

Grammaticalization as Optimization

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2.1 Grammaticalization

2.1.1 Meillet's formal concept of grammaticalization

According to the neogrammarians and de Saussure, all linguistic change is either sound change, analogy, or borrowing.¹ Meillet (1912) identified a class of changes that don't fit into any of these three categories. Like analogical changes, they are endogenous innovations directly affecting morphology and syntax, but unlike analogical changes, they are not based on any pre-existing patterns in the language. Meillet proposed that they represent a fourth type of change, which he called GRAMMATICALIZATION. Its essential property for him was that it gives rise to *new grammatical categories* — that is, to categories previously unexpressed in the language — and thereby transforms its overall system.

“... Tandis que l'analogie peut renouveler le détail des formes, mais laisse le plus souvent intact le plan d'ensemble du système grammatical, la “grammaticalisation” de certains mots crée des formes neuves, introduit des catégories qui n'avaient pas d'expression linguistique, transforme l'ensemble du système.”

The “newness” of a category can be either a matter of content, as when a language acquires a new tense category, or a matter of new form for old content, as when postpositions turn into case

endings, or word order replaces morphology as the mark of grammatical relations.

For Meillet, analogy and grammaticalization are categorically distinct processes, because analogy requires a model for the innovating structure, and grammaticalization by definition does not have one. Meillet noticed that grammaticalization processes have two other distinguishing properties. They proceed in a fixed direction towards “l’attribution du caractère grammatical à un mot jadis autonome”. For example, languages readily acquire case systems by grammaticalization of adpositions into affixes, but there are no known examples of languages acquiring systems of adpositions by “degrammaticalization” of case endings (although individual case affixes can become clitics and even adpositions by ordinary analogical change, see section 2.3 below). Secondly, grammaticalization is often accompanied by phonological *weakening* of the grammaticalized element, and never, it seems, by strengthening. For example, case affixes are typically reduced in phonological form compared to the original adpositions that they are historically derived from. Together, Meillet’s two generalizations constitute the first formulation of the famous unidirectionality hypothesis.

Meillet’s generalizations are empirical rather than definitional, so they demand an explanation. He suggested that grammaticalization is due to the loss and renewal of expressiveness of speech forms in the use of language, reasoning that, since this is a constant factor in the ordinary use of language, the changes it triggers must have an intrinsic direction. As for phonological weakening, he saw it as a consequence of the fact that function words (*mots accessoires*) ordinarily do not carry focus. Therefore, when a lexical item becomes a function word, speakers can afford to give it a reduced articulation, which then can become established as its normal pronunciation:

“...les mots accessoires groupés avec d’autres tendent de ce chef à s’abrèger et à changer de prononciation. De plus, et par le fait d’abrègement, et par le fait que,

étant accessoires, ils sont prononcés sans effort et attendus sans attention spéciale, ils sont négligés, dénués d'intensité, ils ne sont plus articulés qu'à demi." "... les mots accessoires ont des traitements phonétiques aberrants."

The idea that there is a special type of grammatical change which is unidirectional and associated with phonological reduction has gained widespread support in recent work. Meillet's examples remains staples of the modern grammaticalization literature:

- (1) a. The rise of the periphrastic perfect in Romance and its subsequent development into a simple past in French (VERB > AUXILIARY, PERFECT > PAST),
- b. the strengthening of negation by indefinitely quantified elements, which then become negations themselves: Latin *ne* > *ne unum* > *noenum* > *nōn*, Romance (*nōn* >) *ne* > *ne pas* > *pas* > *pas du tout* (the trajectory later famous as "Jespersen's cycle"),
- c. the rise of auxiliaries: *je suis parti*, *habeo dictum* > *j'ai dit*, *I will make*, *I shall make*, *je vais faire*,
- d. the rise of light verbs and "clause union" constructions: *laissez venir*, *il vient me dire cela*,
- e. the rise of complementizers: Greek *thelo ina* > *thelo na* > *the na* > *tha*,
- f. the grammaticalization of fixed word order ("... la façon de grouper les mots peut aussi devenir un procédé d'expression grammaticale.").

In spite of its sketchy nature, Meillet's pioneering essay makes some precise proposals and raises issues which remain unresolved even now. One obvious criticism is that taking the creation of new linguistic categories as the defining property of grammaticalization yields too broad a class

of changes. Because morphological categories are compositional, new ones *can* be created by analogical extension of existing combinatoric patterns.

An example of a new morphological category that has originated by analogy is the Sanskrit Past Perfect (“Pluperfect”). Sanskrit has a subclass of Perfect forms which have present time reference, e.g. *ci-két-a* ‘I see, I recognize’, *ja-grábh-a* ‘I grasp’. These Perfects have Past (“Pluperfect”) counterparts, which are formed by adding Past tense morphology to the Perfect stem, e.g. *á-ci-ket-am* ‘I saw’, *á-ja-grabh-am* ‘I grasped’. The category of Past Perfect originated by analogy to the Past non-Perfect (the “Imperfect”), by a morphological generalization which can be visualized by the proportional schema in (2):

(2)	Nonpast	Past
Nonperfect	<i>kr-ṇó-mi</i> ‘I do’	: <i>á-kr-ṇav-am</i> ‘I did’
Perfect	<i>ja-grábh-a</i> ‘I grasp’	: <i>á-ja-grabh-am</i> ‘I grasped’

The morphology and meaning of the Past Perfect is fully predictable from the meaning of the corresponding Perfect and the Past.² Although this innovation creates a new grammatical category, it has none of the hallmarks of grammaticalization; it is a straightforward case of analogical change.³

A related problem with Meillet’s view is that it treats analogy and grammaticalization as radically disjoint classes of change. Consequently it precludes by definition any interaction between analogy and grammaticalization. I argue below that such interactions are, if anything, the norm, in the sense that most grammaticalization processes are constrained by, and partly motivated by, the grammatical structure of the language. The theory I will propose directly addresses this understudied grey area of analogy/grammaticalization interactions.

Finally, let us note that the causal mechanisms mentioned by Meillet (expressiveness being the primary factor) do not account for common grammaticalization patterns such as univerbation. A

prime example of univerbation is the change of adpositions to affixes, which will be in focus below.

2.1.2 New functionalist approaches to grammaticalization

Meillet's idea that grammaticalization is a "conséquence immédiate et naturelle" of ordinary language use has been widely adopted and fleshed out with the help of ideas from pragmatics. Grammaticalization has become a research area in its own right. Modern studies of grammaticalization often cite Meillet's article as a precursor, but less often do justice to the rather different view it expresses.

The major thrust of the new research has been to explain grammaticalization in functionalist terms (Givón 1979, Lehmann 1982, Traugott & Heine 1991, Bybee/Perkins/Pagliuca 1994). Meillet's formally defined concept of grammaticalization has been replaced in several different ways, usually by building in unidirectionality into the definition. There are two principal competing families of definitions:

- (3)
 - DEF 1: a grammaticalization is a change "by which the parts of a constructional schema come to have stronger internal dependencies" (Haspelmath 2004).
 - DEF 2: a grammaticalization is a change "where a lexical unit or structure assumes a grammatical function, or where a grammatical unit assumes a more grammatical function" (Heine, Claudi, and Hünemeyer 1991).

The two definitions pick out different aspects of unidirectional change. The first is based on change in morphosyntactic form, which proceeds from lexical words to function words, function words to clitics, and clitics to affixes, in short towards increasingly tightly bonded units. The second definition is based on change in morphosyntactic function, which is also assumed to proceed unidirectionally from "less grammatical" function to "more grammatical" function (however exactly that is to be defined).

The two kinds of change do not exactly coincide. For example, the change from a postposition to a clitic or suffix involves a strengthening of internal dependencies, but it does not necessarily involve any change in grammatical function, either of the postposition/clitic or of the grammatical unit to which it belongs. Such changes are grammaticalizations by Def. 1 but not necessarily by Def. 2. On the other hand, when an epistemic modal acquires a deontic meaning, even granting that it thereby assumes a “more grammatical function” in some sense (which remains to be made more precise), it does not necessarily acquire a stronger morphosyntactic internal dependency. Such changes are grammaticalizations by Def. 2 but not necessarily by Def. 1. The two aspects of grammaticalization do not have to march in lockstep, and neither seems to be a necessary consequence of the other. Thus, the definitions in (3) arguably pick out separate and more or less loosely parallel trajectories of change.

There are moreover putative grammaticalizations to which *neither* definition is straightforwardly applicable. Meillet’s example of the change of the Romance periphrastic perfect into a simple past in French (the second step in (1a)) certainly does not result in stronger internal dependencies, but it doesn’t result in a more grammatical function either, at least in any clear sense of “grammatical”. What does seem to be common to such changes is semantic generalization, or *bleaching* as it is sometimes called.⁴ The perfect’s domain extends to cover the ground of the obsolescent simple past.⁵

Like the increase of grammatical function, semantic bleaching follows a trajectory of its own which does not strictly coincide with any structural changes. For example, in the development of case, bleaching is not necessarily tied to morphological downgrading from postposition to clitic to suffix.

The modern view takes unidirectionality, rather than the formation of new categories, as the

essential property of grammaticalization. This reorientation has important consequences. The concept becomes more restricted in some respects, and more inclusive in others. Some changes no longer qualify as grammaticalizations; on the other hand, the concept now includes much of what is traditionally considered analogical change. In some treatments, in fact, it is effectively equated with grammatical (morphosyntactic) change.

The most drastic consequence of this revision is that the unidirectionality thesis becomes either tautological or false. Under (3), grammaticalization is unidirectional by definition, as Newmeyer 2001, Joseph 2001, 2004, 2006, and others have noted. To make the unidirectionality thesis into an empirical claim again, it can be restated in the obvious way (“there is no degrammaticalization”, cf. Haspelmath 2004), or grammaticalization can be redefined as a change by which an element acquires “new grammatical functions” (rather than “more grammatical functions”) (Hopper & Traugott 2003:xv).⁶ Under either of these reformulations, it becomes false, for there are well-documented instances of DEGRAMMATICALIZATION (“upgrading”), that is, of changes in which “internal dependencies” are loosened, or forms acquire a “less grammatical function” (e.g. Harris and Campbell 1995: 336-338). Here is a partial list of them, culled from the recent literature.

- (4) a. Seto and Võru (South Estonian) Abessive case suffix *-lta* > clitic =*lta*.
- b. Vepsian Abessive case suffix *-tta* (< **-ptaken*) > clitic =*tta*.
- c. Saami (Lappish) Abessive case suffix *-taga* (< **-ptaken*) > clitic =*taga* > free postposition *taga* (Nevis 1986b).
- d. English and Mainland Scandinavian genitive suffix *-s* > clitic =*s* (Janda 1980, 1981, Plank 1992, 1995, Norde 1997, Allen 1997, Newmeyer 1998:266, Tabor and Traugott 1998).
- e. Irish 1Pl. suffix *-muid* > independent pronoun *muid* (Bybee et al. 1994)

- f. Spanish 1Pl. suffix *-mos* > independent pronoun *nos*.
- g. English inseparable infinitive prefix *to-* > separable *to* (Fischer 2000, Fitzmaurice 2000).
- h. Estonian question marker *-s* > clitic *=es* > free particle *es* (Nevis 1986a, Campbell 1991:290-2).
- i. Estonian affirmative marker *-p* > clitic *=ep* > free adverb *ep* (Campbell 1991:291).
- j. Modern Greek prefix *ksana-* ‘again’ > free adverb *ksana* ‘again’ (Méndez Dosuna 1997).

Haspelmath 1999, 2004 and Hopper & Traugott 2003 argue that such counterexamples are not damaging to the unidirectionality thesis because they are sporadic.⁷ In their view, robust tendencies is the best we can hope for in the functional realm, indeed they are in some sense more interesting than categorical ones.

A growing number of authors draw the opposite conclusion: the counterevidence, far from being harmless, refutes unidirectionality outright, and no special type of change such as grammaticalization even exists. Like analogy, it is “just reanalysis” (Harris & Campbell 1995, Joseph 2001, Newmeyer 1998).

I hold that the first view is too weak and that the second is tautological, and defend the more radical position that the unidirectionality thesis, properly formulated, is exceptionless. Following the lead of Plank 1995, I argue that changes like those in in (4) are not degrammaticalizations, but ordinary analogical changes. Further, I claim that at a deeper level grammaticalization and analogical change are unifiable as subtypes of a single kind of change, GRAMMAR OPTIMIZATION.

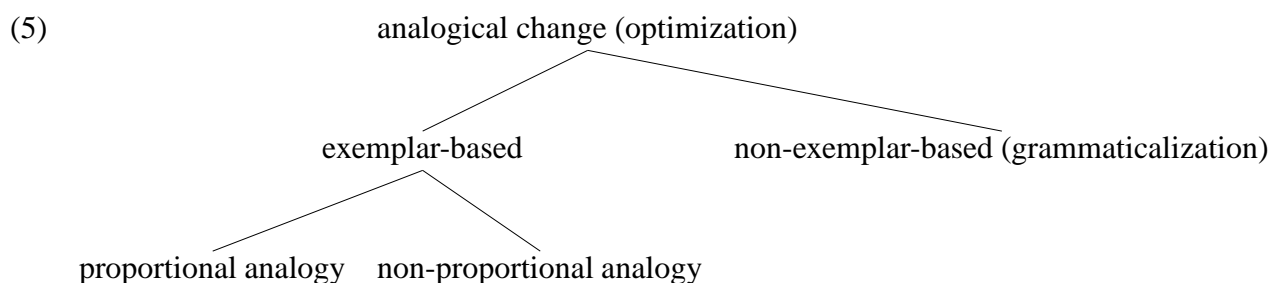
2.1.3 Grammaticalization and analogy unified as optimization

Back to Meillet's original question: how can changes that otherwise resemble analogy give rise to novel structures and categories in a language? Instead of positing a wholly new kind of change, let's rethink analogy itself. In previous work I have proposed that analogical change is grammar optimization, the elimination of unmotivated grammatical complexity or idiosyncrasy (for a summary, see Lahiri 2000, with references). This idea is supported by two classes of arguments. The first is that it places desirable restrictions on analogical change. For example, not every "proportion" or "reanalysis" defines a possible analogical change. As every working historical linguist knows, analogical changes tend towards improving the system in some way (even if incomplete regularization may paradoxically end up complicating it, Kiparsky 2009). The second class of arguments for understanding analogy as grammar optimization is that this allows several types of problematic analogical change to be accommodated, namely various types of non-proportional analogy (arguably leveling, and lexical diffusion according to Kiparsky 1995). Thus, generalization of surface patterns (whether represented as proportions, rules, constraints, schemata, or whatever) is at once too restrictive and not restrictive enough, and grammar optimization solves both problems.

Suppose now that some constraints, patterns and categories of language are provided by UG. Grammar optimization then yields an interesting new corollary. It predicts a type of radically non-proportional analogy — analogy which is not exemplar-based. Such non-exemplar-based analogical change can establish new patterns in the language, as determined by language-independent UG constraints; it is intrinsically directional. *This is grammaticalization.*

From the traditional point of view, the idea of non-exemplar-based analogy is a contradiction in terms: analogy by definition has a model, a pre-existing pattern of the language which is gener-

alized to new instances. From mine, though, that is just one special case of analogy. To the extent that there are language-independent constraints defining asymmetries in markedness or complexity, analogy may be driven by those constraints. Analogy can then give rise to patterns which are not instantiated in a parallel exemplar, or even patterns which are not yet instantiated at all. These patterns reflect preferences grounded in UG and/or in pragmatics or perception/production factors.⁸ If analogical change is grammar optimization, then the existence of grammaticalization, in this sense, follows as a logical consequence. The result is the following typology of analogical change:



As a typical example of grammaticalization, consider again the fusion of two or more words into one. It can occur spontaneously as it were, without any particular model. The opposite process, fission of one word into two or more words, is not only more rare, but what is more significant, it is always exemplar-based: it occurs only by analogy to specific existing constructions. The reason why fusion does *not* require an analogical model is that it is driven by a language-independent preference for structural economy: other things being equal, one word is always better than two. This bias requires no inductive grounding and is not acquired from the ambient language. It is part of what the learner brings to the acquisition process, and part of what the speaker/hearer brings to the speech situation. Grammaticalization occurs when this bias asserts itself against the data, as when languages which have no case endings acquire them through the grammaticalization of postpositions and clitics. So grammaticalization is analogy, albeit a special kind of analogy that

is driven only by general principles and constraints of language (though it may be *constrained* by language-specific rules or constraints as we shall see).⁹

Since those general principles are invariant across languages, grammaticalization *must* be unidirectional. This means that there can be no spontaneous degrammaticalization at all. The apparent cases of degrammaticalization cited in the literature, I believe, are ordinary analogical changes of the exemplar-based type. This crucial corollary of my thesis will be pursued in section 2.3.

In this article I will concentrate on the fusion type of grammaticalization (Def. 1 in (3)), as opposed to bleaching, or semantic generalization. I think the latter type of grammaticalization can also be analyzed in the present framework as grammar optimization, but I will leave this for another study.

To summarize: the idea of grammaticalization as UG-driven analogy combines aspects of Meillet's and modern grammaticalization theory. It has three main consequences:

- Grammaticalization is unified with ordinary analogy — not just in the trivial sense of classifying them both as instances of reanalysis, but within a restrictive theory of analogical change.
- There is a formal distinction between analogy and grammaticalization, but no sharp boundary between them. They may conflict, or act in concert. Between straightforward proportional analogy and wholly creative grammaticalization there are intermediate cases varying in the remoteness of the exemplars and in the degree to which they constrain or facilitate the innovation.
- Unidirectionality is vindicated as an exceptionless generalization, and derived in a principled way from linguistic theory.

Overall, though, my proposal is closer to Meillet's in that draws the distinction roughly where he does, and shares his form-oriented approach as well. In contrast, grammaticalization as defined in (3) is not a coherent type of change and has no interesting properties (in particular, it is not unidirectional).

The remainder of this paper is organized as follows. In section 2.2.2 I sketch out a rudimentary morphological theory as a basis for the analysis of change. I begin with ordinary analogy and grammaticalization (2.2.3–2.2.4) and then discuss how various combinations and interactions of them are accounted for (2.2.5–2.2.7). In section 2.3 I defend the strict unidirectionality thesis by showing that apparent spontaneous upgradings such as those in (4) are exemplar-based analogical changes — that is, generalizations of language-specific patterns of grammar.

2.2 The inseparability of analogy and grammaticalization

2.2.1 Grammaticalization: from postpositions to case suffixes

Let us consider *univerbation*, the typical grammaticalization path by which the words of a syntactic construction fuse into a single word (recall (3a)). Univerbation has played a major role in the constitution of the rich case systems of the Finno-Ugric languages (Korhonen 1979). Let us record this as

(6) *A generalization*

In Finno-Ugric languages, new case forms arise by grammaticalization of postpositions.

An instance of this trajectory in Hungarian is the development of the word **pälV-k* 'to the inside' into the Illative suffix *-be*:

(7) a. **käte pälV-k* (reconstructed Finno-Ugric source)
hand inside-Lative
'to the inside of the hand' (postposition)

- b. kéz-be (Hungarian)
 hand-illative
 ‘into the hand’ (case suffix)

The display in (7) gives only the reconstructed initial stage and the final result in Hungarian. There were of course intermediate stages, presumably including a clitic stage. In the course of its grammaticalization as a suffix, the former postposition became monosyllabic, probably by a series of phonological reductions like this:

- (8) *pälV-k > *belV-j > *-belé > *-bele > *-be

These are not necessarily sound changes, but may be in part adaptations to the canonical monosyllabic shape of other case suffixes, and thus technically analogical changes, albeit of the non-proportional type.

The three stages in the grammaticalization trajectory towards “stronger internal dependencies”, namely postpositions > enclitics > suffixes, can be identified in Finno-Ugric languages by certain clear-cut formal properties. In essence, the enclitics have the syntax of postpositions and the phonology of suffixes:¹⁰

(9)	obligatory agreement,	undergo harmony,
	must appear on all conjuncts	undergo place assimilation
postposition	no	no
enclitic	no	yes
suffix	yes	yes

Loosely associated with such univerbation trajectories are certain semantic grammaticalization trajectories. For example, cases (or prepositions) with the meaning of English ‘with’ often have an originally Sociative meaning:

(10) Sociative → Comitative → Instrumental → Associative

This path involves the successive generalization of meaning, or “bleaching”, along something like the following trajectory.¹¹

- (11) a. *Sociative* ‘in the company of’ (*John saw Fred with Mary*)
- b. *Comitative*: ‘in the company of’ + ‘together with’ (*John ate cheese with Mary / with wine*)
- c. *Instrumental*: ‘in the company of’ + ‘together with’ + ‘by means of’ (*John ate cheese with Mary / with wine / with a fork*)
- d. *Associative*: (*John ate cheese with Mary / with wine / with a fork / with care*)

The formal account of such changes, and the demonstration of their relationship to analogy, requires the elements of a morphological theory.

2.2.2 Morphology as a constraint system

I assume that a grammar consists of a lexicon and a set of constraints. Some of the constraints are universal (part of UG), others are language-specific. These constraints may conflict and the conflicts are resolved by ranking, as in OT. The use of constraints as opposed to rules is not crucial, however; what is essential to the argument is that at least some of the constraints/rules are universal, and that constraints can be prioritized to resolve conflicts between them.

Let us further adopt a lexicalist approach to morphology. Again, the details are not essential, but we need a way to handle morphological blocking and the relationship between word structure and syntax. With Wunderlich 1996, I posit two components, a GENERATIVE COMPONENT and a BLOCKING MECHANISM.¹² The generative component specifies the potential expressions of

the language and their potential interpretations. Morphemes are combined subject only to general constraints on word structure. For example, affixes are added freely provided their feature content unifies with the feature content of the base, and directionality requirements (represented by alignment constraints or perhaps in some other way) are satisfied. The blocking mechanism resolves the competition between the potential expressions whose meaning is compatible with a given input meaning (the ‘intended meaning’).

Crucially, blocking as understood here is not a relation between competing word-formation rules, but between competing *expressions*. This approach is a natural consequence of any non-rule-based approach to word-formation, including both older analogical theories such as Paul’s (1886) and recent OT theories. Wunderlich 1996 points out that, properly articulated, it offers a straightforward account of the constitution of a language’s morphosyntactic PARADIGMS, which may include both morphologically derived single-word expressions and syntactically generated periphrastic expressions. Wunderlich makes a number of further assumptions, which together define the theory that he calls Minimalist Morphology. These additional assumptions will not be at issue here. For present purposes any theory of morphology which is lexicalist and treats blocking as a relation between expressions will serve equally well.

The competition holds only with respect to meaning features which are paradigmatically expressed in the language by morphological means. (For example, *worse* competes with *badder*, but *wine* does not compete with *fermented grape juice*).¹³

Compatibility will be understood as identity or subsumption. (Put another way, MAX is violable but DEP is undominated.) Thus, blocking adjudicates between those outputs which express either all of the input meaning or feature content, or some subpart of it. Blocking results from the interaction of constraints that enforce expressiveness (FAITHFULNESS) and economy

(MARKEDNESS)

- (12) a. FAITHFULNESS: Express the meaning of the input.
b. MARKEDNESS: Avoid complexity.

FAITHFULNESS requires that, other things being equal, all of the input meaning should be expressed by the output expression. The ‘other things being equal’ clause is not part of the constraints, of course, but comes from the appropriate constraint ranking.¹⁴ MARKEDNESS requires that, other things being equal, the simplest expression be chosen; For concreteness, complexity will be assumed to be measured by the number of words and morphemes.

The interaction between FAITHFULNESS and MARKEDNESS gives rise to four types of situations.¹⁵

- (13) a. Among equally faithful expressions, the least marked is optimal.
b. Among equally unmarked expressions, the most faithful is optimal.
c. Among equally faithful and unmarked expressions, these constraints make no decision. Unless other constraints apply, there is “free variation”.
d. When FAITHFULNESS and MARKEDNESS conflict, their ranking decides. If they are freely ranked, there is again free variation: each ranking gives a different winner.

Cases (a) and (b) are the standard types of blocking: semantic blocking and morphological blocking, respectively. Cases (c) and (d) yield two kinds of free variation.


As a toy example, let us see why *best* is the best expression of the superlative of *good*. In that meaning, it is better than the three competing expressions *good*, *goodest* and *most good*, which are also generated by the grammatical system and filtered out, as exponents of this meaning,

by the blocking system. On our lexicalist assumptions, *best* and *good* are listed in the lexicon with their respective meanings, **goodest* is generated and assigned a meaning compositionally in the morphology, and **most good* is generated and assigned a meaning compositionally in the syntax. The constraints FAITHFULNESS and MARKEDNESS in (12) explain the distribution of the four expressions. The compositional forms **goodest* and **most good* are superseded by the synonymous simple form because they violate MARKEDNESS. This is an instance of case (a) in (13): synonyms tie on FAITHFULNESS, so the competition between them is necessarily resolved by MARKEDNESS.

Because *good* does not express the semantic content of the superlative, it incurs a violation of FAITHFULNESS which is not incurred by *best*. This is an instance of case (b): being monomorphemic, the candidates are equally simple, so they tie on MARKEDNESS, and the competition between them is resolved by FAITHFULNESS in favor of *best*.

Assume that the input or dominant constraints in the system specify that *-est* is a suffix and that *most* is a word. The following tableau shows the result.

(14)

Input: <i>Max(good)</i>	FAITHFULNESS	MARKEDNESS
1. good	*	
2.  best		
3. good-est		*
4. most good		**

The candidates **most goodest* and **most best* (not included in the tableau) will always be harmonically bounded by *goodest* and *best*, respectively. Double marking is excluded. As a baseline prediction this seems correct, but some other constraint or constraints must be capable of over-

riding MARKEDNESS since double marking sometimes does occur (as in Shakespeare's *the most unkindest cut of all*). What these might be is a question I'll leave open.

This is a simple example of how the blocking mechanism generates paradigms. Paradigms, on this view, are not listed, or generated by rules or constraints; they emerge through the blocking mechanism from the competition between expressions.

2.2.3 Analogy

Reduced input to such a constraint system yields analogy. So, if *best* is not a candidate, *goodest* wins (in other words, it is analogized to *widest, longest...*).

(15)

Input: <i>Max(good)</i>		FAITHFULNESS	MARKEDNESS
1.	good	*	
2.	best		
3.	☞ good-est		*
4.	most good		**

If not only *best*, but also *goodest* (or *-est* itself) are eliminated as inputs, then the superlative of *good* becomes *most good*. Notice that the outcome of that further change depends on the ranking of FAITHFULNESS over MARKEDNESS. Under the reverse ranking, the output would be just *good*.

This rudimentary morphological theory suffices to show how analogy arises as a projection of the grammar under a reduced input. Change happens when the data that contradicts the old output (*best* in our example) is not taken into account by learners. Crucially, on this view structural ambiguity by itself is not a sufficient cause of analogical change. The innovation must not merely be consistent with the data under consideration by the learner, it must be the best projection from that data.

The model does not say *how* the input data might become unavailable to a language learner. It could be for any of a number of reasons: because it is not present in the learner's input, because it is misparsed as something else, because it develops an incompatible meaning through some other change, or because it becomes stigmatized or otherwise blocked by some supervenient external constraint. The tableaux abstract away from any such potential cause of change. They are grammatical idealizations that represent merely the hierarchical organization of grammatical information which determines the direction of analogical change. A given modification of the input, however caused, then predicts a diachronic outcome. Accounting for the triggering causes and the actuation of change obviously requires a far richer theory which takes into account the process of language acquisition in real time, the use of language in production and perception, and the sociolinguistic context, to mention just the most important factors. The usefulness of the abstract model is that it isolates the contribution of grammatical structure to the shaping of language change.


2.2.4 Grammaticalization

In the limiting case, some aspect of the grammar is so radically underdetermined by the input that the learner falls back entirely on UG. This is when grammaticalization can take place. Returning to the grammaticalization of postpositions to case suffixes (generalization (6)), here is the historical derivation of Hungarian *kéz-ben* 'in the hand' from **käte päle-nä* 'at the inside of the hand' again.

- (16) a. **käte päle-nä* (reconstructed)
 hand inside-Locative
- b. *kéz-ben* (Hungarian)
 hand-Inessive

How did this happen? At each stage in (16), the learner must consider two analyses of the input. One is as a noun plus postposition, the other is as a noun plus case suffix. Suppose that at stage (16a) a situation arises where learners have no evidence about the morphological category and prosodic constituency of *bele-n*. Then, in the absence of decisive data, the choice between them devolves solely on the constraint system, and MARKEDNESS decides in favor of the suffix:

(17)


Input: ‘in the hand’	FAITHFULNESS	MARKEDNESS
1. [kéz] _ω [belen] _ω		*
2.  [kéz-belen] _ω		

(17) shows how MARKEDNESS generates a preference for “stronger internal dependencies”. Under reduced input conditions, this preference can lead to grammaticalization, such as the downgrading of postpositions to case endings.

Crucially, such a change could in principle happen in a language that has no case endings at all. In other words, it is possible for a category that is altogether uninstantiated in a language to acquire positive exemplars, resulting in structures that are new to the language. Such radical change is rare, but it must be possible, for we know that completely novel structures and categories sometimes do arise.

As for the semantic grammaticalization trajectory (“bleaching”), it can be derived in Minimalist Morphology on the same assumptions. When MARKEDNESS dominates FAITHFULNESS, a simpler expression displaces a more complex expression. For an extremely schematic example, suppose *with* ‘together with’ acquires an instrumental meaning. Our paradigmatic blocking theory claims that this automatically goes hand in hand with the displacement of a more complex instrumental expression, in this case *by-means-of*.¹⁶

(18)

Input: <i>'by means of X'</i>	MARKEDNESS	FAITHFULNESS
1. by-means-of X	*	
2.  with X		*

2.2.5 When grammar constrains grammaticalization

While grammaticalization processes are driven by UG constraints, language-specific constraints do place limits on them, for learners' parses are guided by previously acquired grammatical knowledge. For example, the English words *more* and *most* run little risk of being grammaticalized as comparative and superlative prefixes, because learners of English know from the rest of the the language they are learning that the exponents of inflectional categories are suffixes.

Returning to our prototypical example of grammaticalization, the downgrading of postpositions into case suffixes, we can now formally account for certain classes of cases where it systematically does *not* happen. First, Kahr (1976) observed that it does not occur in languages where nouns precede their modifiers.

(19) *An exception to generalization (6)*

Postpositions are not grammaticalized as case endings in languages where Nouns precede their Modifiers.

The obvious reason is that postpositions are only grammaticalized as affixes if they come in the language's canonical affix position, immediately after the head noun. Our Hungarian example conforms to this generalization.¹⁷

Another important generalization was noted by Korhonen (1979). He pointed out that postpositions are normally grammaticalized as case clitics or affixes in languages where they govern an

uninflected (nominative) form of the noun. When they govern some oblique case, grammaticalization does not take place, except under the special circumstances to be described below.

(20) *Another exception to generalization (6)*

Postpositions are not grammaticalized as case endings in languages where they are added to inflected nouns.

The reason is obviously that the resulting case ending would violate the morphological constraint that case endings are added to bare stems.

This generalization is the basis of a striking split within Finno-Ugric: in the Balto-Finnic branch and in Saami, postpositions govern the genitive and are rarely grammaticalized. In just these languages, new cases normally arise by analogical change, as discussed in the next section, and sometimes by borrowing (e.g. the Estonian Essive, which is apparently borrowed from Finnish). In the other Finno-Ugric languages, postpositions govern nominative case, and in these they are frequently grammaticalized, as in the Hungarian example (17). Finnish case endings attach to bare stems and form words (Kiparsky 2003), so grammaticalization has an extra hurdle to overcome because it creates structures that violate the relevant complex of morphological constraints, call it CASESELECTION for short.¹⁸

(21)

Input: ‘in the hand’	CASESELECTION	FAITHFULNESS	MARKEDNESS
1. ☞ [käde-n] _ω [pää-llä] _ω			*
2. [käde-n-päällä] _ω	*		

In languages of the Hungarian type, CASESELECTION does not inhibit grammaticalization because postpositions there select the bare stem, exactly like case endings.

2.2.6 When analogy creates new categories

Generalization (20) says that languages where modifiers precede nouns and postpositions take inflected nouns, such as Finnish and the other languages of the Balto-Finnic subgroup of Finno-Ugric, and Saami (Lapp), will generally not build up their case system by grammaticalization. Then how has the rich case system of these languages come about? We already know the answer from section (2.1.1): by ordinary exemplar-based analogical change. While this mechanism usually does not produce new grammatical categories, it can do so when the grammatical categories are formally and semantically compositional, as in the case of the Sanskrit Past Perfect discussed above. And this has been the most important source of new case categories in Balto-Finnic.

An example of an analogically created new case is the Exessive in Southeastern dialects of Finnish and some of its closest relatives.¹⁹ The starting point is the case subparadigm in (22), with two parallel triplets of locative cases and a partly corresponding pair of predicational cases, which however has a “hole”.

(22)	Place/State	End Point	Source
External Location	Adessive	Allative	Ablative
Internal Location	Inessive	Illative	Elicative
Predication	Essive	Translative	—

The predicational cases mark predicate complements of verbs of being (the Essive) and verbs of becoming (the Translative), for example, “serve as chairman” (*puheenjohtaja-na*, Essive) and “be elected chairman” (*puheenjohtaja-ksi*, Translative). There is no corresponding predicational Source case for marking the predicate complement of verbs of ceasing to be, such as “resign as chairman” or “fire as chairman”.²⁰

The Essive also has a secondary locative function. It fills in for the Adessive and Inessive in a

class of nominals and adverbs which lack those cases. The missing Source locatives are supplied by the Partitive, which otherwise has no locative uses. Most of these nominals and adverbs lack *all* Location cases, in which case the missing Goal cases are supplied by adverbial endings (see (23c-f)).

(23)	Essive		Illative or Adverbial		Partitive	
a.	<i>koto-na</i>	‘at home’	Illative <i>koti-in</i>	‘home’	<i>koto-a</i>	‘from home’
b.	<i>sii-nä</i>	‘there’	Illative <i>sii-hen</i>	‘to there’	<i>sii-tä</i>	‘from there’
c.	<i>luo-na</i>	‘at’	Adv. <i>luo, luo-kse</i>	‘to’	<i>luo-ta</i>	‘from at’
d.	<i>taka-na</i>	‘behind’	Adv. <i>taa-kse</i>	‘(to) behind’	<i>taka-a</i>	‘from behind’
e.	<i>kauka-na</i>	‘far’	Adv. <i>kaua-s</i>	‘(to) far’	<i>kauka-a</i>	‘from afar’
f.	<i>ulko-na</i>	‘outside’	Adv. <i>ulo-s</i>	‘(to) outside’	<i>ulko-a</i>	‘from outside’

In the innovating dialects, the gap in the paradigm (22) is completed by a new Source case, the Excessive in *-nta* (*-nt* in most dialects). The Excessive supplies the two functions just described: expressing the Source for verbs of ceasing to be as in (24),

- (24) Hän-t pan-tii pois opettaja-nt.
 (s)he-Acc put-Pass away teacher-Excessive
 ‘(S)he was removed as teacher.’ (Southeastern dialect of Finnish, Alvre 2001)

and replacing the Partitive in its marginal Source locative function as in (25).

- (25) a. *koto-nt(a)* ‘from home’
 b. *sii-nt(ä)* ‘from there’
 c. *luo-nt(a)* ‘from at’
 d. *taka-nt(a)* ‘from behind’
 e. *kauka-nt(a)* ‘from afar’
 f. *ulko-nt(a)* ‘from outside’

The Excessive ending is formed from the Essive on the analogy of the corresponding pairs of local cases *-ssa:-sta* and *-lla:-lta*. Most of the relevant dialects undergo apocope and degemination word-finally, so the morphology, visualized as a proportion, is:

(26) talo-s(s) : talo-s-t = talo-l(l) : talo-l-t = koto-n : koto-nt

The analysis behind (26) is probably that *-t* is a separative ('from') case built on the three locative/predicational stems in *-s*, *-l*, and *-n*. In this system, the phonology and the semantics of the new Excessive case are entirely compositional,²¹

The upshot is that analogical extension *can* create new morphological categories, provided they are built from simpler ones in conformity with existing combinatoric patterns of the language.

Is this analogy or grammaticalization? I suspect that Meillet would have concurred that it is analogy, even though it results in a new category and thereby strictly speaking fits his definition of grammaticalization. Contemporary theorists might be more likely to claim this as a case of grammaticalization, even though the definitions in (3) do not really accommodate it. The awkwardness of these classifications undermines the sharp separation between analogy and grammaticalization.

There are much harder cases. Imagine a skewed case system with the semantics of (22), but with arbitrary portmanteau affixes. In such a system, an Excessive case would still be analogically projectable from the gap in (22), as in Finnish, but analogy could not determine its morphological realization as in (26). Instead, the new case ending would have to be recruited by grammaticalization from a clitic or postposition. Analogy would determine the content of the category and grammaticalization its form. Such hybrid scenarios are an even bigger challenge to the traditional view. And they are not uncommon, as the next section documents.

2.2.7 Pseudo-grammaticalization

2.2.7.1 An exception to the exception

The exception (20) to (6) has in turn an exception in the Balto-Finnic languages. Contrary to the generalization that when postpositions are added to inflected nouns, as in the Balto-Finnic languages, they are not grammaticalized as case endings, the Balto-Finnic and Saami languages have grammaticalized a Comitative (‘with’) case from a postposition. In fact, a new Comitative case has developed in Balto-Finnic and Saami at least four times independently, from four distinct postpositions. In Vepsian it has happened no less than three times in separate dialects, from a different source each time. A summary of these new Comitatives and their sources is given in (27).

(27)	<i>morpheme</i>	<i>status</i>	<i>etymology</i>
Estonian	- <i>ga</i>	clitic	<i>kaasa</i> < <i>kansa-ssa</i> ‘people-Iness’
Livonian	- <i>ks, -k</i>	clitic	“
Finnish (dial.)	- <i>kā</i>	clitic	“
Votic	- <i>kā, -ka, -k</i>	clitic	“
Vepsian	- <i>kā</i>	suffix	“
Vepsian (South)	- <i>mu(d)</i>	suffix	<i>möd</i> < <i>mööta</i> ‘along’
Vepsian	- <i>ke, -kel, -ked</i>	suffix	<i>ker(a)-lla</i> < <i>*kerδa-lla</i> ‘at once’
Karelian	- <i>ke(l(a))</i>	suffix	“
Olonets	- <i>ke(l)</i>	clitic	“
Saami	- <i>guim</i>	clitic	<i>guim</i> < <i>guoibme</i> ‘fellow’

The table identifies the morphosyntactic status of the element in accord with the criteria in (9). Thus, suffixes and clitics are distinguished from postposition by phonological criteria (most importantly that they undergo vowel harmony), and suffixes are distinguished from clitics by

morphosyntactic criteria (most importantly agreement and distribution in coordinated NPs).

The downgrading of Comitative postpositions to case suffix is evidently a powerful trend in this subgroup of Finno-Ugric, even though it violates CASESELECTION, for like other postpositions in this group, the Comitative is added to Genitive-inflected nouns, rather than to bare stems. The trend is all the more remarkable because the Comitative as an inflectional case category is cross-linguistically relatively uncommon. There must be some reason why Balto-Finnic and Saami can't seem to get enough of this particular case.

Our approach provides a novel kind of solution to this puzzle. *The Comitative is formed on the basis of the Abessive case by a combination of grammaticalization and analogy.* More precisely, the change is analogical in that it fills a gap in the case paradigm, like the Sanskrit Past Perfect in (2) and the Balto-Finnish Exessive in (26), but this time there is no exemplar-based analogical source for the exponent of the new category. So it is recruited by grammaticalization from a postposition that is suitably close in meaning, such as one of those in (27). The change thus instantiates a new type of change predicted by the proposed theory. The details follow.

2.2.7.2 *Comitative and abessive*

A Comitative ('with') case and an Abessive ('without') case belong to a fairly early layer of Uralic case morphology.²² Forming a minimal morphological opposition, these two cases constitute a little subparadigm of their own within noun inflection and have tightly intertwined histories.

In the Finno-Ugric languages most closely related to Finnish, comprising the Balto-Finnic subgroup and Saami, they underwent three major changes.

- (28) a. The original Comitative case in **-ine* was lost in most of the languages, largely through phonological attrition which led to merger with other cases. It is preserved in Finnish, in a somewhat marginal function, and in Ingrian (Kokko 2000).

- b. Most of the languages that lost the Comitative formed a new one by grammaticalizing a postposition into a case clitic, and sometimes onward into a case ending. Four different postpositions served as the starting point of this process.
- c. In most of the languages that developed a new Comitative clitic, the inherited Abessive changed from a case ending to a clitic.

This sequence of changes is a causal chain. The first change, itself triggered by phonological changes, provided the basis for the second, a grammaticalization — the topic of the next section — which in turn caused the third, an apparent degrammaticalization, dealt with in section 2.3 below.

2.2.7.3 *Downgrading the Comitative*

The torrent of new Comitatives in Balto-Finnic/Saami was caused by morphosyntactic analogy. The existing Abessive (‘without’) projected a positive counterpart in the paradigm, the Comitative (‘with’). This is an instance of the Jakobsonian principle in (29), according to which the presence of a marked category in the system implies the presence of the corresponding unmarked category:²³

(29) *Morphological implication (Jakobson)*: If there is an expression with the meaning M(A), then there is an expression of equal or less complexity with meaning A.

Given the privative nature of the “with:without” opposition (for which see Stolz 1996), (29) has the following corollaries:

- (30) a. If a language has a ‘without’ case, it also has a ‘with’ case, but not necessarily conversely.
- b. An expression meaning ‘without’ can be morphologically derived from an expression meaning ‘with’ (but not conversely).

- c. For each meaning of the ‘without’ case, the corresponding ‘with’ meaning is expressed by means of case.

These implicational relationships seem to hold. Within Uralic, every language that expresses ‘without’ by case also expresses ‘with’ by case (either by a special Comitative case, or by Instrumental case). Table (31) shows the distribution of ‘with’ cases and their negative ‘without’ counterparts in the languages that have them.

(31)	‘with’	‘without’	
(Eastern) Mari	Com. <i>-ge</i> , Gen./Instr. <i>-Vn</i>	Car. <i>-de</i>	Kangasmaa-Minn 1998:226-7 ¹
Komi (Zyrian)	Com. <i>-këd</i> , Instr. <i>-ën</i>	Car. <i>-fëg</i>	Rédei 1988:116, Riese 1998:268
Udmurt (Votyak)	Instr. <i>-(j)en</i>	Car. <i>-tek</i>	Wichmann 1954:143, Riese 1998:268
Khanty (Ostyak)	Com. <i>-nat</i> , Instr. <i>-at</i>	Car. <i>-ΛƏγ</i>	Honti 1998:180
Selkup	Instr. <i>-sä</i>	Car. <i>-kåål(in)</i>	Helimski 1998b:560-1
Nganasan	Com. <i>-na</i>	Car. <i>-kaj</i> ²	Helimski 1998a:496-8
Kamassian	Instr./Com. <i>-se</i> ,	—	Künnap 1971:134
Mansi (Vogul)	Instr. <i>-əl</i> (nouns), Com. <i>-təl</i> (pron.)	—	Keresztes 1998:410-413
Hungarian	Instr. <i>-(v)al</i> , Soc. <i>-stul</i>	—	Szathmári 1988:203

¹Comitative *-ge* and Caritive *-de* may be adverbial (Alhoniemi 1988:89, 1993).

²According to Helimski, the Caritive *-kaj*, *-kaClⁱli* is on the borderline between a case and an adverbial.

Some Uralic languages have neither of these cases: Nenets (Salminen 1998), and Samoyedic (Janhunen 1998:470). What seems to be missing is a language that has a ‘without’ case ending but no corresponding ‘with’ case.²⁴

The same one-way implication appears to hold cross-linguistically. Comitative/Sociative/Concomitant case is significantly more common than Abessive case. Outside of Uralic, it is found in Basque, Chukchee, Yakut, Uyghur, Evenki, Udi, Archi, Ossetic, Tocharian, Sumerian, Zoque, Dyirbal, Lake Miwok, Shastan, Yuki, Ket. Of these languages, only Ket seems to have a corresponding Abessive. The Abessive case is also found in Australia, “where it is matched by a ‘having’ case called the CONCOMITANT or PROPRIETIVE” (Blake 1994:156). All in all, the generalization that a ‘without’ case implies a corresponding ‘with’, as per (30a), holds up quite well.²⁵

As for (30b), it is true almost by default in this domain, because the ‘with’ and ‘without’ case affixes in these languages tend to be morphologically unrelated. More interesting is (30c), which seems to be borne out when it can be checked, though caution is in order because information about the uses of the cases is often scanty. For example, in languages where Abessive case means ‘without’ in the sense ‘unaccompanied by’, ‘not having’, and ‘not using’, there is a case or cases for the corresponding positive meanings of accompaniment, possessum, and instrument.

I conclude that (30) is a robust cross-linguistic generalization. If we assume that it reflects a principle of UG, perhaps some version of (29), it explains why a comitative ending was (re)introduced into the languages that kept an Abessive. It must have been strong enough to overcome the morphological anomaly of double case-marking encoded in the CASESELECTION constraint of section 2.2.5. This illustrates how competing constraints are resolved in linguistic change.

However, the Jakobsonian implication (29) only projects a Comitative *function* — there is no morphological proportion that would specify its shape. That is where grammaticalization comes

in. It presses an appropriate postposition into service as the new case marker. The change is a combination of *morphological analogy* and *functional/semantic grammaticalization*. The possibility of such interaction of analogy and grammaticalization is predicted by the theory proposed here. It is of course a conceptual impossibility in Meillet's theory, and at least not explicitly addressed in the modern functionalist grammaticalization literature.

2.2.7.4 Summary

In saying that analogy and grammaticalization are at bottom the same thing we are going beyond classifying them as reanalyses (Harris & Campbell 1995, Joseph 2001, Newmeyer 1998). Reanalysis takes place when learners acquire different grammars than the speakers they are exposed to have. This is certainly a normal occurrence in language acquisition, and it is implicated in many types of change, including grammaticalization, but also analogical change, probably much of semantic change, and at least some types of sound change (Blevins 2004). Some writers hold that essentially all language change involves the discontinuous transmission of language (Hale 1998). Therefore, placing grammaticalization under the umbrella category of reanalysis does not explain any of its special properties.

Harris & Campbell 1995:90 rebuild the distinction between grammaticalization and analogy within the category of reanalysis by distinguishing grammaticalization from analogy as “innovative” reanalysis, by which an existing category A is reparsed as a new category B. In the absence of a theory which says what kinds of discontinuities are possible, labelling a change as a reanalysis, innovative or otherwise, doesn't get at its nature or motivation. For now, the claim that grammaticalization is reanalysis remains essentially a tautology.

One apparently restrictive proposal about reanalysis is that it always proceeds in two stages: it originates as covert change, with a new grammar that generates the same language as the old

grammar, and is then extended as an overt change. But this claim (in any case dubious) does not seem to predict any specific constraints on change, or on grammaticalization in particular. Some authors indeed seem reconciled to the position that in reanalysis, anything goes, explicitly denying that any sort of unidirectionality holds, and expressing scepticism about generalizations relating to analogical change, such as Kuryłowicz' Laws of Analogy and the proposals of Natural Morphology.

2.3 Apparent degrammaticalization

2.3.1 Upgrading from suffix to enclitic and postposition

2.3.1.1 *The Abessive*

Returning to the Abessive, let us turn to the third episode in (28). In several languages of the Balto-Finnic subgroup, the Abessive case suffix has been upgraded into a clitic, against the expected direction of grammaticalization. In one instance, by a further apparent degrammaticalization, it has even become an independent preposition. These changes, widely attested in Finno-Ugric, have been often cited as a counterexample to the unidirectionality thesis, as was summarized in (4a-c), repeated here as (32).

- (32) a. Seto and Võru (South Estonian) Abessive case suffix *-lta* > clitic =*lta*.
b. Vepsian Abessive case suffix *-tta* (< **-ptaken*) > clitic =*tta*.
c. Saami (Lappish) Abessive case suffix *-taga* (< **-ptaken*) > clitic =*taga* > free postposition *taga* (Nevis 1986b).

The present theory is committed to the claim that grammaticalization is strictly unidirectional, in other words, that there is no such thing as degrammaticalization, and in particular no sponta-

neous upgrading of affixes to clitics and postpositions. Therefore it strictly entails that the upgrading of the Abessive must be a case of exemplar-based analogical change.

And this is what the data confirm. Given the discussion in 2.2.7, it is not hard to see that the Abessive became a clitic on the model of its antonym and closest paradigmatic partner, the Comitative clitic ('with'). We have seen how this Comitative clitic had itself arisen from a postposition by an analogically driven grammaticalization process which served to fill out a skewed case system. The new Comitative then in turn imposes its clitic status on its negative counterpart, by what is not a process of degrammaticalization at all, but ordinary morphological analogy, in fact of the proportional type.

Recall from section 2.2.7 that Abessive and Comitative cases are paradigmatically associated, and that the Comitative is the unmarked member of the opposition: 'with' is unmarked relative to 'without'. This markedness asymmetry generates the implicational generalization in (29), as discussed above. It is also the basis of Kuryłowicz' (1945-49) Fourth Law of Analogy.²⁶

(33) *Direction of analogical change (Kuryłowicz):*

Analogy proceeds from basic, unmarked, or distributionally unrestricted forms (*formes de fondation*) to derived, marked, or distributionally restricted forms (*formes fondées*).

Kuryłowicz' generalization means in particular that an expression meaning 'without' may take its shape from one meaning 'with', but not conversely. This is exactly what happened in Balto-Finnic: Abessive suffixes turned clitics by analogy to the Comitative clitic, but Comitative clitics were not conversely affected by Abessive suffixes. Moreover, every Finno-Ugric language that turned its Abessive suffix into a clitic also has a Comitative clitic. Thus, all upgradings of the Abessive can be explained in the same way.

Here is a summary of the scenario, where the arrows symbolize the direction of influence.

(34)		<i>Comitative</i>		<i>Abessive</i>
	1.	<i>sound change</i>	lost	retained as case
	2.	<i>grammaticalization</i>	rise of new clitic	⇐ retained as case
	3.	<i>“degrammaticalization”</i>	retained as clitic	⇒ upgraded to clitic

The next sections describe the progress of this change in the individual branches.

2.3.1.2 *The Abessive as a case: the Finnish evidence*

The original status of the Abessive (or ‘Caritive’) as a case is retained in Finnish, as shown by the fact that it is marked on all conjuncts in a co-ordinated NP in its scope (see (35a,b)) and requires obligatory agreement within a NP (see (35c,d)):

(35) Finnish

- a. *suru-tta ja luva-tta* **suru ja luva-tta*
care-Abess and permission-Abess care and permission-Abess
‘carelessly and without permission’ (forumit.fff.in.com/showthread.php?p=181933)
- b. *varaukse-tta ja rajoitukse-tta*
reservation-Abess and restriction-Abess
‘unreservedly and unrestrictedly’ (www.netn.fi/197/netn_197_hume.html)
- c. *kumme-mm-i-tta selittely-i-ttä*
strange-Comp-Pl-Abess explanation-Pl-Abess
‘without any particular explanations’ (<http://www.tiede.fi/arkisto/tulosta.asp?id=249>)
- d. *lisä-maksu-i-tta ja mu-i-tta sako-i-tta*
extra-fee-Pl-Abess and other-Pl-Abess fine-Pl-Abess
‘without surcharges or other fines’ (www.finlex.fi/fi/sopimukset/sopsteksti/1947/19470014)

The Adessive and the Instructive serve as corresponding ‘with’ cases, e.g. Adess. *luvalla*, Instr. *luvin* ‘with permission’.

In standard Finnish, the Abessive is relatively infrequent (outside of stereotyped expressions); in some dialects it is more common, while others have lost it altogether. It is fully productive to mark negated participial clauses of means, manner, and circumstance; as in the nominal use, the Adessive and Instrumental serve as positive counterparts.

- (36) a. *valmist-i-n se-n veistä-mä-ttä / veistä-mä-llä*
 made-Past-1Sg it-Acc carve-Participle-Abess / carve-Participle-Adess
 ‘I made it without carving’ / ‘by carving’
- b. *luku-un otta-ma-tta / luku-un otta-e-n*
 number-III take-Participle-Abess / number-III take-Participle-Instr
 ‘except’ (‘without taking into account’) / ‘including’
- c. *ken-en-kään näke-mä-ttä / kaikki-en näh-de-n*
 who-PIGen-even see-Participle-Abess / all-PIGen see-Participle-Instr
 ‘without anyone seeing’ / ‘in plain view of everybody’

2.3.1.3 The Norwegian Saami Abessive

The most spectacular case of apparent degrammaticalization of the Abessive ending is Norwegian Saami, where *-tâyâ/-hâyâ* ‘without’ (from < *-ptaken) has become a full-fledged clitic, in some dialects even an independent postposition (Nevis 1986b, Sammallahti 1977, 1998, Nielsen 1926:65). It is cognate with Finnish *-tta* and like it was originally a case ending. Its shift to clitic and postposition status in Saami is revealed by morphology and phonology. Morphologically, it is added to inflected genitive nouns, not to stems as true case endings are. Secondly the Abessive ending follows all true suffixes, in particular the suffixes that mark the person/number features of the possessor, unlike true case endings, which invariably precede them.²⁷

- (37) *gūss-i-id-an =haga*
 guest-Pl-Gen-my =without

‘without my guests’

Phonologically, the Abessive ending has the prosodic characteristics of a clitic rather than of a suffix. The initial *t-* of the Abessive is exceptionally not subject to gradation after odd-syllabled stems, as the examples in (38a) illustrate. Also, the ending constitutes a stress foot of its own, which causes the usual alternating stress pattern of Saami words to be disrupted when the stem is odd-syllabled. Sammallahti proposes the foot structure in (38b).

- (38) a. *dāi=tâyâ* ‘without these’, *gābmâsii=tâyâ* ‘legless (of boots)’ (Sammallahti 1977:94).
b. (kaapmakijh)_ϕ(hakaa)_ϕ ‘shoeless’ (Sammallahti 1977:94)

Under definitions of grammaticalization such as (3), this change from suffix to clitic is truly a counterexample to the unidirectionality thesis. From our perspective, the change is a straightforward case of paradigmatic analogy: the Abessive ending =*tâyâ* was upgraded to a clitic by analogy with the Comitative plural clitic =*guim* ‘with’, which had arisen earlier by grammaticalization from *guoibme* ‘fellow’. Being a clitic, =*guim* is attached to the genitive rather than to the stem, and it follows all suffixes including the possessive endings.

- (39) a. *gūss-i-id-an* =*guin*
guest-Pl-Gen-my =Pl.with
‘with my guests’
b. *gūss-i-id-eamēt* =*guin*
guest-Pl-Gen-our =Pl.with
‘with our guests’

Phonologically, the Comitative does not undergo gradation after odd-syllabled stems, which suggests that it forms a stress foot of its own. The Abessive =*tâyâ* acquires the same properties by paradigmatic analogy, in conformity with the direction determined by Kuryłowicz’ Fourth Law. This accounts for all the data mentioned so far.

A second analogical change has taken the upgrading even further in some Norwegian Saami dialects, where *tâyâ* occurs on its own without a head.

(40) *døn bāccik tâyâ* ‘you were left without’

Here the former suffix must be an independent postposition. This step in the degrammaticalization trajectory cannot be due to analogy with the Comitative, since no bare **guim* ‘with’ has been reported even for the dialects that allow (40). The reason the Abessive has ‘liberated’ itself even further may be that it is the only disyllabic case ending (see (41)), whereas all postpositions are disyllabic.

(41) Norwegian Lappish (Saami): declension of *dievva* ‘pile’ (Nielsen 1926:62)

	[-PL]	[+PL]
Nom.	dievva	dieva-k
Gen.	dieva-	dieva-i
Acc.	dieva-	dieva-i-d
Illat.	dievva-i	dieva-i-di
Iness./Elat.	dieva-st	dieva-i-n
Comitat.	dieva-in	dieva-i=guim
Abess.	dieva=tâyâ	dieva-i=tâyâ
Ess.	dievva-n	dievva-n

The change of *tâyâ* into a postposition removes an exception to a global regularity governing the shape of case endings. It is a case of exemplar-based (albeit non-paradigmatic) analogical change.

2.3.1.4 Estonian

The Seto/Võru dialect of Estonian²⁸ has an Abessive case ending *-ldaq*.²⁹ It is a “phrasal affix”, which attaches to the genitive head of an NP; in a coordinate NP, it appears only on the rightmost

conjunct noun, as in (42b), and adjectives and other modifiers do not undergo case agreement with it (see (42b)), but appear in a special form built on the Genitive Singular or Plural, depending on the number of the head noun.

- (42) a. *tjü: ja leivä=ldäq*
 work and bread-Abess
 ‘without work and bread’
- b. *musta leivä=ldäq*
 black bread-Abess
 ‘without black bread’
- c. *risutsi-idõ nurmi=ldaq*
 ‘littered-PlGen meadow.Pl=Abess
 ‘without littered meadows’

In these respects, the Abessive diverges from the language’s other inherited cases (Genitive, Partitive, Illative, Inessive, Elative, Allative, Adessive, Ablative, Translative). The Abessive suffix became “degrammaticalized” into a clitic by analogy with the antonymous Comitative clitic =*ga* (Seto/Võru =*gaq*) ‘with’, with which it was paired in the case paradigm. The Comitative had arisen in the 17th century by grammaticalization from the independent word *kaas* (< **kanssa* < **kansa-ssa*), which, like other postpositions, governed a genitive NP. It patterns like the Abessive with respect to agreement and conjunction, compare (42) and (43):

- (43) Seto/Võru
- a. *tjü: ja leivä=gaq* ‘with work and bread’
- b. *tühje kässi=gaq* ‘with empty hands’.

Unlike the Saami Abessive, it has however kept its case-like morphology, being added to the singular or plural nominative stem, (see (44a)). The other clitics, including the Comitative and the Terminative *-niq*, are added to the singular or plural genitive.

(44) Seto/Võru

- a. Abess.Pl. *mõtt-i-ldaq* ‘without ideas’ (idea-Pl-Abessive)
- b. Com.Pl. *mõtt-i-idõ=gaq* ‘with ideas’ (idea-Pl-Gen=Comitative)
- c. Term.Pl. *mõtt-i-idõ=niq* ‘up to ideas’ (idea-Pl-Gen=Terminative)
- d. Gen.Pl. *mõtt-i-idõ* ‘of ideas’ (idea-Pl-Genitive)

In standard Estonian, the Abessive has the form *-ta* (phonologically /-tta/), which is identical with Finnish *-tta*). It also behaves as a clitic, but so do all -CV case endings: Terminative *-ni*, Essive *-na* (absent in Seto, and probably a borrowing from Finnish via the Northern Estonian dialects), and optionally, the Allative *=le*. This seems to be due to a second analogical generalization by which all syllabic (-CV) endings became clitics, leaving only -C, -CC endings as suffixes. Here, as in the Norwegian Saami dialect discussed in the preceding section, the analogy works along a prosodic dimension.³⁰

(45) Standard Estonian

- a. (*ilma*) *ämbri ja labida=ta* ‘without bucket and shovel’ (Abessive, -CV)
- b. *ilusa tüdruku=ni* ‘up to the pretty girl’ (Terminative, -CV)
- c. *humanisti ja demokraadi=na* ‘as a humanist and democrat’ (Essive, -CV)
- d. *humanisti ja demokraadi=le* ‘to a humanist and democrat’ (Allative, -CV)
- e. **humanisti ja demokraadi-lt* ‘from a humanist and democrat’ (Ablative, -CC)

As the Estonian data illustrate, the analogical conversion of suffixes to clitics does not take place in one fell swoop. Like most analogical innovations, it reaches the least salient contexts first and the most salient contexts last. As usual, between the contexts where the change is complete

and the contexts where it has not penetrated yet there is a zone of variation which reflects ongoing change.

2.3.1.5 Vepsian

In Vepsian, we can catch the Abessive case suffix just starting out on its road to clitichood. It can be placed optionally *after* the possessive suffixes (Zaiceva 1981:185-191).

- (46) a. mama-ttë-iž > mamë-iš-ta ‘without your mother’
 mom-Abess-2Sg mom-2Sg-Abess
- b. mama-tta-z > mama-zë-ta ‘without his mother’
 mother-Abess-3Sg mother-3Sg-Abess

The only inherited case that does this is the Abessive. All other inherited case endings must be put *before* the possessive suffixes, which is the original Finno-Ugric order:

- (47) a. mama-íi-iž *mamë-iž-íi ‘to your mother’
 mother-Allative-2Sg mother-2Sg-Allative
- b. mama-lë-iž *mamë-iž-la ‘at/by your mother’
 mother-Adessive-2Sg mother-2Sg-Adessive

The Abessive, then has adopted the order of a group of clitics derived from postpositions, more especially of its antonym and paradigmatic partner, the Comitative *-ke(d)*, which is historically derived from the postposition *kera(-lla)* < **kerða-lla* ‘at once, at one go’, and shows the same possessive–clitic order.³¹

- (48) mamë-iš-ke(d) (*mama-ke-iš)
 mother-2Sg-Comitative
 ‘with your mother’

The Comitative behaves as a clitic in other ways, including lack of case agreement and attachment to the genitive:

- (49) suri-*den* regi-*den*-ke(d)
big-PlGen sled-PlGen-Comitative
'with big sleds' (Zaiceva 1981:181)

These properties have not been extended to the Abessive. The optionality and incomplete extent of its clitic behavior shows that the upgrading is in its early stages.

2.3.1.6 Finnish

Finnish retains the Comitative as a case (not as a clitic), although it is marginal and no longer quite matches all the Abessive's functions. One peculiarity of the Comitative is that it semantically neutralizes number, and is morphologically formed only from plural stems. Possibly this restriction is the source of the minor peculiarity of the Abessive that it is restricted to the plural when has a modifier (Hakulinen et al. 2004:1209).

- (50) a. ongelma-tta / ongelm-i-tta
problem-Abess / problem-Pl-Abess
'without any problem / without any problems'
- b. *suure-mma-tta ongelma-tta / suure-mm-i-tta ongelm-i-tta
great-Comp-Abess problem-Abess / great-Comp-Pl-Abess problem-Pl-Abess
'without any major problem' / 'without any major problems'

The semantic neutralization of number in the Abessive is quite natural, since it is always interpreted as an indefinite ('without any problem' = 'without any problems'). The morphological neutralization is more surprising, and is perhaps due to analogy of the Comitative. The remaining unmodified Abessive Singulars might then be considered adverbials.

2.3.1.7 Summary

The case inflections develop in a similar way in each of the languages: analogy within the Comitative/Abessive subparadigm, followed by prosodic leveling of the endings. The languages show different phases of the trajectory, from the first tentative steps apparent in Vepsian to its final stages in Estonian and full completion in Saami.

I conclude that that when affixes are upgraded into clitics and postpositions, it is by extension of some already existing clitic/postposition pattern. This shows that the intrinsic preference for fusion can be trumped by language-specific constraints which prevent it in some morphological or prosodic category. Generalization of such constraints can have the effect of “degrammaticalization”. Such reversal of the expected direction of grammaticalization instantiates the competition between UG and language-specific constraints.

2.3.2 Other apparent degrammaticalizations

2.3.2.1 The group genitive

The English genitive suffix *-s* originated as a suffix but now famously behaves more like a clitic, in that it is added to entire noun phrases (*the man I met on the plane's story*). Behaving essentially as in English, this so-called GROUP GENITIVE also occurs in Swedish and in the other continental Scandinavian languages:

(51) Swedish:

a. någon annans fel
someone other-Gen
'someone else's fault'

b. På sidorna framöver kan du läsa några av de GU:are som var meds tankar
on pages forward can you read some of the GU:ers who were with-Gen thought

‘On the following pages you can read the thoughts of some of the GU:ers who were with us’ (www.gronungdom.se/nisse_hult/pdf/nisse5-00.pdf)

- c. att skvallra om människor de inte ens känner privata kärleksliv
to gossip about people they not even know-Gen private love-life
‘to gossip about the private love-life of people they don’t even know’

(www.blandband.nu/ForumRead.asp?forumId=4382)

Whether or not *-s* is a full-fledged clitic in these languages (Börjars 2003, Delsing 1999, Norde 1997, 2001a, 2001b), it is at any rate clear that it has changed from a tightly fused suffix to a more loosely attached element.

On the other hand, the English and Swedish-style group genitive does not occur in Icelandic and German. This distribution is significant: *the group genitive occurs only in those languages which have lost their nominal case system*. Where accusative and genitive case inflection in nouns was lost (typically by a combination of phonological and local analogical changes) the remaining case ending *-s* was reanalyzed as a clitic. The elimination of stem inflection was generalized by making the genitive a clitic. (Cf. Janda 1980, 1981, Weerman & de Wit 1999). The rise of the group genitive is an *analogical* change — the elimination of a singularity in the language.³²

According to Carstairs 1987, a group genitive of pronominal origin occurs in Afrikaans, but interestingly enough not in Dutch, at least in the standard variety.

- (52) a. die man, wat ek gister gesien het, se huis ‘the man who I saw yesterday’s house’

(Afrikaans)

- b.*de man, die ek gisteren gezien heb, z’n huis (Dutch, acceptable only as anacoluthon, with a pause before *z’n*).

(Carstairs 1987:157-8)

This distribution would jibe with the more radical leveling and deflexion that Afrikaans has undergone.³³

The loss of case morphology correlates with the rise of a group genitive but does not invariably lead to it. An interesting case are certain Fenno-Swedish dialects, which have practically the same case morphology as standard Swedish, yet did not develop a group genitive (Vangsnes 1998). Perhaps this was a substratum effect. Under the prevailing conditions of widespread Swedish/Finnish bilingualism, the rich morphology of Finnish may have “protected” the status of *-s* as a case ending in Fenno-Swedish. There are other indications of a conservative influence of Finnish on the coteritorial dialects of Swedish: retention of contrastive vowel quantity (Kiparsky 2008), retention of non-finite forms of modals, and the absence of the *that*-trace effect.

In addition to making sense of the distribution of the group genitive within Germanic, the analogical account explains why the group genitive did not arise until Middle English. It could have happened only after the loss of noun inflections, which were alive and well in Old English. Still, we may ask why the group genitive does not appear until *late* Middle English (as in Chaucer’s (53)), several hundred years after the other noun cases disappeared?

(53) the god of slepes heyr
the god of sleep’s heir (Chaucer, *Book of Duchess* 168)

Kroch 1997 suggests that the texts may reflect the conservatism of the written language and that the new group genitive would appear first where it differs minimally from the old usage. In fact, the upgrading from a suffix to an X^{\max} clitic seems to have passed through an X^0 clitic stage (13th-14th c.), during which *-s* could be added to conjoined X^0 s; also to a title+name as in (b), which perhaps counted as syntactically atomic:³⁴

(54) a. Upponn Herode kingess daʒʒ
‘in King Herod’s day’

(*Orm* 257, ca. 1200, Allen 1997: 123)

- b. our Lord the Kyngus wille
‘our Lord the king’s will’
(Lazamon’s *Brut*, 13th c., Allen *ibid.*)

2.3.2.2 Irish *-mid*

What about the upgrading of the Irish 1Pl. verb ending *-mid* to an independent pronoun *muid* (example (4e))? The key triggering factor of this change is clearly that this ending was the only bound person/number marker in the paradigm.

(55) Present indicative of *mol-* ‘praise’ (Bybee et al.: 14)

	Singular	Plural
1.	molann mé	molaimid
2.	molann tú	molann sibh
3.Masc.	molann sé	molann siad
3.Fem.	molann sí	molann siad

Here the 1.Pl. obviously assimilates to the other endings. The analogy is further grounded in the complementarity of periphrastic and inflected verb forms throughout the Irish verbal paradigm (McCloskey and Hale 1984). Verb paradigms contain a mix of synthetic forms, which mark tense, mood, person, and number, and analytic forms, which consist of a verb that marks tense and mood and a pronoun which marks person and number. They cite the following paradigm for the conditional of *cuir* ‘put, apply’ in Ulster Irish:

(56)	Singular	Plural
1.	chuirfinn	chuirfimis
2.	chuirfeá	chuirfeadh sibh
3.Masc.	chuirfeadh sé	chuirfeadh siad
3.Fem.	chuirfeadh sí	chuirfeadh siad

The synthetic forms can't have a pronoun subject: **chuirfinn mé* 'I would apply', and where a synthetic form exists, it blocks the corresponding analytic form: **chuirfeadh mé* 'I would apply'.

The endings and pronouns are morphosyntactically equivalent, so that the leveling of the paradigm in (55) not as radical a restructuring as it might appear.

2.3.2.3 Spanish *-mos*

A somewhat similar case is (4f), the upgrading of affixal *-mos* to clitic *=nos* in Spanish, which “seems to have taken place independently at so many widely separated points within the Spanish-speaking world” (Janda 2001:301). But, as Janda himself points out, this change “greatly increased the consistency of penultimate verb-stress in most tense/aspect/mood/ paradigms”.

2.3.2.4 English infinitive *to*

The infinitive marker *to* (case (4g) in our list) originates as an inseparable prefix on the nominalized verb (originally a preposition), but since late Middle English it has begun to pattern syntactically like a modal.

- (57)
- a. Split infinitives: *to not go* like *will not go*
 - b. Ellipsis: (... *and I want*) *to* \emptyset like (... *and I*) *will* \emptyset (van Gelderen 1993)
 - c. Conjunction: ... *to dance and sing* like ... *will dance and sing*
 - d. IP complements: accusative and infinitive construction

This change occurred when when the new category of modals had been grammaticalized from main verbs. In fact, it fills a gap in the pattern, since the original modals were exclusively finite and *to* supplies the nonfinite counterpart to them (Kiparsky 1997). The upgrading of *to* is an analogical change — non-proportional but exemplar-based — which fills out the syntactic paradigm of finite modals. It is not a spontaneous degrammaticalization.

2.3.2.5 Estonian =*ep*, =*es*

The decliticizations of the Estonian focus particles =*ep*, =*es* have been cited as instance of degrammaticalization (see (4h,i)). The development of =*ep* is assumed to have proceeded as follows (*miks* ‘why’):

- (58) 1. *miksi* ~ *miksi=pä*
 2. *miks* ~ *mikse=p* sound change
 3. *miks* ~ *miks=ep* reanalysis
 4. *miks* ~ *miks ep* upgrading

In modern Estonian, the former clitic *ep* can even be preposed: “After this suffix was lexicalized, the word *ep* could change its syntactic position and precede the affirmed words: *see ep* → *ep see* [‘just that’].” (Ariste 1971, Campbell 1991:290-2). This usage appears to be rare, but the fact that it occurs at all is a striking piece of evidence that decliticization has occurred. The development of =*es* is partly similar, though the data in this case are murkier (Nevis 1986a).

This decliticization is once again part of a larger change. Estonian has lost all original Wackernagel clitics (C-domain clitics, corresponding to Finnish *-pa*, *-ko*, *-han*, *-s*). The residual clitics *ep*, *es* which had arisen by resegmentation from *-pa*, *-s* were refashioned as free particles in order in conformity with the new constraint. So this case of decliticization is analogical in the sense that it makes a partial distributional regularity in the language exceptionless.

2.3.2.6 Greek *ksana-*

Our last example is (4j) *ksana-* ‘again’, from *eks-ana-*, which has been upgraded from a bound prefix in Medieval Greek to a free adverb in Modern Greek (Dosuna 1997). The analogical model here seems to be a class of aspectual/temporal adverbs which form compounds with verbs:

- (59) a. StdModGr *sixna* ‘frequently’
b. *ton sixnorotao* ~ *ton rotao sixna* ‘I keep asking him’

This class seems to have attracted a number of originally disyllabic prefixes, beginning with *meta* ‘after’ (attested as a free adverb as early as the 6th century).

An intermediate stage, shared with *para* ‘(too) much’ and *mata* ‘re-’, is tmesis:

- (60) a. StdModGr *to exo ksana- δ i* ‘I’ve seen it before’, ‘I’ve seen it again (since)’
b. *to ksana-exo δ i* ‘I’ve seen it before’
c. *to ksana-exo idi δ i* ‘I’ve already seen it again (since)’, ‘I’ve already seen it before’
d. *to exo idi ksana- δ i* ‘I’ve already seen it again’
e. *δ ém ború mata na to fáu* ‘I can’t eat it again’ (Sarakatsan, Höeg 1925:297) = StdModGr
 δ é boró na to matafáó.

Of course, showing the possibility of an analogical origin not proving it. Still, the existence of a plausible alternative weakens the claim that this is an instance of degrammaticalization. It is fair to ask why precisely prefixes such as *ksana-* and *meta-*, *mata-* underwent the analogy. Dosuna 1997 suggests a number of syntactico-semantic reasons: their uniform and compositional semantics, the lack of interaction with argument structure, the fact that they have semantic scope over the whole VP (the aspectual domain), and their “low bonding” with their host.

2.4 Conclusions

Analogy as traditionally understood is a process that extends and regularizes existing structures, typically represented by proportional schemata. In previous work I have argued that such a view of analogy is too narrow, and that the process should be properly understood as grammar optimization. This provides a natural reconstruction of various types of non-proportional analogy, including lexical diffusion. Here I have pushed this grammar-based view of analogy one step further. I have shown that it entails the existence of a type of non-exemplar-based analogy, which projects UG constraints that are not positively instantiated in the language. This, I suggest, is what grammaticalization is.

The new concept of analogy unifies grammaticalization with ordinary analogy — not just in the trivial sense of classifying them both as instances of reanalysis, but causally within a restrictive theory of analogical change. It provides a unified mechanism for all endogenous innovation in morphology and syntax.

In addition to this conceptual advantage, my proposal has two empirical virtues. First, although it makes a formal distinction between ordinary analogy and grammaticalization (one is exemplar-based, the other is not) it does not draw a sharp boundary between them, and does not force us to classify a given change as belonging exclusively to one or the other type. Between straightforward proportional analogy and wholly creative grammaticalization there are intermediate cases varying in the remoteness of the exemplars and in the degree to which they constrain or facilitate the innovation. Moreover, they may conflict, or act in concert. Examples of such mutually constraining interaction were presented above.

Secondly, my proposal predicts the core properties of grammaticalization, including unidirectionality. In fact, unidirectionality is vindicated as an exceptionless generalization, and derived

in a principled way as a consequence of the model. Apparent counterexamples, often taken as refuting the theory and requiring a retreat to a weaker characterization as “reanalysis”), can be explained by the independently motivated mechanism of analogical change. I presented evidence that the instances of degrammaticalization cited in the recent theoretical literature are ordinary exemplar-based analogical change.

Seen in this light, the debate on the unidirectionality thesis turns out to run almost exactly parallel to the earlier debate on the neogrammarian exceptionlessness thesis about sound change. In each case, there are four opposing views. Regarding the question “is grammaticalization unidirectional?”, there are four answers.

- (61) a. *No*. The unidirectionality hypothesis is false; grammaticalization is reanalysis, the same “mechanism” as analogical change (Harris and Campbell 1995, Joseph 2001).
- b. *Yes, trivially*. The unidirectionality “hypothesis” is a tautology (Newmeyer 2001),
- c. *Sort of*. There are counterexamples (anti- or degrammaticalization), but unidirectionality is a robust tendency (Haspelmath 2004, Hopper & Traugott 2003).
- d. *Yes, nontrivially*. Properly understood, grammaticalization *is* unidirectional. Apparent degrammaticalizations are ordinary analogical changes. Grammaticalization and ordinary analogical change can be unified. (This article.)

And to the parallel question “is sound change exceptionless?” the same four answers have been given:

- (62) a. *No*. The neogrammarian hypothesis is false (Schuchardt 1885).
- b. *Yes, trivially*. The neogrammarian hypothesis is a tautology (Hoenigswald 1978).

- c. *Sort of*. Sound change is often exceptionless, though there is also lexical diffusion (Labov 1994).
- d. *Yes, nontrivially*. Properly understood, sound change is exceptionless. Lexical diffusion is (non-proportional) exemplar-based analogical change (Kiparsky 1995).

The answers (61d) and (62d) are a happy empirical outcome of taking “sound change” and “analogy” to be precise theoretically defined concepts rather than vague observational givens. As always, linguistic structure does not necessarily wear its identity on its sleeve. Whether a given datum is to be allocated to syntax or to semantics, to morphology or to phonology, may not be obvious on phenomenal grounds. It often depends on the theory and on the rest of the grammar, in empirically consequential ways. So too in historical linguistics. Just eyeballing a historical process is not enough to tell us whether it is sound change, analogical change or grammaticalization. Moreover, even the idea that it must be just one of these things is vitiated by the interactions between “mechanisms” of change such as those we have seen here for analogical change and grammaticalization.

Notes

¹This paper was presented at DIGS VIII in 2004 and revised in 2005 for publication in a projected volume of proceedings of that conference. I am grateful to the organizers and participants of DIGS, and especially to Andrew Garrett for his penetrating comments. Thanks also to audiences at NYU and Christchurch, where this material was presented and discussed, as well to as Ash Asudeh, Andrew Carstairs, Pekka Sammallahti, Jan Strunk, and Ida Toivonen for sharing their ideas and expertise.

²Because Sanskrit has no sequence of tense and no counterfactual use of Past tense, the Past Perfect does not have these uses either. It merely expresses past time. Therefore, from the perspective of English, it is a “Pluperfect” in form only, not in function.

³Many similar cases of analogically created new categories can be cited. For example, some dialects of Finnish and Estonian have formed a new mood, the Eventive, by combining the Potential mood *-ne-* with the Conditional mood *-isi-*. E.g. Indicative *voitta-a* ‘wins, will win’, Conditional *voitta-isi* ‘would win’, Potential *voitta-ne-e* ‘probably wins, will probably win’, Eventive *voitta-ne-isi* ‘would probably win’.

⁴The idea appears already in Meillet: “L’affaiblissement progressif de la valeur du type *j’ai dit* a abouti à en faire un simple prétérit, sans aucun reste de la valeur de parfait.”

⁵Possibly the perfect and the more specific past are in a blocking relationship and the meaning of the perfect actually does not change at all — rather, more of its meaning is realized as the past disappears. See the analysis of the functions of the perfect and its relation to past tense presented in Kiparsky 2002.

⁶“... we now define grammaticalization as the change whereby lexical items and constructions come in certain linguistic contexts to serve grammatical functions and, once grammaticalized, continue to develop new grammatical functions.” (Hopper & Traugott 2003:xv).

⁷Tabor and Traugott 1998 tentatively suggest that the exceptions to the unidirectionality hypothesis might be explained away by distinguishing different types of grammaticalization. But they concede that the idea has problems, and it seems to have been dropped (although their proposal that grammaticalization is scope-increasing has been picked up and developed by Roberts & Roussou 2003).

⁸The matter of grounding is an important one but cannot be addressed here. I will set it aside and simply speak cavalierly of UG constraints, without commitment as to whether they are part of the genetic endowment, and if they are, how they got there.

⁹We can still keep the term ‘analogy’, of course, just as we continue to speak of ‘sunrise’.

¹⁰The fourth logical possibility, of elements which have the syntax of suffixes and the phonology of postpositions, is not accommodated by this typology. A candidate for this category would be Hungarian disyllabic local “postpositions” (pointed out to me by Andrew Carstairs, cf. Carstairs 2000:598). They are perhaps case endings which fail to undergo vowel harmony, for reasons connected with their disyllabic shape.

¹¹For some discussion of the evolution of Comitatives and their relation to Instrumentals, Agents, and other categories, see Croft 1991, McGregor 2003, Sakamoto 2000, Stolz 1996a, 1996b, 1998, 2001a, 2001b, Stolz and Stroh 2000.

¹²Unlike the filter suggested by Halle 1973, which contains language-specific constraints, the blocking mechanism is language-independent.

¹³I take it to be uncontroversial that some morphological categories in a language are paradigmatic and others not, and that a given category may be paradigmatic in one language and non-paradigmatic in another (e.g. feminine is paradigmatic in French and German but not in English). And I take it to be an unsolved problem why that is the case. Pending a solution of this problem, the paradigmatic status of a feature must simply be stipulated.

¹⁴See Koontz-Garboden 2002 for a stochastic OT treatment of blocking which also uses conflicting markedness and faithfulness constraints.

¹⁵See Kiparsky MS for more details and empirical justification.

¹⁶The assumption here is that an expression meaning “(together) with” is the best alternative because it is closer in meaning to the instrumental “by means of” than any of the available equally simple candidates (such as “between”, “after”, or “notwithstanding”). Of course, the other realistic alternative is an expression denoting a path, such as “by” and “through”, which is a short step away from instrumental meaning and often develops into an instrumental.

¹⁷See Kahr 1976 for further support, such as the fact that Balochi Accusative ending *-ra* is from a postposition meaning ‘on account of, because’ (Old Persian *rādiy*, Modern Persian *rāi*).

¹⁸The alternative affix analysis *kāde-npäällä* would violate constraints on morpheme structure. I bypass it here so as not to overburden the discussion.

¹⁹Karelian, Ingrian, Votic, and Livonian (Särkkä 1969, Hurtta n.d., Alvre 2001).

²⁰The idea must be expressed by a paraphrase such as “from the chairmanship” or “from the office of chairman”. For individual-level predicates, the missing Source Predication case is supplied by the Elative, e.g., (he changed) “from a child” (*lapsesta*, Elative) “into an adult” (*aikuiseksi*,

Translative).

²¹Other case categories of compositional analogical origin are the Estonian Long Illative, and, at an earlier period of Finno-Ugric, the six local cases themselves.

²²In some grammars, the Comitative is called the Sociative, and the usual term in Australian linguistics is the Concomitant; the Abessive is sometimes called the Caritive (Blake 1994: 156).

²³See e.g. Jakobson 1941 (*Gesetz der einseitigen Fundierung*); also Noyer 1998 and Bobaljik 2002. This principle would of course have to be reconstructed within the OT approach to morphology assumed here; I leave this task for another occasion.

²⁴A possible instance is Mordvin, where some authors analyze *-vtomo* as an Abessive case ending (Zaicz 1998). However, Raun (1988:101) gives good arguments that it is a derivational suffix (like its cognate Finnish *-ton /-ttoma/*): it can be used as an adjective, and it constitutes a base for derived nouns.

²⁵These asymmetries probably extend beyond case to prepositions and other expressions for comitative and abessive relations (Stolz 1996).

²⁶As with Jakobson's principle, no formalization within OT morphology is attempted here. It remains to be seen whether (33) is an exceptionless universal, but it certainly is a tendency. As always, *prima facie* counterexamples can be cited, but a proper falsification would have to come from well-motivated analyses; unanalyzed data are not enough.

²⁷Thanks to P. Sammallahti for this example.

²⁸Seto is spoken by approximately 10,000 people in the Southeasternmost corner of Estonia and adjoining parts of Russia, and by a substantial diaspora in Siberia. The adjoining Võru dialect of

Estonian is very similar, particularly the conservative variety which has been selected as the basis of the new standard Võru literary language (Keem 1997).

²⁹Etymologically the Seto/Võru Abessive ending seems to consist of the Adessive case marker *-l-* (< *-lla*) plus the old Abessive **-tta*, cognate with the Saami suffix discussed above. This combination perhaps reflects a time when the Adessive was used as the instrumental ‘with’ case, as in Finnish, and *-tta* was added to it to form its negated counterpart ‘without’.

³⁰For some Seto speakers as well, the allative ending *-le* can behave as a clitic, e.g. *suurõ mihele* ‘to the big man’. This usage is not mentioned in Keem 1997 and is perhaps due to interference from Standard Estonian.

³¹South Vepsian has *-mu(d)*, from *möd* < *mööta* ‘along’, which is a Prolicative (path-denoting) clitic in the other languages. Some Vepsian dialects have an ending *-kā*, from **kanssa*, cognate with the Estonian ending taken up immediately below.

³²Carstairs 1987 notes a further correlation which corroborates the analogical account: possessive endings turned into clitics, with group genitive behavior, only after their allomorphic alternations were leveled out.

³³See Strunk 2004 for an analysis of the corresponding possessive construction in Low Saxon. Of particular interest is his observation that the possessive morpheme can appear following a possessor without a following possessum, which suggests that it already being reanalyzed as a clitic on the possessor.

³⁴A similar stage seems to have been achieved in Dutch and colloquial North German; for the latter, see Strunk 2004.

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