistic creatures: they view language as conceptually necessary for thought (Davidson, 1973, 1975; Dummett, 1981, 1989; McDowell, 1994). At the other extreme, the communicativists contend that language has nothing to do with thought whatsoever, beyond making it explicit (Fodor, 1975, 2008; Pinker, 1994, 2007). Of course, such extreme positions require a great deal of qualification. The first group is really only concerned with "propositional thought"—or the ability to entertain propositional contents—which is characterized by its truth conditions. Nonverbal creatures might be capable of simpler, referential thoughts, but given the conditions of content ascription, propositional thoughts are solely ascribable (by linguistic creatures) to linguistic creatures. The second group willingly accepts that language may

be instrumental in the acquisition of many concepts, even most concepts (Devitt & Sterelny, 1987). Pinker, one of the spokesmen for this position, also concedes in passing that for one to be able to speak about reality, one needs to conceive of reality in terms of a particular language's requirements for communicating contents through one's speech (thus, languages differ in whether they require marking number, person, aspect, or voice) (Pinker, 1989, p. 360). They conceive of the main relationship between language and thought in the contrary direction, however: it is thought that conforms to language. Language is just the means for expressing thought, which is psychologically and semantically previous to language and is independent of how it is expressed. They adhere to a purely communicative view of language.

There has been a sort of pendulum dynamic in linguistics over the past 30 years or so. The communicative approach became hegemonic in the cognitive sciences in the eighties, but in the last decade there has been a lot of new evidence in support of the constitutivist approach. In 2011, it looks as though constitutivism is becoming mainstream. During the heyday of the communicative view (Gauker, 1992), the question of whether and how language might influence thought fell into disrepute. It was confronted with many central postulates of the cognitivist-computational approach that became dominant a strong nativism, an understanding of psychological processes as logical inference, a language-like view of mental representation, a modularist view of cognitive architecture, and an assumption of semantic–conceptual isomorphy. It became too difficult to fit linguistic effects on cognition into this general view of cognition, to the point that Pinker (1994) included a chapter with a necrological note on Whorf.

It is a well-known phenomenon in psychology, however, that the way in which a situation is linguistically described greatly influences whether it is attended, remembered, and valued. The effects of language on verbal tasks have been proven beyond doubt by the work of many, including that done by: Carmichael, Hogan and Walter (1932) on the effect of the lexical labeling of ambiguous pictures on memory; Glucksberg and Weisberg (1966) on problem solving; Loftus and Palmer (1974) and Schooler and Engstler-Schooler (1991) on explicit memory; Tversky and Kahneman (1981) and Kahneman and Tversky (1982) on the "framing effect" in decision making; Wickens (1972) on the influence of language on short-term memory; Barrett (2007) on emotion perception; and Styles (1994) on voluntary attention. How an experience is linguistically coded deeply influences how it is cognitively processed, and problem solving, in particular, benefits from linguistic formulation. The very diversity and sophistication of verbal tasks bear witness to the important role language plays in cognition.

The same realization can come from social life in: the feminist concern with sexist language; the diplomat's care with choice of words; the publicity and propaganda efforts of public figures; and the general tendency to use euphemisms. It is easy to find many examples of such behaviors showing that how we describe a situation in linguistic terms has powerful, cognitive effects that may also determine our emotional reactions and valuations. The following anecdote provides an example: one woman said to another: "Thank goodness for the word 'muffin.' Otherwise, I'd be eating cake for breakfast every morning." Similar effects of language have even led to some words being considered taboo and hence forbidden at times in history: advanced democratic societies and learned associations included (Chamizo, 2009). For a

simple example: the British Sociological Association, in its "Guidelines for antisexist language" (April 2004), banned such words as "disseminate" and "seminal."

Of course, these examples amount to demonstrations of linguistic constitutivism. But they foster interest in the cognitive roles of language. After a period of disrepute, then, interest in the question of the relationship between language and thinking slowly returned, and it can be said that a cognitive view of language is currently fashionable, lively, and full of vitality. It is not easy to spot the stimulus, if there was one, of such intellectual changing of gears. Different disciplines have been involved: developmental, cultural, and comparative psychology; cognitive, linguistic, and evolutionary anthropology; cognitive linguistics; and philosophy of mind and language. Critical milestones in this resurgence were collective books such as: Gumperz and Levinson (1996) and Gentner and Goldin-Meadow (2000), which managed to put the discussion on firmer methodological ground and renewed theoretical approaches. The trend has given rise to a wealth of research in the last decade that deserves to be reviewed and synthesized, as we will try to do in this work. New approaches, new experimental paradigms, more stringent standards of evidence, and new ways to conceive of the relationship have been developed, so that it can be asserted that the debate has been moved to a new dimension.

Against the wealth of evidence that has been amassed in recent years, critics of the cognitive view of language tend to react in a paradoxical manner: they contend both that empirically demonstrated effects are trivial, and that they do not really support a cognitive role for language. If they were really trivial, then the shaping role of language would not even be up for discussion! But if they were really trivial, so much effort at experimental control to prove them would not have been required in the first place. In other words, a prerequisite to joining this debate is to show a proper respect for the empirical evidence, so painstakingly amassed. It required ingenuity in experimental design and the application of new statistical techniques, cross-cultural and comparative research, and long-term projects. If such a respect is achieved, the real issue, then, is one of superior explanation: which theory provides the best way to account for the empirical effects uncovered. It is then that the architecture of cognition occupies center stage: it is the source of explanatory concepts, basic processes, and levels of cognitive organization and mental representation. But there is not a single, universally agreed upon, cognitive architecture that can play a touchstone role. Thus, empirical evidence in this area—as in any other—can cast doubt on previous assumptions concerning cognitive architecture. Explanatory coherence requires a sort of cognitive equilibrium that pushes arguments both ways.

That coherence is why a proper account of the cognitive influence of language on human thinking also involves a discussion of cognitive architecture. In this regard, in the final chapter we will argue for a dual theory of thinking, as the best way to accommodate the evidence. This approach brings to the foreground the hypothesis that verbal minds are special because they are verbal, and that it is language that makes human cognition special: flexible, self-conscious, slow, and systematic. The "duality of mind" approach naturally accords with the idea that language has to do with what makes human minds dual in that way. Dual theories are committed to a view of "basic" cognition as independent of language, thus accounting for nonverbal thinking and for

language acquisition processes, while being compatible with the hypothesis that higher order thinking comes about with language. I will propose a version consistent with an embodied cognitive science (Calvo & Gomila, 2008). The logical geography of cognitive explanation that it opens up, despite it coming short of forming a unified paradigm (Gomila & Calvo, 2008), provides for an easier accommodation of language as an organizational force of human cognition. In this work, however, I'll avoid direct discussion of the debate on the ground level of cognition. In particular, I'll take for granted that speaking of mental representations does not prejudge the outcome of this debate, assuming that postcognitivist cognitive science will also need to honor offline and internal state-mediated processes. I will argue, however, that a "language of thought," as the representational medium that is to account for the systematicity and productivity of higher cognition, is not basic, but parasitic on natural language (Gomila, 2008, 2010a).

Of course, there is also a trend that focuses on differences among human groups, and finds in language a crucial element for such differences, in the tradition associated with Whorf. While we will also pay attention to the cognitive effects of speaking one language versus speaking another, our emphasis will be on the effects of "being verbal" versus not being verbal as the crucial aspect to take into account for a proper understanding of the "verbal mind" and its architecture. Linguistic differences, while important, seem not to be as divisive a factor among human minds as nineteenth-century Romanticism claimed, in reaction to the Enlightenment's hierarchical views of human differences and Western supremacy. However, a lot of work has also focused on this dimension. I will follow Gentner & Goldin-Meadow's way of labeling these two areas of research: "language as lens", for the effects of speaking one language vs speaking another, and "language as tool kit", for the shaping effects of language on thinking (Gentner & Goldin-Meadow, 2003). The former approach looks for cognitive differences due to linguistic differences; the latter looks for cognitive surpluses made possible by language.

Our project, then, can be seen as "the case for a role of language in human cognition." Exactly which role will be proposed as a conclusion to our review, and it will depend on the reviewed evidence. The main dialectical rival, though, will be those views of human cognition that oppose the very possibility of such an influence and that tend to conceive of language as a sort of peripheral of the mind, as an extra "module" that we happen to have, without any remarkable consequence for the way the rest of alleged mental modules work. In its most extreme version, this view claims it is impossible for language to play any cognitive role: a bold contention that we will have to discuss from the start.

Our goal in this monograph, then, is triple-pronged: (a) to analyze the different ways the relationship between language and cognition has been conceived, (b) to review the evidence amassed in recent years on this relationship, and (c) to conclude which of the multiple ways to conceive of the relationship best accounts for the facts. I can already advance that it is not going to be an extreme or a radical conception, but that it will articulate how language makes possible some outstanding properties of human cognition. In addition, given the interdisciplinarity of the project, special attention will also be paid to methodological issues: the type of data required in these matters and how we can improve what we already have available.

2 Clearing the Ground

Before considering the relationship between language and thought, a preliminary dialectical move is required: calling into question the "in principle" arguments that foreclose the very possibility of a cognitive conception of language. Those arguments are grounded in a view of the architecture of the mind that conceives of language as a set of extra modules, added to an already modular cognitive system, working in a language-like representational medium, the "language of thought" (Fodor, 1975, 1983; Shallice, 1988; Smith & Tsimpli, 1995). There are two main versions of such an approach. The first is the "rational nativism" of Fodor, which proposes an innate language of thought and a cognitive architecture of input/output modules, plus a holistic central system for which a cognitivist–computational approach fails (Fodor, 2001a, 2008). The second is the "massive modularity" approach, which shares the computational view of mental processes, but hopes to block the holism of the central, cognitive ones, by splitting them into a series of computationally tractable cognitive modules (Barkow, Cosmides & Tooby, 1990; Carruthers, 2006; Pinker, 1997; Samuels, 2000; Sperber, 1996), at the cost of relaxing the notion of "module" to mean little more than a domain-specific system. Both camps agree that the conceptual primitives of the system cannot be learnt, but while Fodor argues that most concepts are primitive and hence innate (Fodor, 1975; 2008), Pinker believes that the primitive set is smaller and that most concepts are structured out of this set of primitives (Pinker, 2007).

According to this general approach, language is conceived as a "peripheral" to the mind, from which it is "decouplable." Its evolutionary emergence—according to this approach—has had no effect whatsoever on the rest of our cognitive abilities. Such an approach is committed to the view that our thoughts would be the same even if we were not linguistic beings. Language is just a means of expressing—of communicating—these language-independent thoughts. In Fodor's words: "English inherits its semantics from the contents of the beliefs, desires, intentions and so forth that it's used to express, as per Grice and its followers. Or, if you prefer (as I think, on balance, I do), English has no semantics" (Fodor, 1998, p. 13). Or in Jackendoff's words: "The terms semantic structure and conceptual structure denote the same level of representation" (Jackendoff, 1983, p. 24). The semantics of language is dependent on the conceptual contents specified by the language of thought, which it simply reflects.

This communicative view of language, however, turns out to be too simplistic when attention is paid to the cognitive requirements and effects of communication. Several well-known phenomena, such as: basic categorization, concept acquisition through language, conversational implicatures, mutual knowledge in pragmatic understanding, intentional attributions, and perceptual and memory effects of verbal

descriptions, cast doubt on that assumption of conceptual-semantic isomorphy. The difficulties are made clearer when the question of the interface between thinking and language is raised. While expressions in natural languages depend on context to convey a proposition, and therefore not perfectly compositional, language of thought expressions are supposed to be perfectly compositional and context-free. The recognition of this pragmatic complexity creates difficulties for a language of thought view: it casts doubt on the main argument for the existence of a linguistic vehicle of internal representation, the supposed isomorphy between natural language sentences and propositional contents.

Such assumptions about cognitive architecture are then used in the service of arguments that seemingly make it "impossible" for language to have a shaping role in human thinking by means of a series of arguments that rely on these general assumptions. In this chapter, we will first call into question the communicative-expressive view of language and the idea of a language of thought as the vehicle for the contents for our thoughts. In the second section, we will review and discuss an anthological presentation of a number of arguments against the idea of influence of language on thought (Pinker, 1994). In the third one, we will discuss the massive modularity view of cognitive architecture. After this is done, a proper assessment of empirical evidence will be possible.

2.1   Against Language as a Peripheral to the Mind

A view in which language is a peripheral of the mind is one that restricts language to a purely communicative dimension, detached from the cognitive architecture of the mind. It holds an exclusively communicative view of language, as a set of mental modules that convert sound patterns into propositional contents, and the propositional contents of thought—the result of language-independent cognitive processes—into sound patterns. Linguistic modules, according to this generic view, are input–output modules, a sort of "peripherals" to the mind, decoupled from the workings of the latter. Thinking goes on quite independently of the linguistic processes—which are thought to be cognitively inert beyond their proper output—constituting a conceptual–pragmatic system. Fodor's proposal, in fact, views language an extra component of the mind, a set of modules that, in fact, expands its capabilities, but which does not modify the architecture of the system. Language is a group of components dedicated to delivering and parsing expressions of natural language (Chomsky, 1988; Levelt, 1989; Pinker, 1994), which may or may not get activated without further effects on other mental processes. In its turn, the massive modularity approach goes further by also deeming thinking to be carried out modularly.

This peripheral view of language was mainstream in cognitive psychology during the heyday of cognitivism: the doctrine that mental processes are computational processes that operate on propositional representations from a "language of thought," a symbolic, language-like medium of representation. Such a representational medium was thought to be previous to and independent of language, and is, in fact, the way

to ground linguistic meaning: lexical terms get their meanings by getting associated with the corresponding mental symbol or concept. Concepts come first; language comes later and profits from this basic cognitive architecture. Given the coupling of the semantics of language to concepts, and the further belief that human conceptual structure has a universal, innate, common core across cultural differences it follows that semantic structure should also have a common universal core across cultures.

Is there any reason to accept such a view? There are two main arguments for this "language of thought" approach to thinking. The first is grounded in the isomorphy of the representational vehicles of thoughts with natural language: natural languages are systematic and productive, and these properties are due to the compositional semantics of language. Therefore, a language of thought, which also is thought to exhibit systematicity and compositionality, is supposed to require a corresponding compositional conceptual structure (Fodor, 1975, 1987, 2008). However, when the contextual dependency of natural language is taken into account (as exemplified by the general indexicality, polysemy, or ambiguity of sentences, among many other phenomena, all of which require a context to express a proposition), the argument becomes problematic because they show that the systematicity and productivity of natural language are not best explained by appeal to compositional semantics. So why should it be the case regarding the language of thought (Vicente & Martínez-Manrique, 2005)? Although Fodor himself has eventually acknowledged that natural language does not have compositional semantics (Fodor, 2001b), he doesn't seem to realize the further consequences of this fact with respect to his hypothesis of the language of thought. He still sticks to the logicist idea of a language of thought as the canonical way to express propositional contents, but this is an idea related to Fregean semantics, rather than to cognitive architecture. As we'll be discussing with respect to Pinker's argument, there is no contradiction in the idea of a "psychopragmatics": in the possibility of the context-dependency of mental representations (not to be confused with mental contents).

The second argument is that concept learning is impossible (Fodor, 1975, 1998, 2008), so the nonstructured conceptual units of the language of thought are considered to be innate. Given that concept learning is understood exclusively as hypothesis formation and testing, a large original conceptual repertoire is supposed to be available from the start to be able to form meaningful hypotheses in the first place. However, the well-established fact that the concepts one "activates" correspond to the meanings of one's language, entails that the language of thought will have to include all the possible "simple" concepts expressible in natural language meanings. Given that the criterion of "simplicity" is lexical, i.e., a concept is simple if it is lexicalized, if there is a simple word to express it, Fodor is committed to the idea that the language of thought will have to include as many concepts as there are different morphemes in any possible natural language (Fodor, 1998, p. 42, ft. 2). *A fortiori*, he is committed to the idea that the language one speaks is the best guide to which concepts, from all the innate possibilities, get activated: a view not that far from Whorf, himself, in the end.

In summary, then, Fodor's arguments for a language of thought are in trouble, and therefore are not enough to delegitimize the possibility that language plays

a central role in shaping one's conceptual repertoire. In fact, the program is losing momentum in the cognitive sciences (Gomila, 2010a). Notice, in addition, that the very idea of a language of thought, distinct from natural language, does not entail a priority of thought over language, but for the logical argument that concepts cannot be learned. But if concepts are acquired through language use, then the language of thought could be conceived as derived from language, rather than the other way around. What's assumed is the communicative conception of language, which sees language as expression of thought. Fodor's language of thought, therefore, is just one way to develop this general, communicative, approach: not the only way. But the general view is also problematic. In particular, it is not obvious that every linguistic proference is preceded by a communicative intention that then transmits its content to the proference. Some linguistic preferences are automatic or institutionalized; in some cases, we don't know exactly what we want to say until we start speaking. We may also realize what we wanted to say after we spoke. In fact, most of speech is not intentionally prepared, but is rather nondeliberate and comes out of improvisation in context.

These intuitive cases cast doubt on a very general picture of linguistic communication as the means by which speakers convey the contents of their thoughts to their audiences. This is probably the deep assumption that drives the resistance to accepting the idea that language may play a cognitive role (Gauker, 1992). In the standard, Gricean articulation of this picture, one is supposed to start with a propositional content that is somehow linguistically coded to be transmitted. On the basis of those words, the audience is supposed to be able to realize that the speaker had the intention to transmit that propositional content. That is made possible by a common understanding of the linguistic code plus an intentional inference. But this is certainly a convoluted way of proceeding: the audience might just be in the business of grasping the meaning of the linguistic expression, rather than trying to get at thought content that the speaker is supposed to convey. Additionally, the speaker might be said to express a meaning by her choice of words, rather than expecting the audience to recognize her intention on the basis of understanding the meaning of the words said.

Grice utilizes this convoluted approach: to explain meaning in terms of intention and intention recognition (Grice, 1957, 1975). Grice's intentionalistic theory may be useful for rationally reconstructing meaning, but it over intellectualizes speaking. In practice, speaking is more similar to piano playing or skiing than to propositional problem solving: complex sequences of rule following intentional movements get activated in context, through practice, quite apart from strategic calculations or means-ends reasoning. Linguistic understanding is guided by contextual considerations, instead of intentional attributions (or what was meant by the speaker), with regard to scope of quantifiers, demonstrative reference, and proper names of reference. Critiques of Grice's theory point out that thought contents are acquired and explicated through mastering the use of words, which undermines the priority of thought over language. In particular, as it has been argued by social externalism about meaning (Burge, 1979), the contents of the thoughts depend on the linguistic practices of the linguistic community of the thinkers. Hence, thought content cannot be logically and psychologically prior to linguistic meanings, as the communicative view of language contends.

It is clear, then, that if one takes for granted such a view of linguistic communication, there is no room available to attribute a cognitive role to language. Unfortunately for such a view, as already remarked, there is no independent characterization of such thoughts, apart from their linguistic expression. Some other forms of thinking—such as visual or imagistic—are not equally shareable via communication, but they also do not easily fit into the language of thought representational vehicle either. Again, a more parsimonious explanation of the intimate relationship between language and propositional thought is that the latter somehow depends upon the former: the meaningfulness of thought is better understandable in terms of the meaningfulness of the words said.

2.2 Resisting "in Principle" Arguments Against the Influence of Language on Thought

In Chapter 3 of "The Language Instinct," (Pinker, 1994), Stephen Pinker brought together all of the arguments that have been put forward against the idea of the cognitive role of language (Fodor, 1975). Interestingly, his issue is with the idea that natural language is the medium of thought, which is only one of the ways to articulate a cognitive conception of language. It is not crystal clear that Whorf fully subscribed to the idea—although some textual evidence suggests that he did—nor is it clear that it is a necessary ingredient of linguistic relativism. If Pinker's arguments can be shown to be weak, despite being aimed at such an extreme version of the cognitive approach to language, the cognitive approach to language becomes a legitimate proposal. This is especially important, given that his arguments have been rehearsed later on—in one way or another—by other opponents to a cognitive role for language. Recently, in "The Stuff of Thought," Pinker (2007) again criticizes Whorfian relativism, but this time his target is solely linguistic determinism, and his tone is much less dismissive. Pinker claims the recent evidence (which we will be reviewing in the next two chapters) comes short of proving that the strongest version of linguistic determinism is true; he is not interested in distinguishing weaker versions, or other ways language has been shown to influence thinking. The reason, I submit, is because he is in the grip of the "language as peripheral," modularistic view, that we have just outlined. Once the shortcomings of such a view are made apparent, the ground is clear for a fair assessment of the evidence.

One of the central arguments against a cognitive conception of language concerns the possibility of nonlinguistic thinkers. Animals, as well as prelinguistic infants or nonlinguistic deaf people, can think, it is said; but they lack a natural language. Therefore, language is not required for thought. All that is required is a language of thought in which to think.

There are several aspects of this idea that deserve comment. On the one hand, the conclusion is a nonsequitur, unless it can be established that the thinking processes of such nonlinguistic creatures exhibit the same structural features of human propositional thinking. In other words: is it true that such creatures' thinking processes exhibit the same sort of systematicity and productivity as our own thinking processes are

taken to exhibit? The problem is that all the examples of systematicy and productivity in thought turn out to be linguistic examples (Fodor, 1987). On the other hand, content attribution to nonverbal cognitive systems has been shown to be underdetermined, when it goes beyond imagistic, perceptually based contents (Bermúdez, 2003). Hence, it is simpler to conclude that these structural properties of human thinking are inherited from the recursivity and compositionality of language, which modify the basic cognitive architecture to make it conceptually discrete and propositionally structured. This distinction between two kinds of thinking is also coherent with dual theories of thinking, even those that apply to linguistic beings. This is not to say—as already remarked—that natural language is the representational medium of thought. It may well be the case that our systematic and productive language of thought, instead of being innate, is somehow derived from language acquisition, which thus transforms a simpler, iconic, or schematic representational ability.

This point, that humans thoughts are structurally different from non-verbal being's thoughts, is all that is needed to resist the battery of intuitive arguments Pinker enlists against the idea that we think in natural language:

a. the common experience of realizing that what we said doesn't express properly what we wanted to say;
b. the fact that we remember the gist of an idea, not the literal words with which we heard it expressed;
c. the possibility of new terms for new ideas;
d. the fact that language is learned; and
e. the fact that we can translate from one language to another.

All of the examples call into question the strict view that natural language is the medium of thinking, because all of them point out the possibility of distinguishing between the language level and the conceptual level: in expression and understanding, in lexical innovation, and in acquisition and translation. Therefore, Pinker concludes, thinking cannot be language-dependent. However, the correct conclusion that follows from these examples is that all thinking cannot be "completely" language-dependent, but neither case is enough to reject a partial influence. On the other hand, it is not a simple task to single out a type of thinking independently from language, as the arguments take for granted. In fact, it is also a common experience not to have a clear idea of what one wants to express before starting to express it: speaking helps clarify our thoughts. On the other hand, we'll review evidence on bilinguals holding language-relative semantics, rather than a unified conceptual level of representation: it could just be the case that two linguistically grounded ways of mental representation can be shifted and compared. The same idea applies to translation. Additionally, the fact that language is learned does not exclude the possibility that—once learned—it can facilitate thinking processes. The possibility of the development of new terms does not prove that conceptualization has to be previous to labeling for everybody; on the contrary, novelty spreads in the linguistic community by getting the new concept from the linguistic meaning.

Again, it is the further assumption that language solely expresses thought that biases Pinker's discussion. In other words, all of these arguments do not prove