The possibility of linguistic influence on thought

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Abstract

We address four obstacles that stand in the way for a productive investigation into the possible influence of language on thinking. The first is the claim that it is impossible to disentangle language from thought, so the issue concerning "influence" is senseless. The second is the argument that it is impossible to disentangle language from culture in general, and from social interaction in particular, so it is impossible to attribute differences in the thought patterns of the members of different cultures to language per se. The third objection is that methodological and empirical problems defeat all but the most "trivial" version of the thesis: that language affects thinking by giving new information. The fourth is the assumption that since language can potentially influence thought from "not at all" to "completely", the possible forms of linguistic influence can be arranged on a cline, and competing theories can be seen as debating the actual position on this cline.

We present counter-arguments to these claims, and show that the first three do not constitute in-principle objections against the validity of the project of investigating linguistic influence on thought, and the last one is not the best way to frame the empirical challenge at hand. Thus, while we do not argue for any specific type of linguistic influence on thought, we claim that it is possible, and thereby intend to clear the way for further investigations into the topic.

Keywords: consciousness, culture, discourse, language, relativity, thought, Whorf

1. Introduction

The question if and how language affects thinking goes back to the dawn of contemplative thought, as reflected in the *Vākyapadīya* of Bhartrihari. Since thought, or consciousness, and language are intimately connected, some form of close relationship between the two has often been assumed. The recurrent debate, with oscillating tendencies, has been whether it is mostly thought that influences language, or vice versa (Zlatev 2008a). The thesis that language has a non-negligible effect on thinking, combined with the claim that languages are non-trivially different, has been known as "the Sapir-Whorf hypothesis", a label introduced by Carroll (1956) in the preface to the well-known collection of papers by Benjamin Lee Whorf, *Language, thought and reality*. After a prolonged period of scientific mistrust, what Whorf (1956: 213) called *the principle of linguistic relativity* has been resurrected, and appears to find a substantial degree of support in contemporary research (Lucy 1992, 1997; Pedersen 1995; Gumperz & Levinson 1996; Slobin 1996, Levinson 2003; Casasanto 2008).

At the same time, the extent to which language underlines – our preferred general term, avoiding strong terms such as 'determine', 'constrain', 'enable' – thought, especially when combined with the thesis of linguistic relativity, continues to be highly controversial, and every now and then provokes sweeping criticisms, describing the enterprise as fatally flawed or even nonsensical. As stated by Ellis (1993: 55): "[T]he Whorf hypothesis seems to bring out the worst in those who discuss it".

In this article, we consider the following in-principle objections that have been levelled at the project:

(1) The question of language influencing thought presupposes that the two can be distinguished, which is impossible since thought cannot exist independently of language.

(2) It is impossible to disentangle language from culture in general, and from social interaction in particular, so it impossible to attribute differences in the thought patterns of the members of different cultural communities to the structures of language.

(3) The strong thesis of linguistic influence is methodologically circular, or else false, while the weak thesis is trivial.

In each of these cases, we argue that the force of the objection has been overstated and that the critique is misguided, or at least can be avoided by a more careful approach.

A fourth issue is not so much an objection as something that has been presented in the way of a practical solution to the dilemma: since language can potentially influence thought from "not at all" to "completely", theoretical proposals can be arranged on a cline from "weak" to "strong", and the only issue is to determine the place of linguistic influence on the cline, presumably toward the weak end. In contrast, we argue that theoretical proposals on linguistic influence differ underlined qualitatively, at least according to two independent dimensions.

Our aim is thus to show that much of the dismissive critique against linguistic influence and linguistic relativity is unsatisfactory, and thereby to pave the way for further research. While we often

refer to relevant empirical findings, our aim is not primarily empirical, that is: to answer how exactly language influences thought, but as the title states: to open up for research into various possibilities.

2. It is impossible to disentangle thought from language (Obstacle 1)

A classical objection against the possibility of cogently posing the question of linguistic influence on thought, or even "mind", is to reject that the latter could even exist in the absence of language. Philosophers, at least since Humboldt (who wrote: "…the idea is born, becomes an object and returns, perceived anew as such, into the subjective mind. For this, language is inevitable", quoted and translated by Zinken 2008, fn. 10), have often been inclined to such a radical position, implying that without language we would be thought-less, or even mindless. While this view still has its champions among philosophers (Dennett 1991; Macphail 1998), it is harder to find it represented in psychology or the language sciences. Still, researchers following Humberto Maturana (e.g. Maturana 1988), who placed an especially heavy emphasis on the role of language (or languaging) for the "construction of reality", are prone to adopting it:

> An existing impasse in the study of this relationship [i.e. between language and mind] cannot be overcome as long as the problem itself is not reformulated to rid it of the intrinsically dualistic assumption that there is, in fact, a phenomenon called 'language' that is ontologically independent of the phenomenon called 'mind.' […] mind cannot be understood without and outside of language. (Kravchenko 2011: 355)

It is possible to agree with such claims in some respects, e.g. that treating 'language' and 'thought' as fundamentally different "modules" (or "variables" in an experiment) is mistaken, but nevertheless maintain that language and thought should not be equated, since doing so would short-circuit the crucial question concerning their interrelation (cf. Vygotsky 1962).

A convenient definition of language, following Zlatev (2007, 2008b), is that of *a predominantly conventional semiotic (i.e. symbolic) system for communication and thought*. This comprises the point that languages are essentially "socially shared symbolic systems" (Nelson & Shaw 2002), which have evolved over millennia and develop in children over years, to serve two main functions: for sharing experiences and for thinking. Indeed, this perspective implies that thought is not impossible (un-thinkable) without language and that it is indeed possible to treat the two "phenomena" as distinct, e.g.: "Language invades our thinking because languages are good to think with" (Bowerman & Levinson 2001: 584).

Similarly, thought can be defined independently of language as *mediated cognition*. Thus, we may avoid an over-general concept of that would equate thought with all forms of cognition, including (conscious and non-conscious) process of perception, movement, procedural memory and implicit anticipation. By "mediated", we mean cognition that is not fully immersed in the practical concerns of

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the here-and-now, but rather employs various structures and processes of conscious awareness such as mental imagery, episodic memories or explicit anticipations (also known as "foresight") to focus on intentional objects that are not perceptually present.

Phenomenological analysis (e.g. following Husserl 1989; Merleau-Ponty 1962), spontaneous (naïve) introspection, and psychological research all show that thought (understood as mediated cognition) is possible without language. For example, monkeys are capable of making decisions on the basis of judgments of whether a given stimulus is familiar or not, which is difficult to explain without episodic memory (Griffin & Speck 2004). Chimpanzees and orangutans are apparently capable of planning for the (near) future (Osvath & Osvath 2008), and at least chimpanzees and bonobos display behaviors such as consolation and tactical deception which require one to place oneself "in the shoes" of someone else: *cognitive empathy* (Preston & de Waal 2002). On the other hand, there are forms of thinking that are clearly (or at least arguably) linguistically mediated: internal speech, complex planning, story-telling and an autobiographic self-concept (Nelson 1996). Few would doubt that language plays a constitutive role in such "linguistic thought", though many questions remain concerning the extent to which this is so, and how exactly this happens (Bowerman & Levinson 2001).

Given that we have clear examples of what Whorf (1956) called "linguistic thinking", a precursor to what Slobin (1996) later dubbed "thinking-for-speaking", and forms of thought that can occur <u>without</u> language, the question of linguistic influence can be clearly formulated: to what extent do the effects of language-induced "patterns", categorizations, distinctions and preferences permeate such non-linguistic thought, and possibly cognition in general?

Could it then be so that even if thought and language can be in principle (ontologically) distinguished, this is not possible methodologically – for "languaging" creatures such as us (Kravchenko 2011)? The methodological issue presents itself clearly in the context of linguistic relativity which, similar to Einstein's principle of relativity, presupposes a non-relative "reality" to be able to establish the differences between "measurements" or perspectives in the first place. This reality need not, as the invariance of light in Einstein's theory, be understood as something that is strictly mind-independent, but rather as the consciously accessible ("given to us", as phenomenologists say) life-world. Many first-time readers of the supposed "relativist" Whorf are surprised to find multiple references to such universal (for human beings) experience.

> To compare ways in which different languages differently 'segment' the same situation of experience, it is desirable to analyze or 'segment' the experience first in a way independent of any language or linguistic stock, a way which will be the same for all observers. (Whorf 1956: 162)

> In describing differences between [languages] … we must have a way of describing phenomena by non-linguistic standards and by terms that refer to experience as it must be

to all human beings, irrespective of their languages or philosophies. (Whorf & Trager 1938: 6)

Even if some other passages of Whorf can be read as proposing that thought is fully dependent on language (Brown 1976), quotations such as these clearly show that Whorf accepted the possibility of achieving a pre-linguistic mode of representation that was yet unaffected by language, and to compare languages with respect to the degrees to which they departed from such experience. Indeed, Whorf even regarded this as a methodological necessity. This position is accepted in all current empirical research in linguistic relativity, such as the active field of *motion event typology* (Talmy 2000; Slobin 2006) where cross-linguistic differences in motion expressions are catalogued and investigated for correlations with non-linguistic categorization. Such studies presuppose prior (eidetic) analyses of the domain itself, i.e. analyses that necessitate the possibility to classify experience "independent of any language or linguistic stock" (see above). In previous work, we have proposed exactly such an analysis of motion on the basis of three binary parameters (TRANSLOCATIVE, BOUNDED, CAUSED), distinguishing between eight kinds of motion situations (Zlatev, Blomberg & David 2010).

To summarize, defining language and thought in a way that is both true to the phenomena, and allowing them to be both distinguished and co-related, is a first prerequisite for further investigations into their relationship. Occasional claims that such distinction is ontologically or methodologically impossible seem to derive from strong theoretical biases rather than from conceptual necessity or empirical evidence.

3.   Language is part and parcel of culture and discourse (Obstacle 2)

Somewhat similarly to the critique from the previous section Björk (2008) argues that current studies in linguistic relativity, often referred to as "neo-Whorfian", adopt a simplified and static view of language:

> The neo-Whorfian studies investigate the role of linguistic diversity in the language-and-thought relation, and language is thus explored primarily as 'particular languages', such as English, Tzeltal, Dutch or Yucatec Maya. The particular languages are viewed as demarcated, cognitively represented systems, in which linguistic meaning is inherent. That is, linguistic meaning is given by the system, prior to any particular situation of language use. The term 'language', that sometimes comes into the discussion about relativity as opposed to 'languages', seems to refer to general aspects of having 'a language', a code. When communication is mentioned, this too seems to be a general aspect of using 'a language'. (Björk 2008: 125-6)

Of course, there is more to language than using a particular 'code': actual, situated language use, which is also tightly intertwined with socio-cultural practices. For example, a study of linguistic

effects on spatial cognition would be simplistic if it only considered "spatial expressions" like motion verbs, and relational terms like prepositions. These should rather be seen as elements in social practices, or "language games" (Wittgenstein 1953), inseparable from the activities in which they participate in, like asking for directions and specifying the location of objects, events, places and people. In other words, language needs to be understood as *socio-culturally situated*: "Linguistic meaning is inextricable from the social practices (language games), in which language is used. The mastery of a language is embedded in, and in important ways formative of, one's cultural background." (Zlatev 1997: 5)

Consequently, it is only actual linguistic practices that can have an effect on thought. To claim that linguistic structures – as a distinct and separate "variable" from culture – can function as causes of cognitive differences in the speakers of different languages, is to evoke abstract, and ontologically suspicious, entities as causes.

As before, we can in part agree with such a critique, but believe that it both exaggerates the problem, and underestimates the methodological sophistication of the neo-Whorfians. Conceptually, the notion of language should indeed include, and possibly even privilege situationally and culturally embedded discourse. But this does not mean that the ontology of language should be restricted to such discourse, and thereby exclude "particular languages", such as English, Tzeltal, Dutch, or the general notion of having a language, associated with particular universal properties (such as *displaced reference* and *predication*). These three aspects: situated discourse, particular language and language in general actually appear as distinct levels of language in the meta-linguistic framework of Coseriu (1985), as shown in his well-known matrix of levels and perspectives, displayed in Table 1. In this explicitly pluralistic and non-reductionist linguistic ontology (cf. Zlatev 2011), Coseriu not only acknowledges the existence of universal, historical and situated levels of language (vertically), but of different perspectives on each of these: language as creative process (*energeia*), as consciousness (*dynamis*) and as product (*ergon*). All these are to some degree independent, but complementary and interacting aspects of language. In line with Björk (2008), we can agree that the most "real" or actual aspect of language is that of discourse, since it is both most "alive", unfolding in the communication between speakers and hearers, and most contextualized. At the same time, discourse will be constrained by the grammatical and semantic norms of the particular language, as well as of universal pragmatics, such as *the cooperative principle* (Grice 1975). While the latter are not capable of determining actual speech (*energeia*), and hence the thought processes dependent on it, the "historical" level clearly has the potential to exercise an influence.

Table 1. Coseriu's matrix, highlighting *Discourse* as the privileged, but non-exclusive aspect of language (based on Coseriu 1985: xxix)

		Perspectives	
Levels	Activity *Energeia*	Knowledge *Dynamis*	Product *Ergon*
Universal	Speaking in general	Elocutional knowledge	Totality of utterances
Historical	Concrete particular language	Idiomatic knowledge	Abstracted particular language
Situated	*Discourse*	Expressive knowledge	Text

As for other aspects of culture, such as shared beliefs and attitudes, Whorf and his predecessors Boas and Sapir, always considered the possibility of these interacting with "grammatical patterns as interpretations of experience" (Whorf 1956: 137) in a reciprocal manner. It has, however, been more difficult to provide evidence for a direct causal link from such beliefs to any aspect of "habitual thought" that could be experimentally attested. Everett's (2005) proposal that the high value that the Pirahã attach to "direct experience" is the main reason for their language lacking numerals and many aspects of grammatical complexity such as hierarchical structure, is a case to the point: while not lacking plausibility, the claim appears to be impossible to support empirically. A stronger case can be made that it is the "habitual patterns" of language – possibly reflecting some particular aspect of the respective culture – that exercise such effects. As Levinson (2005: 638) writes:

> Everett […] prefers an account in terms of the causal efficacy of culture, but no one interested in language diversity would make a simple dichotomy between language and culture: a language of course is a crucial part of a culture and is adapted to the rest of it. […] The question neo-Whorfians are interested in is how culture gest into the head, so to speak, and here language appears to play a crucial role: it is learnt far earlier than most aspects of the culture, is the most highly practiced set of cultural skills, and is a representational system that is at once public and private, cultural and mental.

Methodologically, studies have been designed in a way to attempt to tease apart the respective roles of language and other aspects of culture. This is done by including speakers from languages where certain particular linguistic structures are similar, while there are many other cultural differences, e.g. Yucatec Maya and Japanese (Lucy 1992). Indeed, in this study the participants of the two groups behaved similarly with respect to object categorization, and differently from e.g. speakers

of English, and this could be plausibly attributed to the extensive use of nominal classifiers in both Yucatec Maya and Japanese.

Conversely, one may test speakers from populations that are very similar culturally, and even linguistically – apart from one particularly relevant variable. This was the case in Pedersen's (1995) study comparing speakers of Tamil who preferentially used a "relative" (left-right-front-back) reference frame for locating objects in space, with another group of Tamil speakers who knew this system, but preferred to use an "absolute" (north-south-east-west) reference frame. In other words, what one group would tend to phrase as 'the glass is to the left of the plate', would be preferentially expressed in terms of cardinal directions, e.g. 'the glass is to the West of the plate', by the other. In experiments of the type that have since then been used for a number of languages (Levinson 2003), it was shown that the two groups tended to solve non-linguistic spatial tasks in ways that corresponded to their linguistic preferences. These results are important since as Pedersen (1995: 40) writes, "this difference in habitual language use is not deeply rooted in the grammatical system", i.e. it was not a matter of obligatory or "abstract" properties of two substantially different languages, but was rather a matter of preferences of two very closely related dialects. Still these were sufficient to give rise to differences in solving (apparently) non-linguistic tasks.

Finally, the fact that there is a debate concerning the respective causal roles of language structures (patterns) and non-linguistic cultural patterns is indicative enough that the distinction is not only conceptually possible, but empirically useful. Ultimately, empirical evidence should be able to resolve some particular debates on this matter. For example, Ji, Nisbett and Zhang (2005) reported differences in styles of visual attention ("analytic" vs. "holistic") between East-Asian and American participants, and attributed these to non-linguistic cultural differences: individualist vs. collectivist values, respectively. Durst-Andersen (2010) disagrees, and rather places languages as diverse as Chinese, Russian and Spanish in the (super)type of "reality-oriented" languages, on the basis of common structural features such grammatical aspect. This implies that Russian and Spanish speakers will behave like the Chinese, rather than the Americans in visual attention tasks, which is something that Durst-Andersen (2010) explicitly predicts. To the extent that this prediction holds, the Whorfian interpretation would be supported; if not, the proposal for some degree of "cultural relativity" would retain its credibility.[1]

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[1] At least provisionally to further testing… What makes Nisbett's thesis of cultural relativity more testable than Everett's thesis, mentioned earlier, is precisely that it does not concern one single culture but many, sharing a particular feature ("collectivity"). It is this that allows formulating contrastive predictions.

4. Interesting but unsupported, or else trivial (Obstacle 3)

In an influential review article, Bloom and Kiel (2001) make the distinction between two different kinds of claims/theories of linguistic influence on thought, referring to the first as "interesting" and the second as "trivial":

> […] we do want to insist on the distinction between the interesting claim that language induces theory change because of *linguistic structure* (e.g. the particular words it has) versus the trivial claim that language induces theory change because of the information it conveys. There is a big difference, after all, between arguing that children's developing theory of, say, the social world is shaped by the specific lexical division that their languages make (interesting) versus arguing that children's developing theory of the social world is shaped by what they hear people talking about (trivial). (Bloom & Kiel 2001: 362, original emphasis)

This passage merits some explanation. The authors are here adopting a so-called *theory theory* perspective on cognitive development, according to which we build up (implicit) theories about the world, including "theories" about other human beings and ourselves (Gopnik & Meltzoff 1997). Hence, any act of cognition that gives us new knowledge can be seen as "theory change". Now, it can be very reasonably objected that cognition, and even thought (cf. Section 2) involves processes such as episodic memory, foresight and imagery that are very hard-pressed into the frame of "theorizing". But let us pass this objection, since the distinction that Bloom and Kiel (2001) evoke should remain even if we substitute "induces theory change" with "influences thought" in the quotation above.

So what is meant by "linguistic structure" and why should its possible influence on thought be "interesting"? At first look, one may think that this refers to a distinction made already by Whorf (1956): the more limited effects of lexical items, like calling a barrel with dangerous fumes *empty*, and the much more pervasive effect of "grammatical patterns" (i.e. morphology and syntax), which are used ubiquitously, and under less conscious control. However, Bloom and Kiel (2001) specifically refer to "the particular words" a language has in exemplifying what they mean by "structure", and in line with much of modern linguistics, reject "a simple dichotomy between lexical and grammatical elements" (Croft 2003: 226).

It appears that the distinction that the authors are aiming at corresponds to the distinction between the "historical" and the "situated" levels of language discussed in the previous section (cf. Table 1). However, while we argued that *discourse*, or actual situated language use is what has the potential to influence thought, Bloom and Kiel (2001) argue, or rather assume since no real argument is presented, that only system-level linguistic differences are worthy of being considered as (interesting) causes of cognitive differences. On the face of it, this is puzzling, since linguistic structures are always realized in discourse ("talk"), and talk is never un-structured.

Why should the effects on children's cognitive development of "what they hear people talking about" (cf. quote above) be considered trivial? Apparently, since discourse and the knowledge it yields are so pervasive: nearly everything that we learn <u>without</u> direct perceptual experience is linguistically mediated (and more recently: pictorially mediated as well): dinosaurs, angels, Mount Everest, quarks, genes etc. For example, the word *quark* denotes a certain class of objects hypothesized by modern physics. By means of the informational content of the term we delineate, if not establish, the concept of the basic constituent of matter. Still, Bloom and Kiel (2001) discount such cognitive effects, since words like *quark* apparently do not constitute a systematic aspect of language.

However, the distinction "information vs. structure" is problematic. As well-known, since at least Saussure (1916), the meaning of words in not exhausted by their referential ("informational") content, but also involves the web of relations to other words. To take the previous example, the words *quark*, *basic*, *constituent* and *matter* can be seen as systematically interrelated: their meanings are to some degree inter-defined, as well as in relation to the "language game" of modern science that they participate in. To take another example: is it not a <u>structural</u> aspect of English that *dinosaurs* are (considered to be) *reptiles*, while *elephants* are *mammals*, and so are *dolphins*, though the latter were thought for a long time to be *fish* (and still are in many other languages/cultures)?

Further, if we consider the example of social cognition, used by Bloom and Kiel (2001) in the quotation above, there is considerable evidence that language contributes strongly to children's understanding of the concept of belief (and hence of "false beliefs"). Indeed, at least two undeniably structural features of language have been argued to contribute to this: (a) mental predicates such as *think*, *believe*, *know…* and (b) sentential complement constructions such as *say that* (de Villiers & Pyers 1997; Astington & Jenkins 1999). On the other hand, others have argued that such features are not the only, and possibly not the primary factors that allow language acquisition to influence social cognition. Tomasello (1999: 173) suggests that typical features of linguistic interaction such as disagreements, repairs and explanations constitute (at least) "three kinds of discourse, each of which requires [children] to take the perspective of another person" (cf. Lohmann & Tomasello 2003). Finally, Hutto (2008) presents a book-length argument that the crucial aspect of language that leads to proficiency in "folk psychology" are all the stories (narratives) that children are told. In sum, both structural and informational aspects of language are likely to contribute to developing concepts such as wish, intention, reason, belief, and even more so for interrelating them into a "folk psychological narrative". Since the distinction between "talk" and "structure" (and hence of their possible effects on thought) is highly dubious, there is nothing obviously trivial about the influence of the former.

Let us consider the other prong of the dilemma, that Bloom and Kiel (2001) set up for linguistic relativity ("interesting, but wrong"). They first point out a standard methodological objection: that Whorf and many who have gone in his footsteps use linguistic differences as the sole evidence for cognitive differences, which is circular. In fact, Whorf was aware of this problem, and pointed out the need for future studies to corroborate his conjectures (Whorf 1956: 162). One can say that

documenting linguistic diversity is a necessary preliminary step to formulating hypotheses of linguistic influence. We may employ Popper's (1935) distinction between "context of discovery" and "context of justification", and regard Whorf as engaged in the first, while modern neo-Whorfians with psychological training clearly aim for the latter:

> A full theory of the relation of language diversity to thought necessarily involves at least *three logical components*. It must distinguish between language and thought in some principled way. It must elaborate the actual mechanisms or manner of influence. And it must indicate to what extent other contextual factors affect the operation of these mechanisms. (Lucy 1997: 306, original emphasis)

Still, Bloom and Kiel (2001) find faults even with the most convincing studies that aspire to follow such a procedure. For example, Lucy's studies in object categorization on the basis of shape vs. material in speakers of different languages did not show differences in 7-year old children; differences in spatial reasoning such as those of Pederson (1995) can be due to ecological, rather than linguistic differences; showing that language is essential for numerical reasoning (Dehaene 1997) may also turn out as trivial: "if the task itself requires that the person use inner speech, for instance, than any effect of language on performance is considerably less interesting" (Bloom and Kiel: 358). Thus, the authors reach the conclusion that has been hinted since the onset of their review: "taken together… the available research does not challenge the mainstream view (ibid: 364)" that language is a module quite separate from thinking, or even more plainly: "the language you speak does not affect how you think" (ibid: 351)

We have spent considerable time on one particular paper, albeit as mentioned an influential one, not so much because we disagree with the factual conclusions of the authors, but because we find its style of reasoning quite typical for "mainstream" cognitive science (e.g. Pinker 1994), where notions of (innate) "modules", "information processing" and "mental representations" are axiomatic. Since there is no <u>logical</u> possibility for language to influence thought (in any "interesting" way) given such a conceptual apparatus, the strategy is first to split the claim of linguistic influence into "discourse-based" and "structure-based". The former is then deflated as a truism, while the second is demolished methodologically – and in the worst case, reduced to the trivial variety. Ironically, one could suggest that cognitive scientists like Bloom, Kiel and Pinker are so influenced by the language-based conceptual framework they work with, that their conclusions are (almost) predetermined.

Our main counter-objection has been that the distinction between "information" and "structure" corresponds to the distinction between situated discourse ("situated") and language system ("historical") in Coseriu's framework, discussed in Section 3. Since the two aspects of language presuppose one another, they cannot be opposed as "trivial" vs. "interesting". Admittedly, different kinds of (possible) linguistic influence on thought need to be distinguished, and some may be more

pervasive than others. Thinking of dolphins as mammals might change ways of reasoning (and ethics), but will hardly affect reasoning in other domains. On the other hand, the presence or a linguistic "structure" such as the obligatory grammatical marking of the evidence the speaker has for every proposition (direct experience, inference, hearsay etc.), a feature of e.g. Turkish, could turn out to have much more wide-ranging influences. The extent of such influence is what remains to be determined, but to rule it out is clearly premature.

5. Linguistic influence is a matter of degree (Obstacle 4)

By insisting on a qualitative distinction between "interesting" and "trivial" linguistic influence, Bloom and Kiel (2001) were in one way atypical: the so-called Sapir-Whorf hypothesis is commonly divided into a "weak" and a "strong" version, as in the following formulations by Brown (1976: 128):

> 1. Structural differences between language systems will, in general, be paralleled by non-linguistic cognitive differences, of an unspecified sort, in the native speakers of the two languages.
> 2. The structure of anyone's native language strongly influences or fully determines the world-view he will acquire as he learns the language.

Can one apply such a distinction to the thesis of linguistic influence on thought in general? The adjectives *weak* and *strong* are gradient opposites, entailing the existence of a continuum ranging from approximately zero ("no influence") to max ("complete determinism"). If so, specific theoretical proposals of linguistic influence such as those of Whorf (1956), Vygotsky (1962), Lucy (1992), Levinson (2003), etc. can in principle be arranged on a cline representing "strength of influence". The main issue would be to establish which proposal corresponds to the actual position on the cline – and if following the reasoning of Bloom and Kiel (2001) it should be somewhere very close to the "no influence" end.

We find such a gradient conception of linguistic influence misleading for two related reasons. First, at least four types of (possible) linguistic influence – and corresponding theoretical proposals – differ from each other not quantitatively but qualitatively. Second, at least three of these types of influence are not mutually exclusive or incommensurable with one another, and could potentially all be valid.

Following the proposal of Blomberg and Zlatev (2009), we can distinguish types of linguistic influence on thought according to two parameters. The first is context: general or specific. Whorf's (1956) principle of linguistic relativity is, for example, supposed to be *context-general:* irrespective of the task, context or situation, some particular aspect of language will influence one's thinking, at least in some particular domain. A *context-specific* type of influence, on the other hand, gives more freedom

to thought, and allows a particular task to be solved either without, or if necessary, with the help of language. The other parameter is that of whether features of particular languages affect thinking (*language-specific*) as in the Whorfian tradition, or if the properties of language that influence thought are so general (e.g. prediction, hierarchical structure) that there would be no differences between language communities in the way that language affects thought (*language-general*), as opposed to the difference of having or not having language. These two parameters/dimensions can be combined, yielding four types of linguistic influence, each represented by a number of theories, as shown in Table 2.

Table 2. Four general kinds of possible linguistic influence on thought (with example references, discussed in the text), categorized on the basis of the binary parameters: *Context*: general vs. specific and *Language*: general vs. specific.

Context: / Language:	General	Specific
Specific (relativistic)	**Type 1** Whorf (1956) Lucy (1972) Levinson (2003)	**Type 2** Pedersen (1995) Slobin (1996) Casasanto (2008)
General (non-relativistic)	**Type 3** Dennett (1991) Macphail (1998)	**Type 4** Vygotsky (1962) Tomasello (1999)

As stated, it is not our intention to evaluate in detail each of the theories of linguistic influence categorized in Table 3. We need, however, say a few words concerning each type for the purpose of justifying our classifications, and to support our claim that not all of these are mutually exclusive.

Type 1, classically represented by Whorf (1956), remains viable as long as there is a plausible "mechanism" according to which linguistic classification can affect thinking so pervasively as to be available in any kind of context and situation. Both Lucy (1992) and Levinson (2003) give plausible explanations for how this can take place: through making the respective distinctions encoded in the language from the onset of language acquisition, and thus in the words of Evans (2010, Chapter 8), "training thought" to make corresponding distinctions. Levinson's evidence that speakers of languages using (only) *absolute* frames of spatial reference, also use these frames not only in table-top tasks, but while navigating and gesturing, is probably the strongest evidence for a language-specific, context general type of effect.

Type 2, which is similarly language-specific, but also context-specific, is perhaps most famously represented by Slobin's *thinking for speaking*: "a special form of thought that is mobilized for speaking" (1996: 76). Slobin does not exclude more general effects, but has focused on what is apparently the most obvious context of linguistic influence: the distinctions that are made while using language. This may be a rock-bottom of linguistic influence, since even well-known opponents of the thesis of linguistic influence seem to accept it: "one's language does determine how one must conceptualize reality when one has to talk about it" (Pinker 1989: 360). Hence, within this type, it seems possible to look for stronger forms of influence, and correspondingly stronger proposals. Pederson's (1995) study of Tamil speakers who preferentially used either relative or absolute frames of reference (unlike Levinson's more mono-frame speakers of Guugu Yimithirr), displayed only a strong tendency to solve the spatial task in a manner that corresponded to their preferred linguistic usage. Thus, Pederson concludes that language cannot be used as "obligatory means", but only

optionally: "Under the weaker language as optional means hypothesis, the experimental results suggest a significant, close and variable relationship between language and thought" (Pederson 1995: 54). Another testified effect that could be grouped here as a "stronger" but still context-specific type of influence, is Casasanto's (2008) finding that English speakers could be induced after relatively short periods of exposure to think of time in terms of Greek-style CONTAINER metaphors ('large' and 'small' quantities of time) and thus "override" the conventional LENGTH metaphors of 'short' and 'long' distances of time used in their native tongue.

Turning to the language-general, non-relativist type of linguistic influence, Type 3 represents the possibility that was discussed (and rejected) in Section 2: that language more or less creates thought, or even consciousness. The foremost representative of this position in the current debate is Dennett (1991), with his famous (if mysterious) claim that:

> Human consciousness is itself a huge complex of memes (or more exactly, meme effects in brains) that can best be understood as the operation of a von Neumannesque virtual machine implemented in the parallel architecture of a brain that was not designed for such activities (Dennett 1991: 210).

Macphail (1998) attempts to justify such a claim empirically by considering (and discounting) various evidence for animal consciousness. It is somewhat unclear if this implies returning to the discredited Cartesian view of animals as "mindless automata" and if this also applies to pre-linguistic children. In any case, even if Type 3 is conceptually problematic, ethically detestable and empirically completely implausible (Griffin & Speck 2004), it is worth considering as part of the global picture, striking out a (remote) space of possibilities.

Finally, Type 4 is the much more palatable version of linguistic influence most often associated with the motion of *linguistic mediation* of Vygotsky (1962, 1987). According to this view, language is analogous to a tool insofar as it enables us to solve a certain task more easily than would have been the case if the same task were approached with non-linguistic thought. Differences between languages are less relevant here, than the fact of using, or not using language. For example, Zlatev, Blomberg & David (2010) found that Swedish and French speakers solved a non-linguistic task involving the categorization of animated motion events in a similar way when they described these events prior to the similarity judgement, despite relevant semantic differences between the languages that would have been expected to (in a Type 2, thinking-for-speaking scenario) lead to different categorization. Finally, Tomasello's (1999) argument that the "perspectival" nature of linguistic symbols and certain forms of discourse, mentioned in the previous section, play an important role for bringing about the understanding of others as "mental agents" with beliefs, intentions and emotions, can also be regarded as belonging to this class of language-general, context-specific effects on thought.

To sum up, distinguishing types of linguistic influence in the manner proposed here may be too schematic, but it serves the purpose of our particular argument: to show that it is conceptually inaccurate and analytically impossible to order effects and corresponding theories in a cline from "weak" to "strong". While it may be possible to do so in some particular cases, within each cell in Table 2, one would have to formulate carefully the "metric" for such ordering. Of the four major types of linguistic influence, Types 1, 2 and 4 appear to be both <u>possible</u>, and in some particular cases: <u>actual</u>. Hence, they are not mutually exclusive.

6. Conclusions

The topic of the relation of language on thought, and in particular the thesis that language influences thought in one or more ways, is somewhat like the topic of language origins. First, it has an old pedigree. Second, it fascinates people, and has over the years given rise to many theories, some more plausible than others. Third, it has at times been more or less banned... In this chapter, we have above all addressed the final point: it is not that anyone has explicitly banned discussion on linguistic influence, in the manner that *La societé de linguistique de Paris* banned papers on language origins in 1886, but there have been persistent attempts to discredit the whole idea, consciously or not.

We have focused on four such attempts, envisioning them as "obstacles" that would need to be overcome, if we are ever going to arrive at a more definite answer: (1) that it is impossible to disentangle language and thought; (2) that it is impossible to disentangle language from culture and social interaction; (3) that only "trivial" forms of linguistic influence are viable; (4) that all possible forms of linguistic influence can be aligned on a weak-to-strong cline, and the task is to establish which place on the cline is best supported by the evidence. In arguing against these claims, we maintained that (1´) it is indeed possible to distinguish language and thought conceptually, since thought (understood as "mediated cognition") is possible without languages; (2´) language is an essential aspect of culture, and is realized through discourse, but this does not invalidate the possibility of cultural influence on thought being separate from language, and vice versa; (3´) that the distinction between "trivial" and "interesting" influence stems from a particular view on language and cognition; (4´) that at least four different types of linguistic influence can be distinguished, with qualitative differences between them, and that three of these are both feasible and not mutually exclusive.

As they say, the jury is still out on all more substantial claims concerning the influence of language of thought, and our goal has not been to argue in favor of one or another of these substantive claims. Rather it has been to argue that such influence is possible, in several different forms, and it should be open for further careful investigations into the topic to establish which of these is actual.

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