

Why is grammaticalization irreversible?

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Abstract

Grammaticalization, the change by which lexical categories become functional categories, is overwhelmingly irreversible. Prototypical functional categories never become prototypical lexical categories, and less radical changes against the general directionality of grammaticalization are extremely rare. Although the pervasiveness of grammaticalization has long been known, the question of why this change is irreversible has not been asked until fairly recently. However, no satisfactory explanation has been proposed so far. Irreversibility cannot be attributed to the lack of predictability, to the interplay of the motivating factors of economy and clarity, or to a preference for simple structures in language acquisition.

I propose an explanation that follows the general structure of Keller's (1994) invisible-hand theory: language change is shown to result from the cumulation of countless individual actions of speakers, which are not intended to change language, but whose side effect is change in a particular direction. Grammaticalization is a side effect of the maxim of extravagance, that is, speakers' use of unusually explicit formulations in order to attract attention. As these are adopted more widely in the speech community, they become more frequent and are reduced phonologically. I propose that degrammaticalization is by and large impossible because there is no counteracting maxim of "anti-extravagance," and because speakers have no conscious access to grammaticalized expressions and thus cannot use them in place of less grammaticalized ones. This is thus a usage-based explanation, in which the notion of imperfect language acquisition as the locus of change plays no role.

1. Irreversibility

One of the most common types of morphosyntactic change affects syntactic constructions in which a particular word (or set of words) turns into

an auxiliary word and later an affix, that is, it changes from a lexical to a functional category. Perhaps the most striking fact about this kind of change, commonly called grammaticalization, is that changes in the opposite direction hardly occur. The irreversibility of grammaticalization is one of the most important constraints on possible language changes, but so far there is no consensus on how it should be explained, nor are there widely known proposals for an explanation of this macro-tendency. In this paper I will discuss several earlier unsuccessful accounts and propose my own explanation.

In this first section of the paper I will give a number of examples of grammaticalization and argue that it is indeed by and large irreversible. In section 2 I will briefly discuss the history of the issue, focusing on the question why the importance of irreversibility has been discovered so late and why it has sometimes been denied. In section 3 I will discuss some previous attempts at explaining irreversibility that I do not regard as successful for various reasons. In section 4 I will present my own proposal, which is influenced by the ideas of Christian Lehmann and Rudi Keller. However, these two authors do not offer a complete account, so I hope that my proposal will be a useful contribution to the debate.

Let us now consider some exemplary changes from one of the lexical categories (noun, verb, adjective) to one of the functional categories (adposition/case[P], complementizer/conjunction, determiner, tense, aspect, agreement, number). For each attested change, I give a concrete example from an individual language in Table 1, and for most of them I give one reference to a general theoretical work in which the type of change is discussed.

All these changes involve a complex set of conditions and effects that I cannot go into here. The important thing is that hardly anyone would doubt that they constitute examples of grammaticalization, or changes from lexical to functional categories. However, the sense of the term *grammaticalization* is wider than 'change from a lexical to a functional category', comprising also changes in which a functional category becomes even more grammaticalized. For instance, in the case of Latin *illam* (demonstrative pronoun) and English *all* (quantifier), one could argue that the starting point of the change is already a functional category, but it is beyond doubt that the resulting element is even more grammaticalized. The most general definition of grammaticalization would therefore not restrict this notion to changes from a lexical category to a functional category but would say that grammaticalization shifts a linguistic expression further toward the functional pole of the lexical-functional continuum. We will see in section 4 that this point is crucial for understanding the irreversibility of grammaticalization.

Table 1. *Some grammaticalization changes (lexical > functional category)*

Category change	Example	Discussion
N > P	Latin <i>casa</i> 'house' > French <i>chez</i> 'at (sb's place)'	(Svorou 1994)
N > C	English <i>while</i> 'period of time' > <i>while</i> 'SIMULTANEITY'	(Kortmann 1996)
proN > Agr	Lat. <i>illam video</i> 'I see that one' > Span. <i>la veo a María</i> (OBJ.AGR.)	(Givón 1976)
N > Num	Chinese <i>men</i> 'class' > <i>-men</i> 'PLURAL'	
V > P	Yoruba <i>fi</i> 'use' > <i>fi</i> 'with'	(Lord 1993)
V > C	German <i>während</i> 'enduring' > <i>während</i> 'while; during'	(Kortmann and König 1992)
V > Asp	Lezgian <i>qačuz awa</i> 'taking, is' > <i>qaču-zwa</i> 'is taking'	(Bybee and Dahl 1989)
V > T	Greek <i>thélo na páo</i> 'I want to go' > <i>tha páo</i> 'I'll go'	(Bybee et al. 1994)
A > P	English <i>like</i> 'equal' > <i>like</i> 'similative'	(Maling 1983)
A > D	Latin <i>ipse</i> 'himself' > Sardinian <i>su</i> 'the'	
A > Num	English <i>all</i> > Tok Pisin <i>ol</i> 'PLURAL'	

The assumption that linguistic expressions cannot always be categorized clearly into categories such as N, P, V, Aux, C, D, and that instead what we have are continua (N ↔ P, V ↔ Aux, etc.), creates obvious complications for syntactic description, and it is probably for this reason that it has hardly been adopted in formal approaches to syntax. However, the simplifying assumption that all elements can be classified unambiguously leads to even greater difficulties, because it means that many arbitrary decisions have to be made. Every practicing grammarian knows that it is virtually impossible to come up with a set of criteria that neatly distinguish nouns from adpositions (cf. *because of*, *instead of*, *in front of*, *in view of*), adjectives from determiners or quantifiers (cf. *every*, *all*, *many*, *several*, *numerous*, etc.), and so on. For diachronic change, this continuous view of the lexical/functional distinction implies that grammaticalization is a gradual process, and no single point in time needs to be identified at which a lexical category turns into a functional category. Thus, grammaticalization changes can be described without invoking the concept of abrupt categorical reanalysis (for detailed justification of this claim, see Haspelmath 1998). What we do need, however, are clear criteria for how the various linguistic elements are arranged on the continuum, such as the six parameters of grammaticalization described by Lehmann (1995 [1982]).

But while the correct description of grammaticalization changes (e.g. in terms of an abrupt reanalysis or a gradual process) may be controversial, there seems to be little doubt that the reverse change is extremely rare: grammaticalization is irreversible, with very few exceptions. That is, we almost never see morphosyntactic constructions changing in such a way that a former grammatical element acquires more syntactic freedom, greater semantic richness, and so on. In other words, degrammaticalization is extremely restricted. When one considers just prototypical functional categories (such as case-marking prepositions or tense affixes) and asks whether they can change diachronically into prototypical lexical categories (such as nouns or verbs), the answer is an unambiguous no.¹ A number of cases have been cited in the literature where a functional element seems to become less grammaticalized (e.g. when an affix turns into a clitic, such as the old English genitive suffix *-s*, which has become the modern English genitive clitic *'s*), but such changes are extremely rare.² I think it is a fair guess to say that 99% of all shifts along the lexical/functional continuum are grammaticalizations, so there is a clear asymmetry here that demands an explanation.

Furthermore, lexical categories do not turn into other lexical categories in changes that preserve the construction's identity (i.e. again excluding the word-formation strategy of conversion). That is, a verb does not become an adjective or a noun, a noun does not become a verb or an adjective, and an adjective does not become a noun or a verb. Thus, when a lexical category changes its categorical affiliation in a constructional change, we can predict that it will become a functional category.

Thus, we need not adopt Lightfoot's (1979: 149) view that "there is no reason to expect plausible formal restrictions to be imposed on possible changes by a theory of change." On the contrary, the unidirectionality of grammaticalization puts a strong constraint on possible syntactic changes, and since the great majority of syntactic changes involve at some stage a grammaticalization change, we would have the foundation for understanding a substantial part of morphosyntactic change in general if we understood irreversibility.

2. Confronting irreversibility

Let us now see how linguists have dealt with the phenomenon of irreversibility over the years. I will group linguists' attitudes into three categories: overlooking (section 2.1), recognizing (section 2.2), and denying (section 2.3).

2.1. *Overlooking*

The changes that we know collectively as “grammaticalization” have long been known to linguists. In the early nineteenth century, grammarians’ attention was focused on the origin of inflectional formative elements. At least since Bopp (1816) and Humboldt (1985 [1822]), it has been widely recognized that inflectional formatives arise through the attachment (“agglutination”) of formerly independent words, and “grammatical words,” such as prepositions and conjunctions, were likewise traced back to “true, object-denoting words” (Humboldt 1985 [1822]: 63). Thus, the insight that today’s functional categories are yesterday’s lexical categories is very old (the early nineteenth-century authors attribute their view to eighteenth-century predecessors such as John Horne Tooke), but apparently throughout the nineteenth century nobody asked whether the reverse development might not also be possible. Perhaps the irreversibility of the change was too obvious for linguists to demand an explanation.

With August Schleicher’s work toward the middle of the century, another issue became prominent: the development of grammatical structure from a primitive to a more perfect form. Thus, the shift from isolating through agglutinating to inflectional patterns was seen as representing successive stages in the historical development of human language, not as a kind of change that happens all the time in all languages. And toward the end of the nineteenth century, agglutination theory moved further into the background, because new issues such as the regularity of sound change and analogy came to dominate the scene. The leading figures of linguistics at the time never lost sight of it entirely (Gabelentz, Paul, Meillet, Jespersen, Sapir), but it seems that the question why the whole process is unidirectional was never asked explicitly.

2.2. *Recognizing*

After several decades of structuralist dominance in linguistics, interest in grammaticalization began to reemerge only in the 1970s (Givón 1971; Langacker 1977; Lehmann 1995 [1982]). As far as I have been able to determine, the first explicit reference to unidirectionality is found in Givón (1975: 96) in a discussion of the change from serial verbs to prepositions. Givón remarks,

One may offhand argue that an opposite process to the one outlined above, i.e., a process of prepositions becoming *semantically enriched* until they turn into verbs, is at least in theory possible There are a number of reasons why such a process should be extremely rare.

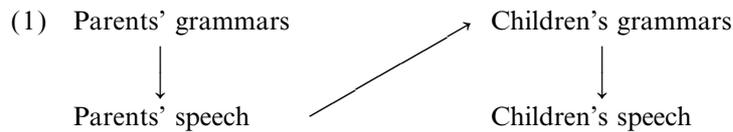
Langacker (1977: 104) also observes, in the context of a discussion of various grammaticalization changes, “Not only are all these kinds of change massively attested, but also they are largely unidirectional,” and Vincent (1980: 58) notes, “Chains of grammaticalization are unidirectional or unilateral — i.e., put at its most general, lexical items may be grammaticalized, but grammatical items do not become lexicalized.” Since then, the unidirectionality or irreversibility of grammaticalization has been recognized as an important feature of the process by all writers on the subject (e.g. Lehmann 1995 [1982]: 16; Heine and Reh 1984: 95; Traugott and Heine 1991: 4–6; Lüdtke 1985; Hopper and Traugott 1993: chapter 5).

2.3. *Denying*

Although the evidence for the irreversibility of grammaticalization is very strong, some authors have given so much weight to the counterexamples as to effectively deny the general rule of unidirectionality. Thus, Ramat (1992: 549) states that “Degrammaticalization, though less frequent than grammaticalization, is an important linguistic phenomenon,” and Harris and Campbell (1995: 338) say that “there is a strong tendency for grammaticalization to proceed in one direction, though it is not strictly unidirectional.” These authors seem to be skeptics with no particular theoretical axe to grind, and their reasons for skepticism are only as strong as their counterexamples. Harris and Campbell cite only one example of a development from clitic to free word (which remains a functional category), and one example of a development from affix to clitic (the well-known case of English ‘s). One of Ramat’s best examples is the existence of a word *ism*, derived from words like *commun-ism*, *fasc-ism*, referring to ‘abstract and possibly abstruse philosophical, political, sociological speculations’. But the creation of this word is hardly thinkable without written language, and it seems to be another case of a citation form of a word part taken out of its constructional context, rather than degrammaticalization (cf. note 1). In any event, the examples of degrammaticalization are so few that the asymmetry requires an explanation. Even Newmeyer (1998), who provides a long list of alleged counterexamples to the unidirectionality claim in a section entitled “Unidirectionality is not true” (1998: 263–275),³ estimates that grammaticalization has occurred “at least ten times as often” (1998: 275) as degrammaticalization.

More interesting are Lightfoot’s (1979: 224–227) reasons for (implicitly) rejecting irreversibility. Like many linguists in the Chomskyan tradi-

tion, Lightfoot primarily focuses on those aspects of language change that seem to be due to the transmission of grammars to successive generations of speakers. Since Andersen (1973), works in this tradition have repeatedly emphasized that there is no direct link between the speech or the grammars of successive generations, but that children have to reconstruct the grammar of the language spoken by their parents exclusively on the basis of the output of their parents' grammars, that is, their speech. This is illustrated in (1).



Since a given output can sometimes be produced by two different grammars, children may choose a different grammar to produce (roughly) the same output as their parents. If this is the main mechanism of language change, then there is no particular reason to expect change to be irreversible. In this perspective, the expectation is that “[l]anguage change is essentially a random ‘walk’ through the space of possible parameter settings” (Battye and Roberts 1995: 11). If language change (or at least one of the main kinds of change, such as grammaticalization) turned out to be overwhelmingly in one direction, this would constitute a puzzle for this general approach, so it is consistent with Lightfoot’s overall purpose that he minimizes the role of unidirectionality. In his discussion of the change from serial verbs to prepositions in Kwa languages, he says,

[I]t is no part of our task to make claims about the direction of the change, whether $a > b$ or $b > a$. Under either interpretation it is an abductive change, a change only in structure. Re-analysis of a serial verb as a complementizer or vice versa is similarly abductive (Lightfoot 1979: 226).

And similarly, Lightfoot states (1979: 224) that “[i]nstead of this development of major to minor category, a reverse process might have taken place.”⁴ Thus, Lightfoot clearly sees the implications of his acquisition-based theory of language change. To the extent that language change turns out to be overwhelmingly directional or irreversible, this is an argument against the simple acquisition-based theory.

3. Previous attempts at explaining irreversibility

Quite generally, the most striking fact about the previous explanations of unidirectionality is that there are so few of them. In view of the

importance of grammaticalization for diachronic linguistics (and also for synchronic variation, cf. Lehmann 1985), which was widely recognized by the 1980s, one would have expected writers on grammaticalization to come up with their accounts of unidirectionality. However, not even the handbooks by Heine et al. (1991) and Hopper and Traugott (1993) contain an explicit proposal in this direction. Most of the explanations that I have found in the literature are restricted to a few remarks that do not add up to a complete story.

Let us begin with Givón (1975: 96), who not only is the first author to explicitly mention unidirectionality but also sketches an explanation. In the passage cited above in section 2.2, Givón goes on to say,

There are a number of reasons why such a process [i.e. the reverse of grammaticalization] should be extremely rare. To begin with, when a verb loses much of its semantic content and becomes a case marker, in due time it also loses much of its phonological material, becomes a bound affix and eventually gets completely *eroded* into zero. It is thus unlikely that a more crucial portion of the information content of the utterance ... will be entrusted to such a reduced morpheme (Givón 1975: 96).

This argument correctly notes that there is an iconic relationship between form and meaning in grammaticalization: as an item is desemantized, it is also formally reduced, and nobody would expect an element to become formally reduced but semantically enriched. But why couldn't an element become phonologically enriched, too? Here Givón invokes the notion of predictability:

Further, while the process of change through depletion is a *predictable* change in language, its opposite — enrichment or addition — is not. The argument here is rather parallel to the uni-directionality of transformations of deletion in syntax (Givón 1975: 96).

The problem with this argument is that the accuracy of predictability is generally quite low. Although we can exclude certain changes, there is no way to predict, say, whether a [p] will be reduced to a [ϕ] or a [b], or whether *going to* will be reduced to [gʊnə] or [gʊŋə]. Similarly, the degree of predictability in lexical-semantic change is very low, and yet words change their meanings all the time. Thus, why shouldn't the preposition *on* become a noun ***owan* 'top' or 'head', for instance?

There is a long tradition in functionalist linguistics that attributes a large part of linguistic variation to the interplay of the two opposite motivations of ECONOMY and CLARITY. The cyclic changes are then explained in the following way: for reasons of economy grammatical

elements are formally reduced until they are barely recognizable, so that the counteracting motivation of clarity must come in. In order to be understood, speakers then introduce fuller, periphrastic elements, which in turn may become subject to the tendency toward economy. Such an explanation is already given by von der Gabelentz (1901 [1891]: 256) (his terms for economy/clarity are *Bequemlichkeit/Deutlichkeit*):

Nun bewegt sich die Geschichte der Sprachen in der Diagonale zweier Kräfte: des Bequemlichkeitstriebes, der zur Abnutzung der Laute führt, und des Deutlichkeitstriebes, der jene Abnutzung nicht zur Zerstörung der Sprache ausarten lässt. Die Affixe verschleifen sich, verschwinden am Ende spurlos; ihre Functionen aber oder ähnliche bleiben und drängen wieder nach Ausdruck. Diesen Ausdruck erhalten sie, nach der Methode der isolirenden Sprachen, durch Wortstellung oder verdeutlichende Wörter. Letztere unterliegen wiederum mit der Zeit dem Agglutinationsprozesse, dem Verschleife und Schwunde ...⁵

Eight decades later, Langacker (1977: 105) paints a very similar picture (his terms for economy/clarity are *signal simplicity/perceptual optimality*):

This tendency toward perceptual optimality will of course often conflict with that toward signal simplicity The tension between signal simplicity and perceptual optimality does not manifest itself basically as an ebb and flow in the erosion of established expressions; I have noted that the processes contributing to signal simplicity are largely unidirectional. Instead the central mechanism for achieving perceptual optimality in syntax is a process I will call “periphrastic locution,” which is simply the creation by ordinary or extraordinary means of periphrastic expressions to convey the desired sense. As these new locutions become established in a language, they too gradually fall prey to the processes leading toward signal simplicity, and the cycle begins again.

This summarizes a view that has been very widespread in the literature. A recent representative of this approach is Klausenburger (1999), who suggests that in grammaticalization new periphrastic forms are created because the older forms are no longer viable “due to the inexorable weakening or destructive evolution so characteristic during grammaticalization.” Similarly, an anonymous *Linguistics* reviewer suggests that grammaticalization is due (at least in part) to “the fact that speakers may revert to periphrastic or metaphorical constructions ... because the older construction may have become opaque for purely linguistic reasons.” But this old idea, that reduction is the cause for expansion, does not explain the irreversibility of the process. After all, one could just as easily argue that conversely, expansion makes reduction possible (e.g. Horn 1921: 117f.). In reality, neither expansion nor reduction causes the other, but both are manifestations of the general cyclic process of grammaticalization.

zation (cf. Lehmann 1985). The real problem is to explain why the conflicting tendencies do not cancel each other out, leading to stasis rather than change — why doesn't erosion stop at the point where it would threaten intelligibility? Or alternatively, why doesn't the tug-of-war between the two counteracting forces lead only to a back-and-forth movement? Langacker notes that “the tension between signal simplicity and perceptual optimality does not manifest itself basically as an ebb and flow in the erosion of established expressions,” but he does not say why this is not the case.

An additional shortcoming of the Gabelentz–Langacker account is that it is not sufficiently clear why only some of the words are reduced dramatically, the eventual functional elements, while other elements remain more or less intact. Furthermore, the economy/clarity approach focuses too much on the formal aspects and has nothing to say on why functional categories also have a reduced, highly general semantics, as well as very special syntactic properties.

Sometimes one gets the impression that linguists become the prisoners of their colorful metaphors. Givón and Langacker speak of “erosion,” and Gabelentz uses the words *Abnutzung* ‘wearing down’ and *Verschleifung* ‘grinding down’.⁶ Our everyday experience with material objects tells us that they are gradually reduced and finally destroyed through frequent use, but why should this apply to words? Words are not material objects, but they exist in our minds as a specific neural patterning, and when they are used they are manifested through coordinated articulatory movements, sound or light waves, and perceptual events. It is not clear that the process of erosion of words has anything in common with the erosion of material objects, except for the conditions (frequent use) and the outcome (reduction). Thus, we cannot hope that the well-understood explanation of the unidirectionality of erosion in material objects will carry over to the unidirectionality of “erosion” of linguistic expressions.

Let us now briefly look at the way one might deal with irreversibility within Chomskyan linguistics. As I noted in section 2.3, generative linguistics with its emphasis on knowledge of language (to the virtual exclusion of language use) and its concern for the problem of language acquisition has generally focused on explaining change through the discontinuity of the transmission of language. As a result, the strong tendency toward grammaticalizing changes and the virtual nonexistence of the reverse of grammaticalization have hardly been mentioned in generative work on language change. The only generative authors who have discussed grammaticalization at any length are Newmeyer (1998: chapter 5) and Roberts and Roussou (this issue; cf. also Roberts 1993).

Newmeyer attempts to explain the prevalence of grammaticalization over degrammaticalization as a “least-effort effect”:

Functional categories require less coding material — and hence less production effort — than lexical categories. As a result, the change from the latter to the former is far more common than from the former to the latter All other things being equal, a child confronted with the option of reanalyzing a verb as an auxiliary or reanalyzing an auxiliary as a verb will choose the former (Newmeyer 1998: 276).

But Newmeyer does not say how the child’s analytical decisions in the acquisition of her linguistic competence might be affected by performance differences. Before the child has a sufficient degree of competence for a certain construction, she can hardly judge the performance effort that goes into it.

More sophisticated, but also less ambitious, is Roberts and Roussou’s account (this issue). While Roberts (1993: 254) still claimed to offer “a genuine explanation” (1993: 254) of grammaticalization, Roberts and Roussou now limit themselves to offering “an enlightening account of grammaticalization” and giving a “reason this kind of change is so common.” Thus, they do not have much to say on why the reverse of grammaticalization should be so much rarer. Their central proposal is that grammaticalization changes can generally be understood as reanalyses involving a structural simplification, especially as involving fewer movement operations. This tendency toward structural simplification is attributed to the property of computational conservatism that characterizes the parameter-setting device (i.e. the learner). Thus, in contrast to Newmeyer, they do not attempt to link grammaticalization with a least-effort principle of performance, but with a hypothesized counterpart of this in competence (or more specifically, the parameter-setting device). However, Roberts and Roussou still rely on previous phonological and semantic changes as triggers of the syntactic changes they discuss, and within their system there is no way of explaining why these changes generally involve reduction and bleaching. Thus, all they do is show that some typical grammaticalization changes can be understood as syntactic simplifications in their framework, and that this is a welcome result from the learner’s perspective.

I conclude that a convincing account of the irreversibility of grammaticalization in a pure competence framework has not been offered to date, and the discussion in the next section will show why I regard performance factors as crucial for explaining directed changes. Certain nondirected changes probably result from strategies of language acquisition (abrupt

reanalyses, cf. Haspelmath 1998), but grammaticalization needs a performance-based account.

4. Explaining irreversibility

In this section I would like to advance a theory of irreversibility that builds on the contributions of Christian Lehmann (1985, 1993) and Rudi Keller (1990, 1994). I will embed the discussion in Keller's metatheory of what constitutes an explanation in diachronic linguistics.⁷

4.1. *The invisible-hand explanation of grammaticalization*

Keller (1994) emphasizes that in order to understand language change, we have to reduce it to the linguistic acts of individuals, rather than hypostatize language as an independent object. Like most nongenerative authors, he assumes a usage-based theory of change in which language change is an unintended byproduct of ordinary language use. Specifically, he proposes that language change should be viewed as an invisible-hand process, that is, a phenomenon that is the result of human actions, although it is not the goal of human intentions. An invisible-hand phenomenon is explained if it can be shown to be the causal consequence of individual actions that realize similar intentions. In section 4.4 of his book, Keller proposes a general structure of invisible-hand explanations: we need to specify (i) the ecological conditions within which certain events take place, (ii) the maxims of action by which speakers are guided in their linguistic behavior, (iii) the invisible-hand process, that is, the events that causally follow from the collective actions of individuals following similar maxims, and (iv) the explanandum.

My proposed explanation has the skeletal structure given immediately below. I will elaborate on the various points in more detail in the next subsection.

- I. Ecological conditions
 - a. Grammar as unconscious processing:

Linguistic units are ordered along a continuum from maximally free/conscious/deliberate to maximally rule-bound/unconscious/automated. Items at the former pole are fully lexical elements, and items at the latter are fully functional (or grammatical) elements.

- b. Basic discourse meanings:
Certain meanings of linguistic units are universally much more basic to speaking than others, i.e. they need to be conveyed much more frequently than others (e.g. 'possession', 'instrument' are more basic than 'bicycle' or 'moon' in this sense).
 - c. Frequency and routinization:
A general feature of cognitive processing in higher organisms is that frequent occurrence of a cognitive event leads to a greater ease of processing (routinization, automation), i.e. less attention is necessary to execute the same task.
- II. Maxims of action (Keller 1994: 95–107; the names of the maxims are mine).
- 1. Hypermaxim: talk in such a way that you are socially successful, at the lowest possible cost.
 - 2. Clarity: talk in such a way that you are understood.
 - 3. Economy: talk in such a way that you do not expend superfluous energy.
 - 4. Conformity: talk like the others talk.
 - 5. Extravagance: talk in such a way that you are noticed.
- III. Invisible-hand process
- a. A speaker says YB_LZ where s/he could have said YA_FZ (by maxim 5). (X_L = lexical element; X_F = functional element).
 - b. Other speakers follow him/her and say YB_LZ , too (by maxims 5 and 4).
 - c. B_L increases in frequency in the community's speech, because B's new meaning is more basic to discourse (in the sense of Ib).
 - d. Because of its high frequency, B_L becomes more predictable.
 - e. Because of its predictability, B is pronounced in a reduced manner by many speakers (by maxims 2 and 3).
 - f. Because of its high frequency, B (which is now B_F) is increasingly automated/routinized in the speaker's mind (by Ic); automated processing entails features such as merger with adjacent elements; obligatory use in certain contexts; fixed position; etc.; i.e. Lehmann's (1995 [1982]) parameters of grammaticalization.
 - g. Through habituation, the meaning contribution of B is no longer perceived as pragmatically salient.
- IV. The explanandum
- An expression B_L , which was a lexical category at a certain stage of the language, has become a functional category B_F (with all sorts of accompanying phonological, semantic, and syntactic changes).

4.2. *Explaining the invisible-hand explanation*

The ecological conditions are highly general properties of language and cognition that are independently motivated. Condition (c) (routinization) is perhaps least controversial (cf. Haiman 1994 on its application to grammaticalization), although it is not very often applied to diachronic linguistics. The first condition (a) presupposes a view of linguistic structure in which there is a continuum between lexicon and grammar, and this correlates with modes of mental processing (“attended vs. automated processing”; cf. Givón 1989: chapter 7; or “conscious vs. unconscious processing”; cf. Lehmann 1993: section 3.4). Such a view is not widespread among contemporary formal syntacticians, perhaps because it complicates the descriptive apparatus considerably, but it is explicit in cognitive grammar (Langacker 1987, 1991) and implicit in much of the functionalist work on grammaticalization. Condition (b) is probably less controversial, because the grammatical categories of different languages overlap to a large extent. Although the precise meanings of functional elements may differ in extremely subtle ways, most of them are drawn from a small recurring set of semantic categories (time and person deixis, participant relations, basic spatial relations, quantity, reference tracking, and a few others). It is difficult to prove that grammatical items are so frequent because their meanings are needed more often than those of other items, but it seems plausible to me, and it appears to be the null hypothesis.

The five maxims are all taken verbatim from Keller (1994), who develops them in part independently of the theory of grammaticalization, and who adopts a different explanation of unidirectionality. Keller formulates the principles as “maxims” in order to emphasize that they guide the speakers in their speech, that is, their locus of application is language performance. Of course, the maxims of economy and clarity are in no way original, nor is the maxim of conformity. What is crucial here is that the speakers’ goal is not just being understood at the lowest possible cost, but rather being socially successful with their speech. If being understood were the only goal, maxim 5 would have no justification, and the replacement of a functional element by a lexical element (e.g. saying *by means of a hammer* for *with a hammer*) would be unmotivated. More generally, it would not be possible to explain the introduction of pragmatically salient innovations (e.g. the use of German *Kopf*, originally ‘cup’, for *Haupt* ‘head’, or the use of polite terms like Spanish *Vuestra Merced* ‘Your Grace’ > *Usted*), because these obscure rather than clarify the message, and the maxim of conformity would eliminate the innovation if it were to arise accidentally.

But social success can also be achieved by being extravagant, and I propose that this is the reason why some speakers introduce innovations such as *by means of* for 'with', or (to take a less well-known example) pre-Maltese *al-kitab mataaġ Manwel* 'the-book property.of Manwel', which has now become *il-ktieb ta' Manwel* 'the-book of.Manwel', and which replaced an older (Classical Arabic) construction with the genitive case. The notion of extravagance is a better description than "expressivity," a notion that is often invoked in the literature.⁸ According to a dictionary definition, *expressive* means 'showing very clearly what someone thinks or feels', so in this sense "expressivity" would not be different from clarity (maxim 2) and it would not explain why speakers should use an innovated word for a sense that for a long time has successfully been expressed by different means.⁹ The crucial point is that speakers not only want to be clear or "expressive," sometimes they also want their utterance to be imaginative and vivid — they want to be little "extravagant poets" in order to be noticed, at least occasionally. Of course, the terms "extravagant" and "poetic" have to be interpreted very loosely here: grammaticalization mostly involves source items that are fairly general already. Thus, while saying 'cup' for 'head' (cf. German *Kopf* 'head') may be poetic and extravagant in an almost literal sense, saying *by means of* for *with* is "extravagant" only in a generalized sense. The main point is that invoking the clarity maxim is not sufficient here.¹⁰

The invisible-hand process thus starts out with individual utterances of speakers who want to be noticed and who choose a new way of saying old things. Since they can only freely manipulate the lexical end of the lexicon–grammar continuum, the new expression necessarily involves a lexical category in the place of the old element. If the lexical item replaces another ordinary lexical item, as when English speakers replace *weep* by *cry*, and perhaps later *cry* by *blubber*, nothing happens except that a lexical item supplants another one. But if the lexical item stands for a grammatical item, as when pre-Maltese speakers began to use the word *mataaġ* 'property' rather than the simple genitive case or juxtaposition, then this may trigger a grammaticalization process at the end of which the lexical item has turned into a grammatical item (Maltese *ta'* 'of').

For this to happen, an individual speaker's innovation must be adopted by other speakers, who thereby follow both the maxim of conformity (showing that they belong to the social group of the original innovator) and the maxim of extravagance (because their linguistic behavior is still unusual for speakers outside their social group). If the minority that thus innovated the new feature is socially influential, the feature will spread throughout the linguistic community, although at a certain point the

maxim of extravagance will no longer be relevant, and the maxim of conformity will be sufficient reason to adopt the new feature.

Lexical items that fulfill a frequent discourse function will then increase in frequency because they are very often useful. Thus, the possessive relation conveyed by the lexical item *mataaŋ* 'property, possession' occurs extremely often, so that *mataaŋ* will become much more frequent. Increased frequency also means increased predictability, and the more predictable an item is, the less phonologically salient it needs to be. Speakers can now afford a slurred pronunciation (by the maxim of economy) because the danger of misunderstanding (the maxim of clarity) is not particularly high. In this way frequent items get reduced phonologically well beyond the average reduction (cf. Bybee forthcoming).¹¹ Since the reduced pronunciation is stable, the original full pronunciation is lost from the language after a while (thus, *mataaŋ* has become *ta'* in Maltese).

High frequency of use entails not only phonological reduction, but also routinization and automation according to the principle Ic of section 4.1, that is, speakers need less conscious attention to process functional items (cf. Bybee forthcoming for details). Routinization seems to be the explanation for several of the accompanying processes of grammaticalization that Lehmann (1985, 1995 [1982]) has described in a systematic fashion. Functional elements become obligatory, that is, speakers are no longer free to choose them in certain contexts, but the context forces speakers to use them if they want to conform to the rules. Functional elements are fixed in their position, that is, speakers have less freedom in positioning them than they do with lexical elements. Through routinization, functional elements often merge phonologically with adjacent words with which they typically cooccur and with which they are in a semantic relationship, for instance when a postposition is agglutinated to become a case suffix. Routinization also has consequences for highly specific grammatical rules such as coordination. For instance, in French the preposition *à* 'to, at' is sometimes omitted from the second conjunct, but sometimes it must be repeated (cf. Jaeggli 1982):

- (3) a. Tu penses à Paul et Marie.
 you think of Paul and Marie
 'You are thinking of Paul and Marie.'
- b. Ils ont emprunté ce livre à Jean et à Marie.
 they have borrowed this book to Jean and to Marie
 <*à Jean et Marie>
 'They borrowed this book from John and Mary.'

In (3a), *à* represents a locative relation (cf. the pronominalization *Tu y penses*), whereas in (3b) it represents a dative relation (cf. the pronomi-

nalization *Ils leur ont emprunté ce livre*). The latter use of *à* taking scope over both conjuncts (cf. Lehmann's parameter of reduced scope in grammaticalization).

4.3. Deriving irreversibility

Let us now see how the irreversibility of grammaticalization follows from this explanation. For the reverse change from A_F (a functional category) to A_L (a lexical category) to take place, the first part of the invisible-hand process would have to be "A speaker says YA_FZ where s/he could have said YB_LZ ." There are two reasons why speakers do not do this.

First, this would run counter not only to maxim 4 (conformity) — every innovation violates this maxim — but also to maxim 2 (clarity), because functional elements are usually less salient and less explicit than lexical elements. There is no maxim that would justify such behavior. This part of my explanation is essentially what Lehmann (1985: 315) seems to have in mind when he says, "The converse movement [i.e. the converse of grammaticalization] almost never occurs. It would constitute a constant desire for understatement, a general predilection for litotes. Human speakers apparently are not like this." But we can be more specific than Lehmann is in this passage. Starting from Keller's (1994: 107) hypermaxim ("Talk in such a way that you are socially successful, at the lowest possible cost"), we can derive the maxims of clarity, economy, conformity, and extravagance. In this context the opposite of extravagance is conformity. However, while extravagance may lead to behavior IIIa, conformity does not lead to the opposite behavior of replacing lexical elements by functional elements. This asymmetry of the opposites extravagance and conformity seems to lie at the root of the unidirectionality of grammaticalization.

A second reason is that, as stated in the ecological condition Ia (cf. Lehmann 1985: 314, 1993: section 3.4), lexical elements are freely manipulable by speakers and (more or less) accessible to consciousness, whereas functional elements are processed automatically and unconsciously. So even if a speaker had some motivation for replacing a lexical item by a functional one, s/he would not be able to do this because functional elements cannot be used outside their proper places.

If by some miracle the first two obstacles were overcome and a speaker were to use a grammatical item in the place of a lexical item (say, *with* for 'tool'), then the next steps in the hypothetical functional-to-lexical development would apparently not be impossible. Thus, because the meaning of the item is no longer basic to discourse the item would drop

in frequency (step [c]), and it would become less predictable (step [d]). Next, speakers might want to pronounce it more clearly because the element is no longer highly predictable (step [e]), and they could do this, for instance, by lengthening the vowel (e.g. [wið] > [wi:ð]), strengthening the consonants (e.g. [wi:ð] > [hwi:θ]), introducing additional syllables (e.g. [hwi:θ] > [hwi:θə]), and so on. Such changes of course do not occur, but the question is why. For Lüdtké (1980, 1985, 1986), the fact that they are impossible is an axiomatic truth (in other words, a general ecological condition) of this theory of irreversibility. In Lüdtké (1985: 356), he puts it this way:

The rules of the game (i.e. the language system) allow for one-sided deviations within the limits of two parameters. There is a phonetological maximum (corresponding to the pronunciation in teaching books) which is a mark not to be overshoot but which the normal speaker, in ordinary performance, will fall more or less short of.

But Lüdtké does not explain this restriction any further, he just takes it as a given fact. I think that he is basically right that speakers do not “overshoot the mark of the phonological maxim,” but I think this can be explained as a consequence of the above ecological conditions and maxims: since the reverse of step (a) is impossible, steps (b)–(e) have no opportunity of ever occurring.¹²

4.4. *Grammaticalization as an inflationary process*

Some authors have noted the parallels between grammaticalization changes and inflationary processes in other domains of human cultural conventions. A particularly detailed discussion is found in Dahl (1999). I believe that this analogy is very useful for understanding grammaticalization, and I will briefly show that grammaticalization as explained here can be understood as a manifestation of the more general process of inflation.

First of all, although Dahl (1999) does not point this out, an “inflationary” account of grammaticalization fits very well with the invisible-hand metatheory that I have been using in this article. As everybody knows, the original idea of invisible-hand processes comes from the field of economics, and inflation is an often-cited example of an economic invisible-hand process. Inflation is a natural consequence of the lack of a real-world counterpart of an object with a conventional value (cf. Dahl 1999). If a government issues more banknotes even when there is no corresponding increase in commodities in a country’s economy, the

banknotes will lose part of their earlier conventional value as a result of an invisible-hand process. Similarly, if a king buys the loyalty of some followers by making them into, say, Grand Dukes and the number of Grand Dukes in the country doubles, the value of that title is bound to decrease (Dahl 1999). This already brings us closer to language: if it becomes customary to address not only university instructors, but also instructors at polytechnic schools as “professors,” the title “professor” is devalued, and university professors may want a new title that distinguishes them.¹³ (A similar example is discussed by Keller 1994: 76–77.) In all these cases, the instigators of the change gain a short-term advantage, but in the long run the change of the system eliminates this advantage.

Grammaticalization is very similar to these processes: a grammatical construction is initially used for a special communicative effect that gives a short-term advantage to the innovator (step IIIa in section 4.1), but as more and more people are trying to get their share of this advantage (step IIIb), the advantage disappears, and the system has undergone a change. Thus, the parallel with other inflationary processes again demonstrates the importance of the maxim of extravagance. The extravagance effect is the short-term gain that sets the whole process in motion. Dahl (1999) thus aptly coins the term “rhetorical devaluation” to describe the pragmatic effect of grammaticalization. The reason for the irreversibility of grammaticalization is similar to the reason for the irreversibility of title devaluation: there is no advantage to be gained from using a less explicit or less vivid construction (cf. section 4.3),¹⁴ just as there is no advantage to be gained from under-titling someone, or from downgrading some Grand Dukes to ordinary Dukes. And while monetary inflation is of course much more complex, again the asymmetry between frequent inflation and rare deflation seems to be attributable to the short-term advantage that governments gain from issuing more banknotes. A final parallel between monetary inflation and grammaticalization is perhaps worth pointing out: once inflation has led to prices of several thousand currency units for everyday goods, governments often decide to introduce a reform that shortens the amount figures by cutting off three zeros at the end. This is completely analogous to the dramatic phonological reduction that generally accompanies grammaticalization.

4.5. *Semantic grammaticalization*

One of the most widely discussed aspects of grammaticalization, the fairly dramatic semantic changes, has not been mentioned explicitly at all so far. The reason is that I am not sure that semantic grammaticalization

is as central to the process as has generally been assumed. In my model, I can easily explain the loss of pragmatic salience that is commonly observed in grammaticalization. For instance, the emphatic negation marker *pas* in older French has lost its pragmatic markedness and has become the normal negation marker, without any semantic changes in the narrow sense having taken place. Or an “emphatic reflexive” element like *self* may lose its “emphatic” value and become an ordinary anaphoric pronoun with special locality restrictions (e.g. English *himself*, *herself*, etc.). The loss of pragmatic salience is a natural consequence of habituation through frequency of use. It is thus another side-effect of routinization.

But what about the semantic bleaching or generalization that is so often observed in the development from a lexical to a functional category? This does not seem to be a consequence of routinization, unlike the phonological and syntactic changes of grammaticalized items, but a prerequisite for it. I said at the beginning that a lexical item can become grammaticalized only if it is used in a basic discourse function, because otherwise it would not increase significantly in frequency. For instance, the semantic change in English *going to* from the spatial sense to the future sense made it possible for the item to become reduced to *gonna* and to develop further properties typical of a functional category. Thus, in my model it is not so much that semantic bleaching and phonological reduction go hand in hand, but semantic generalization is in a sense the cause of the other processes of grammaticalization. The semantic aspect of the change is not itself irreversible. We know from studies of lexical-semantic change that semantic generalization and semantic specialization are equally possible. But when a lexical item is specialized through semantic change, it can hardly increase in frequency — semantic generalization or bleaching is usually a prerequisite for use in a basic discourse function, that is, for the increase in frequency that triggers the other changes.

5. Conclusion

This concludes my account of the irreversibility of grammaticalization. It is to some extent inspired by Lehmann (1985, 1993, 1995), but I have made some of Lehmann’s vague statements more explicit by integrating them into Keller’s (1994) explanatory framework. As a final point, let us examine Lehmann’s most recent statement of his theory:

Sprache und somit auch Grammatik wird immerfort geschaffen. Die zielorientierte Kreativität des Sprechers setzt freilich an den oberen grammatischen Ebenen an,

wo er die Freiheit zum Manipulieren hat. Des Sprechers unmittelbares Ziel ist es, expressiv zu sein. Dadurch überlagert er immer wieder schon vorhandene Ausdrucksmittel, deren Einsatz sich automatisiert. Dadurch entsteht Grammatik (Lehmann 1995: 1265).¹⁵

This passage leaves open several questions that I have tried to answer in this paper:

- How is grammar created and by whom? (It arises through an invisible-hand process.)
- What is the goal of the goal-oriented creativity of the speaker? (The speaker follows the general maxims, one of which is “Talk in such a way that you are noticed” — the maxim of extravagance.)
- Why should the speaker want to be “expressive”? (That is true only if ‘expressive’ is taken to mean ‘extravagant’.)
- What are the conditions for automation of means of expression? (Frequency of use.)

The key concept in my explanation of irreversibility is the maxim of extravagance. This has the potential for explaining the unidirectional trend that we observe, in contrast to the maxims of clarity and economy, which are directly opposed to each other and would cancel each other out.

The invisible-hand explanation allows us to reduce the observed regularities at the macro-level of language change to the speech behavior of individuals at the micro-level. The macro-effect of grammaticalization need not be attributed to some mysterious external “law of history” that inexorably pushes languages down a certain path. As Lightfoot (1999: 220) notes correctly, “a historical law [cannot] be anything other than an epiphenomenon, an effect of other aspects of reality.” However, there is no need to conclude from this that language change is radically unpredictable and that we shouldn’t even try to find a principled explanation for long-term trends of change (as Lightfoot does).¹⁶ My invisible-hand explanation should also make it clear that grammaticalization is not conceived of as “a distinct process,” “an encapsulated phenomenon, governed by its own set of laws,” a view that Newmeyer (1998: 234) attributes (wrongly, in my view) to mainstream grammaticalization studies. None of the explanatory concepts of section 4 are specific to grammaticalization changes, and indeed few are specific to language. Thus, I do not object to Fischer’s (1997: 180) suggestion that “there may not be such a thing as an independent process of grammaticalization.” Clearly, “there is nothing deterministic about grammaticalization ... Changes do not have to occur ... they do not have to move all the way along a cline” (Hopper and Traugott 1993: 95). But it cannot be denied that a large class of morphosyntactic changes conform to a general

pattern in which a more lexical element becomes more functional, and that this pattern is strictly constrained: the reverse process, while perfectly possible logically, is extremely rare.

To conclude this paper, let me stress once again that grammaticalization, which is the driving force of so much of morphosyntactic change, can only be explained with reference to factors of performance — the ecological conditions and the maxims of my model are all laws of language use, not of pure, performance-free competence. Imperfect acquisition of language by children cannot explain the directionality of this change, although it might be an important source of other changes (such as reanalyses). Thus, even today the central sentence of Hermann Paul's *Prinzipien der Sprachgeschichte* (1920 [1880]: 32) remains relevant: "Die eigentliche Ursache für die Veränderung des Usus ist nichts anderes als die gewöhnliche Sprechfähigkeit."¹⁷

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Notes

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1. Sometimes expressions like *ifs*, *ands*, or *buts* are mentioned as counterexamples, but in these cases words are taken out of their construction and employed metalinguistically. This does not count as the reverse of grammaticalization because in grammaticalization the identity of the construction and the element's place within it are always preserved. Similar remarks apply to the often-cited counterexamples of "deprepositional" verbs like *to down a beer*, *to off someone*. These verbs were created by the word-formation strategy of conversion, not by a change affecting a construction whose basic identity is preserved. Moreover, they are derived from adverbs, not prepositions, and spatial adverbs like *down* and *off* are not really functional categories.
 2. Ans van Kemenade (personal communication) suggests as a possible problem the case of ancient Indo-European prepositions, which diachronically derive from adverbial particles (cf. the account in Vincent, this issue). Here one might say that a particle ("specifier") is reanalyzed as a transitive preposition as a result of a structural reanalysis (from specifier-head to head-complement), and since the new preposition has acquired an argument structure, this would go against the irreversibility hypothesis. In my view, this change confirms rather than undermines the irreversibility hypothesis.

because the lack of an argument structure is a criterion for functional (or grammaticalized) status only in the case of verbs (which commonly lose their argument structure when they grammaticalize to auxiliaries). Quite generally, syntactic relations become tighter in grammaticalization (cf. Lehmann 1995 [1982]), so the fact that the original semantic link is strengthened to a syntactic argument link in the genesis of the ancient Indo-European prepositions is completely in line with the general properties of grammaticalization. (Auxiliary verbs, too, are more tightly linked syntactically than full verbs, but the link is with other verbs or VPs, no longer with standard NP or S arguments.)

3. Many of Newmeyer's alleged counterexamples are not real counterexamples; see Haspelmath (1999b) for some discussion.
4. Lightfoot goes on to give an example, which is, however, based on a serious misunderstanding (1979: 224–225): "After all, historical records show that the Romance languages underwent two kinds of changes, moving at one stage from 'synthetic' to 'analytic' morphology, and at another stage in the reverse direction." The movement from synthetic to analytic is the renewal phase of grammaticalization, whereas the change from analytic to synthetic is the agglutination phase. Both processes are evidently part of the same unidirectional development, they only represent different phases of the cycle (cf. Schwegler 1990 for analysis and synthesis in the development of Romance languages).
5. "Now the history of languages turns in the diagonal of two forces: the impulse toward laziness, which leads to the wearing off of sounds, and the impulse toward clarity, which does not allow this wearing off to destroy the language. The affixes grind down, they finally disappear without a trace; but their functions or similar functions remain and need to be expressible again. This expression is provided, by the method of the isolating languages, through word order or clarifying words. In the course of time, the latter again undergo agglutination, grinding down and deletion."
6. This metaphor is already found in Humboldt (1985 [1822]: 22): "Der bloss längere Gebrauch schmelzt die Elemente der Worstellungen fester zusammen, schleift ihre einzelnen Laute ab, und macht ihre ehemelige selbständige Form unkenntlicher" [The mere longer use fuses the elements of phrases closer together, erodes their individual sounds, and makes their former independent form less recognizable].
7. Keller (1994: section 5.1) adopts Lüdtke's (1980, 1985, 1986) theory of unidirectionality in his brief discussion of the reduction–merger–periphrasis cycle. Below in section 4.3 I will give some reasons why I regard Lehmann's approach as superior to Lüdtke's (although Lüdtke's theory is much more rigorous and explicit). (Klausenburger [1999], too, discusses grammaticalization in the context of Keller's meta-theory, but he does not address the issue of why grammaticalization is irreversible.)
8. E.g. Hopper and Traugott (1993: 65): "These new and innovative ways of saying things are brought about by speakers seeking to enhance expressivity"; Lehmann (1995): "Des Sprechers unmittelbares Ziel ist es, expressiv zu sein" [The speaker's immediate goal is to be expressive].
9. Another problem of the term "expressive" is that it might convey the idea that speakers primarily want to *express* themselves, whereas in fact their primary goal is to *impress* the hearer. Thus, I disagree with Koch and Oesterreicher (1996), who equate the "expressivity" at the beginning of grammaticalization with "strong emotional involvement" (1996: 69). Not the speaker's emotions are at issue, but the hearer's reactions.
10. Ulrich Detges (personal communication) has pointed out to me that my term "extravagance" suggests that the choice of lexical elements should be arbitrary, that everything

should be allowed under a kind of poetic license. This is of course in contrast to what we find in languages: again and again the same source items give rise to grammatical markers. In Detges (1999) he instead proposes that the speaker's main motivation in taking step IIIa is to enhance her own credibility, and to impress the hearer. I believe that this view is not necessarily incompatible with my proposal. The main point for me is that the speaker's choice of a novel form is motivated by some further goal, in addition to transporting the message clearly. Perhaps maxim 5 should be rephrased as "Talk in such a way that the hearer is impressed," and renamed as "maxim of impressiveness."

11. That phonological reduction is greater in frequent words has long been recognized, but the reasons for this have rarely been made explicit. Schuchardt (1885: 24) compared sound change of frequent words with the wearing off of small coins that are used often: "Die Veränderung eines Lautes, sein Fortschreiten in einer bestimmten Richtung ... besteht aus einer Summe der allergeringsten Verschiebungen, ist also von der Zahl seiner Wiederholungen abhängig." But I have already emphasized that the comparison between words and material objects can be misleading: material objects necessarily lose structure through friction, but sounds do not change just because a word is used.
12. For a long time I thought that Lüdtke's explanation of irreversibility was the correct one (cf., e.g., Haspelmath 1998), although I always wondered why it should be that articulation "cannot be more distinct than perfectly distinct" (to use Keller's [1994: 109] words). Now I have come to believe that a Lehmannian explanation is superior because it only requires the ecological conditions Ia–c and the maxims 1–5 as axioms of the theory, and all of these are independently motivated.
13. This process is currently going on in Germany, where university professors now officially have the right to use the title "Universitätsprofessor(in)."
14. Moreover, as I also argued in section 4.3, speakers have limited conscious access to functional elements, so it is doubtful that they would even be able to do this.
15. "Language and hence also grammar are constantly being created. The speaker's goal-oriented creativity starts at the higher grammatical levels, where he has freedom to manipulate. The speaker's immediate goal is to be expressive. In this way he again and again creates a new layer on top of existing means of expression, whose use is automatized. This is how grammar arises."
16. See Haspelmath (1999a) for detailed discussion of Lightfoot's position.
17. "The real cause of the change of (linguistic) conventions is nothing other than ordinary language use."

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