

A NOTE ON NATURAL LEXICOLOGY

by
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In the cluster of approaches exploring the concept of naturalness in linguistic theory, some areas of linguistics are better represented than others. Best known are probably Natural Phonology (Stampe 1979, 1987, Donegan and Stampe 1979) and Natural Morphology (Mayerthaler 1981, Wurzel 1983, Dressler 1985), while Natural Syntax (Haiman 1980, 1985) and Natural Text Linguistics (Dressler 1989) are somewhat more recent additions. But what about Natural Lexicology? In this paper, I will argue that prototype theory as developed linguistically in the domain of Cognitive Linguistics is part and parcel of a 'Natural' theory of the lexicon. (I will assume a basic familiarity with linguistic prototype theory; see Taylor 1995 for an introduction, and Geeraerts, Grondelaers & Bakema 1994 for a technical treatment). The ideas to be developed in the following pages rest on a refinement of the classification of semantic change in Geeraerts (1983); for further background, see Geeraerts (1997).

Given a prototypical conception of semasiological structure, the first step on the road towards Natural Lexicology involves the question how to explain prototypicality. It would seem that the best way to do this is to explain the presence of a prototype-based type of conceptual organization on functional grounds. There are, in fact, at least three functional reasons for having a prototypical conceptual structure of word meanings, and all three are functional requirements that the conceptual system has to fulfil if it is to carry out optimally its task of storing categorial knowledge and making it accessible for cognitive and communicative purposes.

The first of these requirements has been mentioned by Eleanor Rosch (who has introduced the prototypical view into lexicology) herself (see Rosch 1977): it is cognitively advantageous to lump as much information as possible into one's conceptual categories. Making conceptual categories as informatively dense as possible enables one to retrieve the most information with the least effort. Clearly, prototypically organized categories achieve such an informational density, because they are clusters of subconcepts and nuances.

Further, the cognitive system should combine structural stability with flexibility. On the one hand, it should be flexible enough to adapt

itself to the ever-changing circumstances of the outside world. On the other hand, the categorial system can only work efficiently if it does not change its overall structure any time it has to cope with new circumstances. Again, prototypical categories obviously fulfil the joint requirements of structural stability and flexible adaptability. On the one hand, the development of peripheral nuances within given categories indicates their dynamic ability to deal with changing conditions and changing cognitive requirements. On the other hand, the fact that marginally deviant concepts can be peripherally incorporated into existing categories indicates that the latter have a tendency to maintain themselves as particular entities, thus maintaining the overall structure of the system. Prototypical categories are cognitively efficient because they enable the subject to interpret new data in terms of existing concepts; as expectational patterns with regard to experience, prototypically organized categories maintain themselves by adapting themselves to changing circumstances.

In short, the cognitive system favours prototypical categories because they enable it to fulfil the functional requirements of *informational density*, *structural stability*, and *flexible adaptability* as a pattern of expectations.

This functional view of conceptual structure can be further specified in the following way. The flexibility that is inherent in prototypically organized concepts cannot work at random; there have to be a number of principles that restrict the flexible extendibility of concepts, or, to put it another way, that specify the principles according to which concepts can be used flexibly. These principles define what is an acceptable extension of a particular concept. The traditional associationist mechanisms of semantic change (such as metaphor and metonymy) have precisely that function; they restrict the set of acceptable conceptual extensions to those changes that are brought about by regular associationist mechanisms such as metaphor and metonymy. In this sense, then, the traditional classificatory categories of historical semantics can in fact be incorporated into a functional classification of the causes of semantic change. But prototypicality itself has a similar restrictive function: the constraint that new meanings be linked to existing ones prevents the semantic flexibility of lexical items of deteriorating into communicatively inefficient arbitrariness.

In this respect, the most profound reason for the adequacy of prototype theory for specifying the characteristics of semantic change, is most likely the *dynamic* nature of the synchronous notion of a proto-

typical conceptual organization. The recognition that conceptual categories are not rigidly defined, and that they combine a number of nuances through the centralising action of a conceptual kernel, implies the possibility of dynamically actualizing the prototypical concept in new peripheral uses.

This dynamic character of prototypes can be situated on an even more fundamental epistemological level: it then characterizes the basic trait of human cognition of interpreting new facts through old knowledge. Incorporating slight deviations into flexibly interpreted existing concepts, is but a special example of the general characteristic of achieving conceptual efficiency through flexible constancy: the conceptual organization is not drastically altered any time a new concept crops up, but new facts are as much as possible integrated into the existing structure, which can thus remain largely unchanged. From this point of view, prototype theory in semantics is connected with the 'cognitive' trend in psychology, stressing the mediating role of existing concepts in cognitive development (Bruner, Piaget); with the paradigmatic trend in the theory of science, stressing the role of existing scientific theories (or 'research programmes') in the forging of new ones (Kuhn, Lakatos); and with the phenomenological trend in philosophy, in as far as it stresses the interactional nature of human knowledge and opposes the epistemological monism of idealism and realism (Husserl's theory of intentionality). (These parallels are studied in detail in Geeraerts 1985. For the philosophical aspects, see also Geeraerts 1993.)

If the prototypical view of conceptual structure is accepted, specific characteristics of semantic change mentioned are explained as predictions following from that structure. For instance, if the synchronous boundaries of word meanings are vague and flexible, it is natural to find this fact reflected in the diachronic relationship between readings, and so on. (For a full exploration of the matter, see Geeraerts 1997.) In general, the implications of prototype theory for the functioning of the human conceptual capacities make it an explanatory basis for diachronic semantics, because the dynamic nature of human thinking is recognized as one of the fundamental structural characteristics of conceptual categories. In this respect, accepting prototype theory is a question of explanatory adequacy rather than descriptive adequacy: prototype theory explains the observed prototypical characteristics of semantic change, because it relates them to general epistemological beliefs about the working of the human conceptual system, beliefs it shares with other cognitive theories. And at

the same time, of course, the overall conception of a prototypical organization of conceptual categories can itself be explained on functional grounds.

As a next major step in the argumentation, we should recognize that the type of efficiency achieved by the prototype-based conception of lexical-semantic structure is part of a broader range of efficiency phenomena in lexicology. Without trying to be exhaustive, two additional examples of efficiency may be mentioned.

First, let us consider homonymic clashes. Gilliéron's famous example involves the collision of Latin *cattus* ('cat') and *gallus* ('cock') into South-Western French *gat* (Gilliéron and Roques, 1912). The tension is resolved by replacing *gat* ('cock') by *bigey*, a local variant of *vicaire* ('curate'), or by *azan*, the local equivalent of *faisan* ('pheasant'), or by the cognates of Latin *pullus*. The moral of the story is usually taken to be that homonymic ambiguities set off therapeutic diachronic changes towards their resolution. The rationale behind the avoidance of homonymy might be called a principle of formal efficiency, more particularly a 'one form, one meaning' principle: formally disambiguated languages are functionally superior, because they avoid communicative misunderstandings.

Second, popular etymology instantiates a tendency (at least in some cases) towards formal, morphological *transparency*. In Dutch, for instance, the loan-word *hamac* 'hammock' is changed into *hangmat* 'hanging carpet'. The semantic transparency of the latter expression (which is composed of the verbal stem *hang* 'to hang' and the noun *mat* 'carpet, mat') is communicatively efficient; those who are not familiar with the foreign word may grasp (or at least get an idea of) what is referred to.

As a further step, let us now compare the approach developed so far with the functional principles at work in the theory of Natural Phonology. Natural Phonology assumes that research into phonological phenomena has to take into account whatever is known about the physiological structure of our auditory and articulatory organs: the physiological possibilities of and restrictions on those organs determine what is 'natural' in phonetics and phonology. The fact, for instance, that sounds may be subject to a process of assimilatory voicing in a voiced environment is a natural phonological process, because our articulatory organs would generally encounter difficulties producing a sequence of a voiced, an unvoiced, and then again a voiced segment. Natural phonological processes do not have to be learned; they follow

automatically from the physiological difficulties that occur in the production and perception of speech. Conversely, learning a language implies learning which natural processes have to be suppressed according to the phonological system of a particular language. (Word-final devoicing, for instance, is a natural process, but children learning French or English have to learn not to give in to the natural tendency.)

Natural Phonology distinguishes between two major types of phonological processes: lenition and fortition. (There is a third type relating to suprasegmental, prosodic phenomena, but the present discussion will be restricted to processes involving single segments.) Fortition occurs when a sound segment is pronounced in a more outspoken manner, in a way, that is, in which it can be more clearly distinguished from its surroundings. Dissimilation, diphthongization, and epenthesis are frequently occurring examples of fortition processes. Lenition, on the other hand, occurs when the contrast between a segment and its surroundings is weakened, as in the case of assimilation, monophthongization, shortening, and deletion. Fortition and lenition processes have a tendency to occur preferentially in specific environments. Fortition is typical for 'strong' positions, such as vowels in stressed syllables, or word-initial consonants. Lenition favours segments in 'weak' positions, such as word-final segments or in unstressed syllables. In addition, there is a stylistic difference between both types: fortition is more likely to occur in slow, careful, and formal speech, whereas lenition occurs more readily in sloppy, fast, or familiar speech.

Most crucially, both process types serve different aims. Fortition is a hearer-oriented process: it makes speech more distinctive and more clear. Lenition is speaker-oriented: it achieves an 'ease of articulation' (in the traditional terminology) that allows the speaker to spend less energy. Both mechanisms, of course, are motivated by efficiency, and hence belong in a functional explanatory framework. But if the kind of phenomena involved implies a distinction between speaker-oriented and hearer-oriented efficiency, could not the same distinction be applied to lexical semantics? On the one hand, prototypical polysemization clearly derives from a speaker-oriented form of efficiency: the advantages achieved through a prototypical conceptual organization primarily involve the stability of the speaker's mental lexicon and his capacity for a flexible response with regard to changing circumstances. On the other hand, efficiency principles such as isomorphism and transparency primarily help the hearer. Structural

adherence to the principle of 'one form, one meaning' means that it is easier for the reader to decode a particular message: a particular formal cue will only lead to one specific meaning. Similarly, morphological transparency may help the hearer to understand the intended meaning even if he is not familiar with the word as such. Another major principle in this hearer-oriented class could be formal iconicity: sound symbolism, for instance, helps the reader to image what the referent of a word could be.

This means, in other words, that the functional conception of phonology as developed in Natural Phonology, and the functional conception of lexicology developed here, can be brought together naturally if a distinction is maintained between hearer-oriented and speaker oriented phenomena. The resulting picture is schematically represented in Figure 1.

Figure 1
A classification of efficiency principles

	SPEAKER-ORIENTED: OPTIMIZATION OF PRODUCTION	HEARER-ORIENTED: OPTIMIZATION OF PERCEPTION
CONCERNING PHONOLOGICAL FORM	ease of articulation: lenition processes	fortition processes
CONCERNING THE LEXICAL RELATION BETWEEN FORM AND MEANING	prototype-based flexibility and stability	- isomorphism - iconicity - transparency and motivation

We can see, in other words, that the prototype-theoretical approach to lexical-semantic structure could easily form the basis for a 'Natural' theory of the lexicon, provided that the existence of other types of lexicological efficiency is taken in to account. It should be noted that the distinction between the basic forms of the efficiency principle (speaker-based optimization of production versus hearer-based optimization of perception) features in various forms in the recent literature on linguistic change. In Langacker (1977) and Kemmer (1992), for instance, it appears in the form of distinction between a Principle of Least Effort, and a Principle of Maximal Distinctiveness.

Lewandowska-Tomasczyk's classification of causes of change (1985) makes clear that a term such as 'Principle of Least Effort' – although traditionally receiving a speaker-oriented interpretation – may also be interpreted from the perspective of the hearer: maximal coding distinctiveness on behalf of the speaker favours minimal decoding effort from the part of the hearer. In addition, note that the distinction is far from new: one of the oldest formulations is von der Gabelentz's distinction between *Bequemlichkeitstrieb* and *Deutlichkeitstrieb* (1891).

Also, the comparison with Natural Phonology suggests a specific problem for a functional explanatory theory of lexical change, and this recognition should help to avoid any exaggerated optimism. In general, it has to be recognized that the functional approach suggested here is far from answering all questions that arise in the context of historical semantics. To illustrate, let us go back to our discussion of popular etymology. It was suggested that a form such as Dutch *hangmat* (from *hamac*) may be explained by an economical tendency to have morphologically transparent word forms. Some cases of popular etymology are less clear, however. For instance, while Dutch *cichorei* 'chicory' is sometimes transformed into *suikerij* 'sugary', semantic transparency is far from achieved: chicory and sugar have nothing in common, chicory does not even taste sweet. Perhaps we might say that the functional principle at work here is a tendency to exploit the morphological possibilities of the lexicon (that is, to maximize the number of morphologically complex words at the expense of newly introduced base forms). This tendency in itself would then be an illustration of a more fundamental tendency towards an economical lexical organization (keeping the number of lexical base forms down is efficient because it diminishes the memory load of the system).

However, even apart from the fact that the semantic opacity of *suikerij* increases rather than diminishes the strain on lexical memory (the language user has to remember that *suikerij* has nothing to do with *sugar*), the operation of the economic principle with regard to the number of lexical forms is unsuccessful, since *cichorei* actually continues to exist next to *suikerij*: the transparency principle creates a situation that is in conflict with the isomorphic principle. In short, the operation of the functional principles does not guarantee success: some changes seem to miss their probable goal, or at least yield results that are incompatible with other instantiations of the efficiency factor. Specifically, given that Natural Phonology accepts that hearer-oriented and speaker-oriented processes may be in conflict, the question arises

how tensions between the hearer-oriented principle of isomorphism, and the speaker-oriented principle of prototypicality are resolved. Solving these and related questions is beyond the scope of this paper, however, whose ultimate purpose is to present a tribute to Anna Wierzbicka: I hope that the suggestion to link prototype theory and Naturalness theories may share some of the fruitfulness of her own contributions to prototypicality studies.

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