Concept Priming in Language Change

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Language change, according to Hermann Paul, is a natural part and effect of ordinary language use. Even though this assumption is widely shared in the literature, scholars would still like to understand in more detail how ordinary talking and language change are tied together. Jäger and Rosenbach tackle this question by proposing an interesting link between psycholinguistic processes and language change. They point out the following parallels: *Priming* is an effect where the use of one linguistic item activates another linguistic item. *Language change* is a process where the use of synchronically available linguistic items makes speakers receptive to invent and use other (new) linguistic items. *Priming* is provably unidirecitonal. *Language changes* of certain types are unidirectional. These parallels are illustrated convincingly with a series of studies that prove the unidirectionality of priming. Could priming be the mental process which gets languages into motion?

The hypothesis is intriguing in that it promises testable hypotheses about language change. Unlike social or political background situations which are hard to simulate in the laboratory, priming effects are well understood and easy to control. Linguistic innovation, spurred by priming, should be amendable to psycholinguistic investigation.

In my comment, I will focus mainly on concept priming, distinguishing between priming within a closed linguistic system (*synchronic* priming) and priming with language change potential (*diachronic* priming). In a first step, I will review the patterns of meaning change that are predicted by the diachronic priming hypothesis (DPH). Next, I will try to establish the differences between diachronic priming and other, more traditional modes of language change. The resulting picture will give reason to doubt whether priming effects in the lab can simulate real language change in

history faithfully. In the last section, however, I want to point out a type of language change (specifically in grammaticalization) which could arguably come about by diachronic priming.

Diachronic Priming, and traditional names for semantic change

Synchronic concept priming of the kind described in the target article relies on the fact that various concepts are accessible via a word, phrase or sentence. Taking the detour via language, we can test which concepts are activated after a certain prime has been presented. In the case of priming in language change, we face a different situation. We have to assume that a concept α primes a concept β where the speaker has as yet no (simple) linguistic term to denote β. The concept α can be accessed by an expression A. Whenever the speaker uses A to denote α, β is activated by priming. In the long run, speakers will start using A to refer to β. This is, in a nutshell, what is suggested by the diachronic priming hypothesis (for concepts). Let us review what kinds of language change could emerge in this process.

The first kind of change that we'd expect is traditionally called *metaphor*. In terms of priming, metaphors can arise when a concept α primes a concept β due to its structural similarity to α (see the experimental study by Boroditsky (2000) discussed in the article). The speaker has as yet no linguistic item to refer to β. The diachronic priming hypothesis will predict that the word A for α will be transfered to denote β, due to priming.

A second kind of change that the diachronic priming would lead us to expect is traditionally called *metonymy*. When a word's extension is extended from container to contained, from process to product, from object to substance etc. we likewise know that the first concept primes the second. The diachronic priming hypothesis assumes that the transfer comes about by priming.

Concept priming exists not only between isomorphic domains but also between hyponym and hyperonym (*animal – dog*) or cohyponyms (*dog – cat*). Most priming studies, in fact, rest on this type of primes and targets. If priming initiates language change in the way envisaged above, we would expect that polysemies in these dimensions will also fall in the range of the proposed analysis. Let us take a look at some examples,

starting with the shift from supercategory to subcategory by way of an example. The subject thinks about 'animal' under the name *animal*. The subject then is faced with the task of recognizing a subconcept (e.g. 'cat') which does not carry a name as yet. Priming effects that the recognition of the subconcept is faciliated when the 'animal' concept is already activated. The diachronic priming hypothesis predicts that the name of the prime is transfered to the target. In traditional terms, this type of shift has been known as *narrowing*.

Finally, the diachronic priming hypothesis also will lead us to expect sense *generalization*. In the simple case, generalization could come about because a subconcept α primes a superconcept β, and the name A for α is transfered to β. A second constellation is predicted to arise when two adjacent concepts in the same ontological domain prime each other. (When both concepts have a name, then the two names are traditionally called co-hyponyms.) In this case, the diachronic priming hypothesis will diagnose that the subject has been thinking about a certain concept (say: 'apple'). The activation of the concept faciliates the recognition of a co-concept in the same ontological domain (e.g. 'plum'). Importantly, the subject is supposed to acknowledge that a different but related concept is involved. The diachronic priming hypothesis predicts that the name for the prime is transfered to the target: 'plums' are called *apple* because primed by 'apple'.

In sum, we can state that the language shifts that are potentially covered by the diachronic priming hypothesis (DPH) are well in the range of traditional theory. This is encouraging, because it offers us a wide domain of well-investigated cases against which the DPH can be tested: Traditional terms differ from the modern notion of "priming" in perspective. The former offer categories for certain types of homonymy, and label productive ways of volitional language extension. The term "priming" refers to a deeper level of cognitive activation patterns. These patterns exist independently of the fact whether they lead to language change, explain language use and comprehension, or have no linguistic effects at all. We can hence ask how the hypothesis that priming acts as an underlying motor of language change will add to, or change our understanding of the more traditional terms. We can also draw a comparison between the explanations for language change that DPH can offer, and the explanations in more traditional terms.

The time scale of priming

There is a prediction inherent in the priming hypothesis which is not part of traditional notions of semantic change, namely a *time scale prediction*. The time scale prediction rests on the observation that priming is a short term memory effect. In order to offer experimental evidence for the fact that the concept 'dog' primes the concept 'cat' but not, say, the concept 'underwear', it is crucial that the prime has been activated shortly before the target. The fact that a subject talks about dogs from time to time, or even that s/he owns a dog is not sufficient to prime him/her to speeded reactions to *cat*. In fact, had it not been such a temporally limited effect, priming would have been hard to detect. In diachronic priming, we might want to extend the forms of priming slightly, including intense mental preoccupation with a concept, visual presentation of a concept, or presentations in other sensory modes. However, it seems inherent to the DPH to maintain the assumption that the priming and its results should occur within a limited time frame.

We can now try to find evidence for such short time processes in instances of *metaphor, metonymy, narrowing* and *generalization.* I will exclude metonymy here because it could in fact involve productive lexical coercion processes which are beyond true language change. Starting with metaphor, let us ask whether metaphors normally (or even necessarily) arise when the source domain *primes* the target domain. To my experience (which is currently the only source I can draw on), the answer is a clear 'no'. Usually, it is the occupation with the target domain of a metaphor that leads one to access the source domain and not vice versa. If I note that a colleague of mine acts like "*a rooster in the chicken yard*" this metaphor will most likely not be primed by current experience with chicken farming. To the contrary, it is the person's behaviour which reminds me of earlier experiences with a kind of *gestalt* that I have stored as the prototype of the kind of behaviour that I am presently wittnessing.

This example involved a fixed metaphor and as such part of English already, but it can easily be complemented by truely innovative metaphors that I happened to see emerge. For instance, a dear father and husband of my acquaintance was once characterized by his friends as a "Bonsai macho". The metaphor refered to his pronounced but small scale macho behaviour towards his female entourage. I am absolutely positive

that in the situation, no mention of Japanese tree trimming was made before the crucial metpahor was coined. Of course, it is not possible to control for the interlocutors inner thoughts in such real situations but from all I observed, the speaker had actively taken part in a conversation which was about various characteristics of men. The topics were far away from Bonsai gardening. Once again, it was the target of the metaphor that seemed to prime the source, if any priming took place at all.

At this point, various empirically tractable questions arise:

- How many metaphors are primed metaphors?
- How many metaphors arise without priming?
- Why can metaphors arise attestably without priming and yet be unidirectional?

The last point refers to the fact that source and target domain are not freely interchangeable in metaphor creation. This shows that unidirectionality can be inherent in language shifts that do not arise by priming. Therefore, the parallel between directionality in priming and directionality in certain types of language change is compelling, but it does not offer conclusive evidence for any causal connection.

Let us next turn to *narrowing*. One common traditional explanation for narrowing could be this. We start from a stage where some general concept carries a name *A*. The speaker community passes a phase where exemplars from one specific subconcept are encountered as exemplars of the general concept with high frequency. By learning, imitation and forgetting, speakers attach the (former) name of the general concept to these exemplars as samples of the narrower concept. Taking these samples as wittnesses of the smaller concept, the (former) name of the superconcept turns into the (later) name of the subconcept.

This kind of explanation makes predictions about facts in cultural history and sociolinguistics which can be tested in historical studies. Notably, the explanation rests on the assumption that typical exemplars of the smaller category (= the one to catch a name) are encountered with high frequency. The priming hypothesis would lead to the expectation that occasions which activate the supercategory (= the prime) are encountered most frequently, while those that lead subjects to think about the subcategory (= the target) are of low frequency. In this case, traditional analyses seem better supported and supportable than the DPH.

The case of *generalization* from a concept to a neighbouring concept in the same ontological domain is problematic to diagnose in actual language history. Whenever two concepts in the same ontological domain are acknowledged as different, speaker communities normally take care to also attach *different* linguistic labels to these. Indirect evidence for this bias is offered by acquisition studies where *new* names are automatically attributed to objects that visibly exemplify *new* concepts (e.g. Casenhiser, 2005). In some rare cases in language history, certain words extended their extension at some point from one concept to another. I have discussed the history of *jade* in Eckardt (2001). The word for *jade* in Chinese originally was used for *jadeite* minerals which are geologically most common in Asia. After trade with South America had been established, the word was extended to minerals that looked similar but turned out to be of a different chemical make (*nephrite*). Currently, there are several naming practices, ranging from a folk term *jade* for both substances to the scientifically justified use of *jadeite* and *nephrite* as the only proper terms. The relevant observation with respect to the DPH is that the first pieces of nephrite were *not* called *jade* because they looked different from older jade but were encountered in a situation where 'jade' was a prime. They were called *jade* because to the best knowledge of experts at the time, they showed all those qualities that were indicative for a mineral to be classed as jade.

Finally, take *generalization* of a name from a concept to a superordinate concept. Here we might indeed claim that the narrow concept primes the broader concept and the name is just maintained. In view of the fact that concepts are mostly addressed via single exemplars it is hard to tell anyway whether an object is refered to as *A* qua being an exemplar of concept α or qua being an exemplar of general concept β. In this case, the time scale constellation is very plausible: DPH will predict that the most frequently encountered special concept will serve as a prime for the general concept. In practical terms this states, for instance, that the word *Schwob* in Alsacian had a better chance to prime the general concept 'Germans in general' than *Preusse* or *Bayer*.[1]

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[1] Schwaben is in the close vicinity of the Alsace, while Prussia, Bavaria, etc. are geographically remote. You need to know that *Schwob* is the Alsacian pejorative name for Germans in general. Why they did not chose the even closer *Badenzer* I can not say.

The time scale requirements of the diachronic priming hypothesis, in summary, are hard to assess in real language change, and in some cases evidence points strongly to the contrary. Priming might play a role sometimes, but there is no initial evidence in favour of it being a universal driving force in language change. The target article did not claim that this were so, either. However, the target article does suggest that language change can be simulated in the lab. In view of the present survey over possible and plausible known cases of diachronic priming, it seems unclear to what extent priming effects that might be detectable in laboratory situations use play a role in the multi-factorial game called language change. It would be encouraging at least to have some evidence for primed language change in real history. This will be the topic of the last – somewhat speculative – section.

Evidence?

The cases that are covered by diachronic priming are, as we have seen, identical in range with tradionally acknowledged types of meaning shift. For some types, diachronic priming makes predictions about the historical circumstances of change which differ from traditional accounts. These predictions are hard to test, however, and are sometimes less plausible than traditional explanations. Other types of shift occur attestedly with or without priming (for instance, metaphor), and so the diachronic priming hypothesis can only be tantamount to the claim that priming *may sometimes* spur change – a disappointingly weak prediction.

However, I want to propose that there might be one type of grammaticalization where diachronic priming indeed can offer more than traditional categories of meaning change without priming: the case of rare conceptualizations. In a recent article, Núñez and Sweetser discuss temporal metaphors that are linguistically attested in the South American Indian language Aymara. Based on lexical and gestural evidence, Núñez and Sweetser (2006) prove that Aymaran exemplifies the FUTURE-IS-BEHIND-EGO versus PAST-IS-IN-FRONT-OF-EGO metaphor. In Aymaran, speakers can for instance use what literally translates into '*the year behind*' in order to refer to the coming year in the future. The study is conducted extremely carefully, setting itself apart from earlier claims about

the existence of this metaphor in other languages which usually rest on the mere existence of a word which can be used for local 'behind' and with relation to some future time point.[2] The authors also stress the extreme rareness of the FUTURE-IS-BEHIND-EGO metaphor, which highlights the question of *why* one language in thousand would show lexical evidence for this metaphor.

A large section of the Núñez-Sweetser article is devoted to survey real-life situations which offer source domains for other, universally instantiated time metaphors like TIME-MOVES-FORWARD or EGO-MOVES-FORWARD-IN-TIME. Such situations plausibly comprise the experience of EGO moving forward in space and reaching points in space at time points after shorter or longer time intervals, etc. As far as we can tell, there is no reason whatsoever to believe that speakers of Aymara or their ancestors were not confronted with such situations. Hence, the metaphorical source domains for the universally attested temporal metaphors were available to Aymaran speakers as well. If real-world situations have any priming effect in the sense of Jäger and Rosenbach on grammaticalization, we can assume that this kind of priming effect could have been operant in past Aymara culture, too. And yet, Aymara among all languages was enriched by a FUTURE-FROM-BEHIND metaphor. At this point, I want to go slightly beyond the speculations in Núñez and Sweetser, who stop at pointing out that the FUTURE-FROM-BEHIND metaphor might be rooted in a strong urge to separate the unknown (behind) from the known (in front).

Let me take up a side remark by Núñez and Sweetser where they note that time is commonly perceived as a moving object, not as static. Indeed, change is the most universal indicator that ''time goes by''. It would be surprising if Aymara culture, ignoring the dynamic nature of time flow, perceived time points as static objects, some covered (= future) and some visible (= past). Núñez and Sweetser comment on this peculiarity; however none of their observations proves that Aymara culture perceives

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[2] The candidate languages for a future in the back which are ruled out by Nunez and Sweetser as insufficiently documented include Classical Greek, Ancien Egyptian, Malagasy, Maori, and Toba. Note that the authors don't claim that the metaphor is inexistent in these cases. They simply point out, and for good reason, that the existence of single temporal adverbs and prepositions is not sufficient evidence for a claim about conceptualization of time in some culture.

time as *static*. To the contrary, their gesture study suggests that time is conceptualized with a topology according to which the events that are more distant in time are conceptualized as more remote in space – a static reflection of the fact that temporal entities move towards and away from the Ego. The only specific feature in Aymara is the direction from which Time is approaching: from behind. I can think of at least two real-life situations where some spacial object flows, and the things encountered in the future come from behind. One is the situation of Ego placed in a river, looking downstream. The flow of the river is isomorphic to the flow of time, and the things to come in the future are behind the Ego. It is important for the stability of the metaphor that the Ego has no reason to turn round and simply *face* the things to come. But perhaps there are cultural practices that require this type of position in a flowing stream.[3] The second kind of situation is that of a backward travel. Certain means of transport, e.g. wooden sledges drawn by ponies or horses, can force the traveller to take a backward position with respect to the direction of travel.[4] In such a situation, the Ego will stably face the past, and have the future behind.

Let us assume for the moment that these speculations were correct. Let us assume that situation types like these are at the origin of the crucial lexifications in Aymara. Even then, it is not plausible to claim that such situations replaced all movement forward in early Aymaran culture. Such situations most realistically occur in addition to those that favour the Future-is-Front metaphor. So we have not yet resolved the question why Aymaran favoured the backward-travel type of situation as a source domain for temporal relations rather than the more common types. It is not evident that this source domain is more useful than those that lead to Future-is-Front lexicalizations. Let me mention in passing that Núñez and Sweetser indeed attempt to explain the fact that practically all cultures also use the Forward-Moving-Ego or the Future-arriving-Form-Front metaphor by claiming that these are more useful in drawing inferences about temporal relations. Following their lead, we could ask: why did Aymaran keep a useless metaphor?

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[3] Other streams like herds of cattle, or trecks of people would likewise be matching.
[4] Another type of modern situation is the one in a train with a seat facing backwards. I admitt that this was my personal source domain.

Diachronic priming can offer an explanation in such cases. *Priming* alone embraces the idea that a temporally limited strong salience of a source domain can prime the lexicalization of an otherwise unusual metaphoric shift. A priming-based theory could claim that Aymaran adopted the FUTURE-IS-BEHIND metaphor because there were times in history where this concept was forcefully primed *even though all other potential source domains were equally known to speakers.*

I would like to end this speculation by discussing another unusual conceptualization of temporal (and spacial) relations that was also mentioned in passing by Núñez and Sweetser. They report that in Hausa, an object A which is further away from the speaker than object B can be characterized as *A being in front of B.* This spacial characterization rests on the idea that EGO, object B and object A are all facing in the same (forward) direction on a virtual path from the EGO via B and A to the horizon. Once again, possible real-world situations which exemplify this spatial structure are easy to imagine and potentially verifyable by investigating Hausa culture. For instance, driving herds of cattle, as well as groups of humans, along a path would be structurally suitable activities of EGO. Núñez and Sweetser point out that this spatial structure has also been transfered to the temporal domain. In Hausa, a time point further in the future can be characterized as 'being in front of' a closer time in the future. E.g. on Friday evening one could say that "Sunday is in front of Saturday". Dually, one could say on Friday evening that "Saturday is behind Sunday".[5] Once again, Jäger and Rosenbach could suggest that the more common lexicalizations for temporal relations between time points were not chosen because the spatial cattle-treck-concept *primed* a homomorphic concept in the temporal domain.

The *diachronic priming hypothesis* evokes the expectation that we will soon be able to simulate language change in the laboratory. On closer investigation, it turns out that even if priming effects on nonstandard language use can be proved in a lab situation, it remains unclear what such studies will tell about language change in real history. Some kinds of lan-

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[5]   Núñez and Sweetser take this example, like others, to show that the fact that a language can use *behind* to refer to a future time point does not offer any evidence for the fact that this language should know the FUTURE-IS-BEHIND metaphor. Hausa in general uses quite common time metaphors.

guage shifts provably can occur (and be unidirectional) with and without priming. Other kinds of language shifts that potentially could be captured as diachronic priming have received other analyses that contradict the priming hypothesis and are supported by cultural/historical evidence. However, the notion of priming can be a powerful tool to explain uncommon and rare types of metaphor, metonymy, or narrowing/broadening. Priming, unlike other mechanisms of change, implies a narrow time frame between a priming experience and the activation of the target. Priming could be the psychological effect that explains why *one* among many available possible source domains for metaphor can override all others. Historical accident, long lamented as untractable by historical linguists, may have found its proper place on the map of our cognitive activities.

Acknowledgements

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