

THEORETICAL ESSAY

# SOME OBSERVATIONS ON WHAT GRAMMATICALIZATION IS AND IS NOT

Brian D. JOSEPH  

Ohio State University (OSU)

## ABSTRACT

The notion of ‘grammaticalization’ — the embedding of once non-(or less) grammatical phenomena into the grammar of a language — has enjoyed broad acceptance over the past 30 or so years as a new paradigm for describing and accounting for linguistic change. Despite its appeal, my contention is that there are some issues with ‘grammaticalization’ as it is conventionally described and discussed in the literature. My goal here is to explore what some of those problems are and to focus on what grammaticalization has to offer as a methodology for studying language change. Drawing on case studies from the history of English and the history of Greek, I reach a characterization of how much of grammatical change can legitimately be called “grammaticalization” and how much is something else. In this way, I work to achieve a sense of what grammaticalization is and what it is not.

## OPEN ACCESS

### EDITORS

- Miguel Oliveira, Jr. (UFAL)
- René Almeida (UFS)

### REVIEWERS

- Olga Fischer (UVA)
- Christian Lehmann (Uni-Erfurt)
- Esmeralda Negrão (USP)

### DATES

- Received: 12/18/2020
- Accepted: 02/24/2021
- Published: 08/01/2021

### HOW TO CITE

JOSEPH, Brian D. (2021). Some Observations on What Grammaticalization Is and Is Not. *Cadernos de Linguística*, v. 2, n. 1, e343.

## RÉSUMÉ

La notion de «grammaticalisation» - l’incorporation de phénomènes autrefois non (ou moins) grammaticaux dans la grammaire d’une langue - a été en générale acceptée au cours des 30 dernières années comme nouveau paradigme pour décrire et expliquer le changement linguistique. Malgré son attrait, j’affirme qu’il y a des problèmes avec la «grammaticalisation» comme elle est décrite et discutée dans la littérature. Mon objectif ici est d’explorer certains de ces problèmes et de me concentrer sur ce que la grammaticalisation a à offrir comme une méthodologie pour étudier le changement de langue. Avec des études de

cas tirées de l'histoire de l'anglais et de l'histoire du grec, je décris quand le changement grammatical peut légitimement être appelé «grammaticalisation» et quand c'est autre chose. De cette façon, j'arrive à une idée de ce qu'est la grammaticalisation et de ce qu'elle n'est pas.

#### KEYWORDS

Grammaticalization; English; Greek; Analogy; Verbal Paradigm; Internal Reconstruction.

#### MOTS CLÉS

Grammaticalisation; Anglais; Grec; Analogie; Paradigme Verbal; Reconstruction Interne.

## PREAMBLE<sup>1</sup>

The notion of grammaticalization has generated a huge amount of scholarly interest in the past 30-plus years,<sup>2</sup> and will surely continue to do so for many years to come. I offer here my own, admittedly perhaps idiosyncratic, perspective on grammaticalization, examining its very nature and discussing some key aspects of this framework for examining language change.

I start with a fairly neutral characterization of grammaticalization, focusing on what happens in such developments, that is, on grammaticalization as a linguistic effect:<sup>3</sup>

the embedding into grammar, i.e., the taking on of grammatical status, of once-non-(or less-) grammatical phenomena.

In this characterization, it should be noted that I do not say “the process by which once-non-(or-less-)grammatical phenomena become embedded into grammar”. I do this deliberately, since it is my firm belief that one thing that grammaticalization is not is a process; in this view, which admittedly is not a position shared by all linguists, grammaticalization is not seen as a mechanism of change.<sup>4</sup>

Rather, for me, grammaticalization of this sort is a result, a state that comes into existence through the action of well-known and well-recognized processes/mechanisms of change, in particular regular sound change, analogy, borrowing (taken as a cover term for language contact effects more generally), and metaphorical extension in meaning.<sup>5</sup>

1 This article is based on a lecture I gave on 30 May 2020 as part of the Abralin ao Vivo series. Inasmuch as this represents a somewhat personal take on the topic of grammaticalization, I have deliberately kept some of the informality of that presentation in this written form. I would like to thank the editors for this opportunity to present my views, and the three reviewers, Olga Fischer, Christian Lehmann, and Esmeralda Negrão, all of whom were identified to me, for the very helpful and insightful comments they provided on an earlier version of this work. I learned much from their comments. Naturally, I absolve them of any blame for the final result.

2 For instance (see also Joseph 2004, 2021), looking just at the literature from the early years of this scholarly movement, one can cite textbooks and surveys (e.g. Diewald 1997, Heine, Claudi, & Hünnemeyer 1991, Hopper & Traugott 1993; Lehmann 1982/1995), dictionaries or similar compendia (Lessau 1994; Heine & Kuteva 2002), several singly-authored studies (e.g. Bowden 1992; Heine 1993, 1997; Kuteva 2001; Ziegeler 2000, to name a few), and numerous edited volumes (including, among many others, Pagliuca 1994, Ramat & Hopper 1998, Traugott & Heine 1991, Wischer & Diewald 2002), all dedicated to different aspects of the study of grammaticalization. Moreover, there are updated editions of several of the key reference works, especially Hopper & Traugott 2003, Lehmann 2015, and Kuteva et al. 2019. Note that I date the advent of what might be called the modern era of grammaticalization studies to Lehmann 1982 (hence, “30-plus years”), though Givón 1971 is an important precursor.

3 The term “grammaticalization” is also used as a cover term for “grammaticalization studies”, i.e. for work done within a framework that takes grammaticalization as its leading idea. I do not address this sense of the term in this piece.

4 See Joseph 2001 for some discussion of this point.

5 In a certain sense, this last mechanism — metaphorical extension — can be subsumed under analogy, as it involves likening some entity, activity, or descriptor to another entity activity, or descriptor, e.g. *surfing* on the worldwide web likened to surfing on waves, or *blazing* colors (e.g. on leaves in autumn) likened to blazing flames of fire.

The term “grammaticalization” is also used as a cover term for “grammaticalization studies”, i.e. for work done within a framework that takes grammaticalization as its leading idea, and for a methodology that informs the research done within that framework.

In what follows, I elaborate on these points, drawing on material and viewpoints that I have published elsewhere – see especially Joseph 2004, 2011a, 2014, and 2017 – but I attempt to present them here in a fresh manner. Moreover, this presentation allows for different observations to be gathered together in one place. My ultimate goal, as the title suggests, is to shed light on and clarify just what grammaticalization is and what it is not.

## 1. GRAMMATICALIZATION AS A METHODOLOGY

As noted above, the notion of grammaticalization can be seen as a guide to a methodology for understanding certain types of grammatical change. Various works in grammaticalization – see especially Hopper & Traugott 2003 – lay out a set of principles that inform analyses and give ways in which accounts of grammatical change can be developed. In this way, it is possible to take the view that grammaticalization is essentially a type of internal reconstruction.

To understand what internal reconstruction is, consider this somewhat informal scenario (see also Joseph 2010):<sup>6</sup> you walk into a classroom and notice that the desks and chairs are all in different places and arranged differently from how they were when you were last in the room; how is this situation to be explained? One could suppose that the movement of the furniture could have been caused by the intervention of aliens, or by the effects of a windstorm; alternatively, the chairs could have staged a rebellion against the desks that had been oppressing them, or another teacher could have rearranged the furniture in the classroom in order to offer a setting for a movie or to stage a play or simply to promote discussion in their class. In trying to decide among these possibilities, it must first be admitted that all are conceivable scenarios under certain assumptions; crucially, though, not all of them are equally plausible, and in fact, some of these can be ruled out rather easily as they involve improbable or even impossible developments in order to be effected. In particular, chairs are simply not capable of holding the propositional attitudes or carrying out the actions necessary for staging a rebellion, and visits by extra-terrestrials are highly unlikely and even if extra-terrestrials do exist and did visit Earth, one has to ask why they would bother to pull a prank like changing around the furniture. The remaining

<sup>6</sup> My inspiration for this particular account of internal reconstruction is my long-time friend, colleague, and collaborator, Rich Janda, who talked in terms of finding a car in one’s living room and trying to figure out how that could have happened. See also Ringe 2003 for a more linguistically oriented presentation of this methodology.

possibilities have greater degrees of probability. That is, an exceedingly strong windstorm could certainly wreak havoc in a room if windows were left open or were blown out, but that is not a likely event, and in any case, an absence of broken glass would allow one to eliminate that possibility. This reasoning leaves the best hypothesis remaining as the one that explains the alterations as the result of human intervention, actions by another instructor sometime before your (re-)entry into the classroom.

The basic structure of this exercise is that of trying to deduce the historical events that led to a particular synchronic state, guided by our sense of what sorts of events are likely and unlikely to have created the observed synchronic state of affairs. This is a mode of inference that we engage in all the time: we see a puddle or wet pavement in the morning and can hypothesize that it rained overnight even without directly experiencing the rain; we see a friend's hair in disarray and guess that he had run out of shampoo, had a turn with a hostile barber, or perhaps just lost his comb; we see a colleague yawning and seemingly going through the motions in the workplace and guess that he did not sleep well or enough the night before. And so on.

In each case we are attempting to reconstruct some aspect of the past that is not directly observable but which, rather, is inferable from the outcome and from what we know about how such outcomes generally arise. Applied to language, this mode of reasoning gives us internal reconstruction, hypothesizing about the causal historical underpinnings to a particular configuration of facts in a language, with the evaluation metric for the most reasonable hypotheses being whether they are supported by what is known about language and about language history in general.

In any historical investigation, including grammaticalization-based explorations of how some grammatical element has developed, we generally have to fill in gaps in the historical record. No matter how detailed the historical record is, there almost always are gaps in coverage that in the absence of direct evidence, including evidence of a comparative nature from other dialects or other languages, require the inferential reasoning that amounts to internal reconstruction. William Labov 1994:11 refers to this aspect of methodology when he states that historical linguistics is the “art of making the most of bad data” (though cf. Janda & Joseph 2003:14 suggest that one should substitute “imperfect” for “bad”!).

Typically, one has an inkling, an idea, that a given morpheme, e.g. a suffix, might have something etymologically/historically to do with some other morpheme, e.g. a free word, and then one uses that as a starting point for further investigation to fill in the details of the development. An example from Spanish illustrates this: adverbial marker *-mente* as in *claramente* ‘clearly’ appears on the face of it, due to the similarity in form, to have something to do with the free word *mente* ‘mind’.<sup>7</sup> A full account, however, needs to go beyond such a

7 This example is discussed in Joseph 2011a; I draw here on the insights of Karlsson 1981 and Murtoff 1999.

simple observation of a possible connection and to try to motivate the connection in question and work out the steps that led to the particular formation and formative. A guess here would be that phrasal forms like *clara mente*, literally ‘with a clear mind’, i.e. ‘clearly’, would be a way of linking the adverbial use of the bound form with the lexical use of the free form. It turns out that such phrases do occur in adverbial usage in Classical Latin, with *mente* clearly being the ablative singular form of the stem *ment-* ‘mind’.

How might one then strengthen this hypothesis? Helpful here would be the recognition that the movement from a free word to an apparent affix via a phrasal use is a common development cross-linguistically; this is really the essence of a grammaticalization account. Moreover, positing such a development here would be in accord with the “principle of unidirectionality” that the grammaticalization framework offers as a condition on grammatical change; this principle states that movement in grammatical change is always from lexical to grammatical, e.g. in this case from free word *mente* in a phrase to grammatical formative *-mente* as a word-level formative. This scenario would then represent an internally arrived at reconstruction of the development leading to modern adverbs like *claramente*, internal reconstruction in that it draws entirely on data from within Spanish, augmented by a sense of how grammatical change in general can proceed.

So far so good – but then reality sets in. In particular, Old Spanish reveals not just phrases like *clara mente*, but also *clara miente*, *clara mientre*, and a few other variants. Furthermore, from Latin *mente*, the regular expected outcome in later Spanish is *miente* (as in some of the Old Spanish forms); compare modern Spanish *miento* ‘I lie’ from Latin *mentior* ‘I lie’ (infinitive *mentīr*) or *pierdo* ‘I lose’ from the Latin root *perd-*.

These Old Spanish facts mean that the *-ment-* form, in both the free word and in the adverb, is not the direct lineal development out of Latin *ment-*, neither in its free form nor in its phrasal combination that yielded the adverbial usage. Rather, *ment-* must represent a learned borrowing into Spanish that replaced the regularly developing *(-)miente* (the *-r-* forms like *mentre* have a different story involving analogical influence of other adverbs in *-r-*). Moreover, the learned borrowing that interrupted the “flow” from the phrasal combination of Latin to the adverbial form of this variety of later Romance in a sense started the devolution from word to affix via phrase all over again in the Middle Spanish period; that is, there was not a straight-line unidirectional movement from word to affix, but instead one that got interrupted by the re-introduction of a newly borrowed form into the adverbial. So the reality is somewhat different from what the internal reconstruction hypothesis based on modern Spanish *-mente/mente* might suggest.<sup>8</sup>

8 It should be noted that both French and Italian show the development of Latin *mente* into an adverbial marker, e.g. French *clairment*, Italian *chiaramente* ‘clearly’. These languages do not seem to show the retreat away from *-mente* as a suffix that Old Spanish did, owing to different conditions “on the ground” in each, e.g. with respect to

Thus, internally arrived at reconstructions can be wrong, but that is all right methodologically because, in a sense, internal reconstruction is nothing more than a hypothesis-generating procedure; that is to say, it is not a way of giving definitive answers but rather a way of offering possibilities to be explored further.

An example from Ancient Greek makes this clear. In particular, based on the following forms:

NOM.SG	ónoma ‘name’
GEN.SG	onómatos ‘of a name’
NOM.SG	méli ‘honey’
GEN.SG	mélitos ‘of honey’
NOM.SG	poimén ‘shepherd’
GEN.SG	poiménos ‘of a shepherd’

it is straightforward to segment the genitive forms as:

onómat-os  
mélit-os  
poimén-os

and then, working with an alternation between the stem form with *-t* and the nominative form without a *-t* to internally reconstruct the paradigms as having \*mélit and \*ónomat as the historical NOM.SG forms, with a final stop-deletion sound change giving the attested forms. At this point, it is appropriate to turn to external data in the form of comparisons from other Indo-European languages, specifically the word for ‘honey’ in Hittite and Gothic:

Hittite	milit
Gothic	miliθ

These external comparanda confirm the internally arrived-at reconstruction \*melit, since they show a final dental obstruent.<sup>9</sup>

However, for ‘name’, the relevant comparison forms external to Greek are the following:

the influence of Latin. That is, even if the starting points are similar, and the general path of development seems parallel, there is no reason to expect developments in related languages to be identical in all respects. Fischer 2011 and De Smet & Fischer 2017 have both made this point, arguing that an apparent grammaticalization development in one language can be quite different from that with a similar item in another language due to the simple fact that different languages will have different synchronic systems in which the grammaticalization change is embedded. I thank Olga Fischer for insightful discussion of this important point.

<sup>9</sup> Moreover, the *-θ* in Gothic is the sound that would be expected to correspond to a Hittite *t* and a pre-Greek \**t*, deriving from a Proto-Indo-European \**t*.

Hittite	laman
Gothic	nama
Sanskrit	nāma
Latin	nōmen

It is noteworthy that, unlike the word for ‘honey’, none of these forms have a final *-t*, suggesting that the internally generated reconstruction \*ónomat is wrong. Interestingly, if one were to have taken a greater range of data from Greek itself into consideration from the outset of this exercise, a difference between the ‘honey’ word and the ‘name’ word might have been evident, as the denominative verbs formed from these nouns actually show different patterns: *blittō* ‘to make honey’ (a regular outcome from \*mlit-yō) versus *onomainō* ‘to name’ (a regular outcome from a form that in Greek terms would have been \*onomḥ-yō).

Thus caution is in order with internal reconstruction more generally, as it can lead to ahistorical hypotheses and accounts always need to be tested against as wide a range as possible of data, especially of an external kind. If grammaticalization accounts are essentially using the tenets of grammaticalization as part of an exercise in internal reconstruction, then the need for caution becomes evident in those accounts as well, as the Spanish (-) *mente* case illustrates. Grammaticalization as a methodology in reconstructing linguistic history must be viewed as generating hypotheses, not necessarily giving definitive answers.

## 2. SOMETHING GRAMMATICALIZATION IS NOT

As a counterpoint to the previous section discussing something that grammaticalization is, I turn here to something that it is not. That is, grammaticalization is not a theory of morphology, or at least not much of a theory of morphology, despite the fact that it is avowedly interested in the origins of grammatical morphemes. I illustrate this claim with several case studies, showing what is needed for a viable theoretically based account of various morphological phenomena, in some instances with a direct comparison with a grammaticalization-based study.

### 2.1. “PHONOGENESIS” AND ENGLISH HANDIWORK<sup>10</sup>

Hopper 1994 presents a case for what he terms “phonogenesis”, the devolution of a morpheme into mere phonological “bulk” in a word with no morphemic status, a state which

<sup>10</sup> This case is discussed also in Joseph 2003, 2017.



for him represents an “advanced stage of grammaticalization” as it is at the far end of a cline of development for once-lexical or once-morphological/grammatical material.<sup>11</sup> He offers up as a case in point the modern English word *handiwork*, defined by Merriam-Webster on-line (<https://www.merriam-webster.com/dictionary/handiwork>) as ‘work done by the hands; the product of handiwork’. In so doing, Hopper gives an implicit morphological analysis of the word.<sup>12</sup>

As to its history, *handiwork* derives from Old English *hand-ge-weorc*, where *hand-* is the stem for ‘hand’ and *ge-* is a collective prefix that combines with *weorc* to give a word meaning ‘a collection of work’, so that *handgeweorc* is ‘a collection of work (done by) hand’. For Modern English *handiwork*, though tri-morphemic from an etymological standpoint, Hopper argues that it is to be analyzed as built up of *hand-*, as the stem for ‘hand’, and *work*, as the stem for ‘work’, with the *-i-* being something that just “adds to the phonological bulk” of the word; that is, the *-i-* is synchronically non-morphemic.

It is useful to consider here the principles of American Structuralist morphological analysis in order to have a basis for deciding whether *-i-* is morphemic or not. In particular, in doing morphological analysis and identifying morphemes, in the structuralist framework, one is to look for recurring partials of form that match recurring partials of meaning; applying that to *handiwork* allows one to segment off *hand-* and *-work* in the modern form, leaving *-i-*. Another principle of analysis in this framework is also that there must be an exhaustive parsing of a word, such that all pieces of form must be identified and accounted for. It is not possible to simply omit *-i-* from analysis here and to treat it as having no analytic relevance. That is, one has to say that *-i-* is a morpheme, admittedly perhaps one with no clear meaning; note that if morphology focuses on form, then it should indeed be possible to have morphemes that are form only and have no readily identifiable meaning.<sup>13</sup> Alternatively, one could say that *-i-* finds its meaning in what it contributes to the combination of *hand+work*, perhaps what allows for the difference between ‘work by hand’ in the abstract and the more concrete ‘product of work by hand’. Admittedly, the modern English *-i-* in this word does not do the same work, so to speak, as the Old English *-ge-* did,

11 It is well known that affixes can give rise to morphophonological processes marking grammatical categories, as is the case with many if not all of the various umlaut phenomena across the Germanic; the further devolution to non-morphemic mere phonological “bulk” in a lexical item would thus logically represent a further step along the grammaticalization cline, as Hopper’s characterization indicates.

12 It is Hooper’s explicit linking of the development of phonological “bulk”—“phonogenesis” in his terms—to grammaticalization that licenses the implication that grammaticalization offers a theory of morphology in some sense; presumably one has to apply theoretically based criteria to see if one is dealing with material that represents a morpheme or instead phonological bulk. See Joseph & Ralli 2022 for some relevant discussion.

13 There can be morphemes, for instance, that have only classificatory value, and thus no real meaning per se; the thematic vowels in Spanish verbs (e.g. *a* in *hablar* ‘speak’, *e* in *comer*, and *i* in *salir* ‘leave’) are a case in point, as they serve only to indicate the conjugational class that a verb belongs to.

but it is a piece of the word that is identifiable, once one segments off *hand* and *work*, and therefore needs to be included in an exhaustive analysis.

Pushing the grammaticalization-based account here, and in particular, looking to characterize the historical changes in terms of the movement in a particular direction along a developmental cline of grammaticalization from morpheme to phonological bulk, thus leads to an unworkable analysis of *handiwork*.

## 2.2. OLD ENGLISH EOM 'AM'

As a similar case involving details of morphological analysis with grammatical implications, some developments with the Old English first person singular (1SG) present of the verb 'be' are of interest. The facts in question have been presented by Hogg 1980, whose interest was in their relevance for the issue of grammar complication, and Joseph 2017 follows up in a similar vein. However, they have not been talked about specifically within a grammaticalization framework, so that there is no overt contrast to be made here as there is *handiwork*; nonetheless, there are some observations to be made that are relevant to the present discussion.

The form in question is the indicative *eom* 'I am'. At one (diachronic or diatopic) stratum of Old English, this form was unanalyzable, inasmuch as there were no other first person singular forms in *-m* nor any other paradigmatically related forms of 'be' that would warrant segmenting *eom* as *eo-m*;<sup>14</sup> in that way, *eom* was in the same situation morphologically as its modern counterpart, *am*. What Hogg draws attention to is the fact that nonetheless, *eom* was the source for an innovative 1SG subjunctive form, *bēom*, replacing earlier *bēo*, and possibly even from there to an innovative form of another partially rhyming word *flēo* 'I flee', thus giving *flēom*. Quite reasonably, Hogg treats the spread of *m* innovatively into *bēom* and *flēom* as a case of analogy, perhaps aided in part by it being a near-rhyming partner to the forms influenced by *eom*.

A question to be asked here now is what the status of *eom* is in terms of its morphological structure at the point at which the innovative subjunctive form *bēom* (and later *flēom*) arose analogically. The answer is that clearly, once there is *beom*, and especially when there is also *fleom*, the principles of morphological analysis described in the previous section (§3.1) would require that the *-m* be segmented off as a variant 1SG marker, given that it is a recurring element of form in these three verbs that correlates with a recurring element of meaning, namely 'first person singular'. Moreover, forms such as *bēon* for the

<sup>14</sup> This *-m* of course derives from a Proto-Indo-European 1SG ending *\*-mi*, seen in that form in Balto-Slavic, Greek, Hittite, and Indo-Iranian, but the point is that there was a stage in the development of Old English where the only trace of this *\*-mi* was in *eom*.

subjunctive plural (all persons) show that the segmentation of the innovative *bēom*, once it has come into existence analogically, is *bēo-m*, so that, morphologically speaking, *eom* would likewise be segmented as *eo-m*. The relevance of this analysis for grammaticalization is taken up in §4.

### 2.3. INNOVATIVE VERBAL INFLECTION IN MODERN GREEK

As a final case-study, I review the relatively well-known facts of an innovative verbal paradigm in Modern Greek, discussed in Thumb 1912:§239 and Householder & Nagy 1972:44, and specifically tested against claims made within a grammaticalization framework in Joseph 2014. The facts in question concern the present-tense paradigm of verbs that are end-stressed, i.e., accented on the final syllable.

The older present tense paradigm for an end-stressed verb with  $\alpha$ -vocalism in the endings, such as ‘ask’, is as follows:

1SG	rotó
2	rotás
3	rotá

These forms can be segmented in the following way:

1SG	rot-ó
2	rot-ás
3	rot-á

The innovative paradigm is:

1SG	rotáo
2	rotáis
3	rotái

which, as Thumb (op. cit.) notes, is based on the addition of the endings seen in root-stressed verbs, e.g. *kan-* ‘do’:

1SG	káno
2	kánis
3	káni

to the 3SG form of the older paradigm, treated as if it were a stem with a zero ending (i.e. *rota-∅*). Given the co-existence of the root-stressed and the innovative end-stressed paradigms, the segmentation of the innovative paradigm would be:

1SG	rotá-o
2	rotá-is
3	rotá-i

Thus *-a*, originally the 3SG ending, has become part of the stem, and the paradigm has been reconstituted with the productive endings from a related verb class.

As Householder & Nagy (op. cit.) note, this development can be subsumed under the phenomenon known in the literature as “Watkins’ Law”, after the work of Calvert Watkins and especially his 1962 analysis of the origins of some Old Irish past tense formations.<sup>15</sup>

These developments give rise to another question, namely what is the status of *-a* in the older paradigm and in the innovative one? As indicated above, in the older paradigm, the segmentation is:

1SG	rot-ó
2	rot-ás
3	rot-á

with *-a* as the 3SG ending; this segmentation is indicated by the singular paradigms for other end-stressed verbs (e.g., *boró* / *borís* / *borí* ‘I/you/(s)he can’),<sup>16</sup> the root-stressed verbs like *káno* (given above), and past tense forms (e.g., *ékana* / *ékanes* / *ékane* ‘I/you/(s)he did’). Since the elements that spread are the root-stressed endings *-o* / *-is* / *-í*, the *-a* of 3SG *rotái* is not part of the ending in the innovative paradigm; rather, *-o* / *-is* / *-í* are the endings and *rota-* is the stem.

This *a* of the stem *rota-*, in one interpretation, could be taken to be just a part of the stem, mere phonological material, perhaps even “phonological bulk”, to use Hopper’s term. However, upon consideration of more data, it turns out that this *a* has morphemic status, though different from its earlier status as an inflectional ending. In particular, the perfective stem of ‘ask’ (e.g. in the aorist past tense) is *rot-is-* (e.g. 1SG *rót-is-a* ‘I asked’); thus *-a* in the new stem *rotá-* can be segmented off as the (present) imperfective stem marker. That is, morphologically there is a contrast between imperfective stem *rot-a-* and perfective *rot-is-*. In this view, *-a-* is a derivational suffix, deriving the present imperfective stem, and is parallel to other suffixes deriving imperfective stems, e.g. *-íz-* as in *arxízo* ‘I begin’ (vs. perfective *-is-* as in *árxisa* ‘I began’) or *-n-* as in *línume* ‘we solve’ (vs. perfective *-s-* as in *lísame* ‘we solved’).<sup>17</sup>

<sup>15</sup> Watkins himself did not like this designation, as noted in Jasanoff & Joseph 2015. Some relevant literature on the phenomenon includes Watkins 1962, Arlotto 1972, Joseph 1980, Collinge 1985, and Janse 2009.

<sup>16</sup> Given the absence of *-í* in the 1SG form of *boró*, and for that matter, the absence of *-a-* in the 1SG of *rotá*, I am inclined to see the 2/3SG forms with *-is/-í* and *-ás/-á* as reflecting two different sets of endings for two distinct conjugation classes; in a sense, the innovative paradigm regularizes the paradigm by extending the *-a-* to all forms.

<sup>17</sup> I consider the marking of imperfective aspect to be derivational, following, for instance, Anderson (1992: 101) regarding the definition of inflexion: “the area [of morphology] in which principles of syntactic structure and of word

### 3. CONSEQUENCES FOR CLAIMS WITHIN GRAMMATICALIZATION AND OTHERWISE

These three mini-case studies provide different points that are relevant to concerns about grammatical change more generally and about grammaticalization more specifically. First, though, to sum up what these case-studies show:

- a) the example of *handgeweorc*/*handiwork* in §3.1 shows that there has actually been little morphological change if any in that word; the meaning of the *-i* has changed from what it was earlier but the status of the piece between *hand* and *weorc*/*work* as a morpheme remains the same;
- b) the example of *eom* in §3.2 shows that a word which is unanalyzable at the stage where it is isolated, with no support for *-m* as a segmentable element and thus presumably stored in the lexicon as a whole, can gain internal segmentation; once *bēom*/*flēom* arose, *eom* was parsable into *eo-m*, with *-m* as a separate, even if restricted, morpheme, so that a nonmorpheme has become a morpheme;  
and,
- c) the example of *rotó*/*rotáo*, etc., in §3.3 shows that the *-a* in the innovative paradigm is part of the present stem so that *-a* has gone from being an inflectional ending to, in one interpretation, being just a part of the stem, mere phonological material, while, in another interpretation — that favored here — it is actually a stem-deriving, i.e. derivational, suffix (see footnote 17).

In the subsections that follow, the consequences of these developments are explored for understanding the way languages change over time. Individually and collectively they bear on the question, discussed further in §5, of the extent to which grammaticalization studies offer a full accounting of all that is relevant to the study of language change.

#### 3.1. THE SOURCE OF GRAMMATICAL MORPHEMES

Hopper & Traugott 1993/2003 claim that there is a lexical source for all grammatical morphemes. The case of *eom* shows that claim to be too strong, since a grammatical morpheme, here *-m*, has a nonlexical source; in this case, the spread of *-m* by analogy,

formation interact with one another". In Greek, aspectual marking, with just relatively few exceptions, e.g. *arxizo* 'begin' requiring imperfective aspect in its complement, is not a matter of morphology that is determined by or is responsive to the syntax, but rather is more a matter of a characterization of the semantics of a given verb form, determined by the speaker's intent. Note too that Borer 1984 considers derivational morphology to be morphology that does not preserve semantics; to the extent, then, that aspectual marking relates to the semantics of how the action of a verb is conceived, it would fall into the realm of derivation.

together with the principles of morphological analysis, creates a situation in which *-m* becomes a grammatical morpheme where previously it was just phonological material (“phonological bulk”, in Hopper’s 1994 terms) prior to the analogies (see also Lass 2000 and Fischer & Rosenbach (2000: 21)).

### 3.2. UNIDIRECTIONALITY

A cornerstone of grammaticalization is the claim that it is unidirectional, always moving in the direction of greater grammaticality.<sup>18</sup> The Greek case of *rotó/rotáo* (etc.) offers a direct challenge this claim. In particular, the older paradigm has *-a-* in *rotá-* as inflectional, as it represents the 3SG ending on its own and is part of the 2SG ending, while the innovative paradigm has *-a-* in *rotá-* as a derivational element, a suffix that creates imperfective stems. In most formulations of the degree of grammaticality, inflection is considered to be more grammatical, more embedded in the grammar, than derivation, which typically is more lexical in nature and therefore less grammatical. Kurylowicz 1965, for instance, explicitly holds to this view (and see also footnote 17). This means that the innovation leading to forms like *rotáo* is a counterexample to the principle of unidirectionality since the movement has been up the cline of grammaticality, going from inflection to derivation, rather than down the cline.

However, the principle of unidirectionality suffers more here than just the one counter-example. In particular, it has been said that some apparent counterexamples do not involve grammaticalization but rather are instances of lexicalization, the creation of new lexical items; the extraction of a suffix *-ism* from words like *capitalism* and *communism* and its upgrading to independent word status, as in a phrase like *socialism and other isms*, or *-stan*, as in *the stans of central Asia*, or *-ologist*, for medical specialist, based on *cardiologist*, *gynecologist*, etc., would be instances of that sort.<sup>19</sup> One might wonder then if the development of a stem *rotá-* would not fall within the realm of grammaticalization but would rather be a matter of lexicalization, and as such would not be a counterexample to any claims about grammaticalization proper. That view, however, cannot be maintained because the stem *rotá-* is not a new independent lexical item but rather a representative of the lexeme for ‘ask’, and moreover it does have some nonlexical value, being involved in the formation of a present/imperfective stem; it just is not as grammatical as an inflectional ending is.

<sup>18</sup> This principle is enunciated in Hopper & Traugott 1993/2003:§1.5, and mentioned in numerous other studies within the framework of grammaticalization. See also Joseph 2006 for discussion of different interpretations of the notion of “unidirectionality”. Lass 2000 is among the several studies that offer a critique of the notion of unidirectionality (and see also footnote 16 and references below).

<sup>19</sup> Janda 2001, for instance, has some 80 examples of this kind of counter-example to unidirectionality, taken from a number of different languages.

Therefore, this example can be added to the list of true counter-examples to claims about unidirectionality in grammatical change, at least the eight that Haspelmath 2004 recognizes and the several that Norde 2009 argues for in her book-length study of degrammaticalization, i.e. of counter-directional developments, as well as others that have been offered in the literature. Furthermore, this *rotá-* example from Greek poses an even more significant problem since it is often claimed that counter-examples such as those recognized by Haspelmath exhibit no pattern and are sporadic and unsystematic; however, there are numerous Watkins' Law examples that have been discussed in the literature (see footnote 15) and each one could lend itself to the same sort of morphological analysis as with *rotá-*, so that this particular instance of degrammaticalization is thus one token of a more general – and thus systematic – type of counter-example to unidirectionality.

### 3.3. MORE ON UNIDIRECTIONALITY: SOMETHING OUT OF NOTHING

With regard to *eom*, it is observed above in §4.1 that the *m* in *eom* at one stage in Old English was non-morphemic, thus something that Hopper might well call just “phonological bulk”. In such a view, it would reflect, as noted in §3.1, an “advanced stage of grammaticalization”, having devolved from a fully morphemic element in Proto-Indo-European (see footnote 14) to a non-meaning-bearing piece of the phonological make-up of a word. That means, however, that in then moving to morphemic status, supported by the innovative *bēom* and *flēom*, it would have moved counter-directionally, counter to the usual direction associated with changes in grammaticality. Moreover, to the extent that it is mere phonology (Hopper's “bulk”) at the point prior to becoming a morpheme, it would be an instance of the development of something, i.e. an element of form with meaning, out of essentially nothing, i.e. something that is just an element of sound. It would thus be the kind of development that Joseph & Ralli 2022 characterize as a curious combination, namely degrammaticalizing grammaticalization – grammaticalization because a new grammatical element, a person/number ending on a verb, is created, but degrammaticalizing because in coming into existence as a grammatical marker, it moves counter to unidirectionality, going from Hopper's “advanced stage of grammaticalization” (see §3.1) to a more weakly grammatical derivational morpheme.

### 3.4. A BONUS FOR LANGUAGE CHANGE IN GENERAL

As a bonus not specifically connected to grammaticalization but relevant for language change in general, the case of *eom* allows for an insight into the issue of whether language change is gradual. Change is often said to take place gradually, devolving over long periods of time, and that may certainly be true for spread of a change either through the lexicon, as in the case of analogically driven changes, or through a speech community, in

the classic Labovian paradigm for change. However, the emergence of a new inflectional morpheme *-m* in *eo-m* / *bēo-m* / *flēo-m* comes about abruptly, as is generally the case, it must be admitted, with instances of reanalysis, without passing step-wise through a stage of being lexical or derivational or the like; that is, once there is *bēom*, to be segmented *bēo-m* as argued above, the analysis of once non-morphemic *eom* into *eo-m* follows automatically, given the principles of morphological analysis discussed above in §3.1. This example, as well quite possibly as the *rota-* case, therefore, demonstrates that language change need not be gradual.<sup>20</sup>

## 4. MORE ON WHAT GRAMMATICALIZATION IS NOT

If grammaticalization practice is best thought of as a type of internal reconstruction then it is not really a theory of grammar in any full sense. Admittedly the issue of what a “theory” is and the complaints made, e.g. by Newmeyer 2001, about “grammaticalization ‘theory’” are maybe ill-aimed, in that it is not clear that anyone has made representations that it is a synchronic theory of grammar. Nonetheless, one can note links between the framework of grammaticalization and notions like “emergent grammar”.

More to the point for language change, I argue that we should not look to grammaticalization for a total theory, or even a total account, of all that is relevant to the study of language change; thus, to sound a terminological note, using “grammaticalization” as a near-synonym for “change”, something I have observed on occasion,<sup>21</sup> seems to me to be a dangerous terminological step to take. That is, there is so much more to language change and historical linguistics than what the grammaticalization framework offers insights into. In particular, language can change at all levels, in all components, and given enough time, perhaps there is nothing in language that cannot change, except for the most foundational aspects of language, the universal properties that make human language what it is. As we all know, language, as traditionally viewed, encompasses phonology, morphology, syntax, semantics, and lexicon, as well as pragmatic interpretations given to the use of these elements in discourse. This means there are sounds, patterns to the sound combinations, prosody, combinations of sounds

<sup>20</sup> See Joseph 2011b for a discussion of this issue of gradualness in general terms.

<sup>21</sup> I have voiced this terminological complaint elsewhere — see Joseph 2011a — though I readily admit that I cannot cite cases of this sort in print. Still, others have noted this usage too, e.g. Fischer 2009, 2011. I have certainly heard it more than once. A recent example came at a conference where a colleague, in commenting on a paper, said of a lexeme’s shifting in meaning that “it had already grammaticalized to something else”; since no grammatical value for the lexeme was at issue — the shift in meaning in question was from ‘quickly’ to ‘perhaps’ — the intent seems to have been to draw attention to the fact that it had already *changed*, not necessarily that it had already become grammatical in nature.



into meaningful units we call morphemes, patterns for the combination of morphemes (word-formation rules), and so on. All of the elements, all of the abstractions that govern the patterning of these elements, all of the combinatoric principles, all of the processes of interpretation, and so on, are subject to change.

How much of all of this do grammaticalization and grammaticalization studies cover? In a narrow sense, grammaticalization deals with just those aspects that constitute change in the direction of creating “grammar”, by which is meant, to judge from what is focused on in the literature, the creation of function morphemes, though derivational elements and discourse markers are routinely treated in grammaticalization-based discussions. This is an interesting, indeed fascinating, area of investigation, but it is not all there is to language change or to the study of language in its historical dimension.

One area especially overlooked in grammaticalization studies is sound change, except via reference to phonological reduction or erosion of grammatical markers. But sound change in its classical sense is not really covered by grammaticalization. That is, within many grammaticalization studies one can see claims that particular grammatical morphemes are subject to changes in their phonological realization that are not regular sound changes in the Neogrammarian sense of being purely phonetically determined and exceptionlessly applying to all instances that meet a particular phonetic context. I single out sound change here because it is the historical foundation of the field, both the field of historical linguistics narrowly and the modern field of linguistics more broadly. But, there is even more in historical linguistics that is not covered within grammaticalization studies, as the field takes in such sub-areas as language relatedness, linguistic contributions to human prehistory (e.g., via a Wörter-und-Sachen approach), philology (text interpretation), and etymology, among other topics. Admittedly those working within the framework of grammaticalization often employ the results and occasionally the methods of these areas of investigation, but not to the particular end that these sub-areas point towards. This situation has led me to wonder if the intense interest that grammaticalization studies show in one type of historical grammatical development might perhaps be skewing the field of historical linguistics overall, leading me to ask in Joseph 2004 whether historical linguistics in general can “survive” grammaticalization. I for one feel that we cannot really afford to give up on the foundational notion of regularity (and phonetic-only conditioning) of sound change, for if we fail to adhere to Neogrammarian doctrine and adopt the grammaticalizationist view of construction- or lexeme-specific sound change, it is not clear what we would be left with. Maintaining the Neogrammarian view of the “exceptionlessness” (Ausnahmslosigkeit) of sound change provides a principled basis for making decisions about possible analyses, and that is too valuable a tool to give up.

## 5. CONCLUSION

By way of a conclusion, for all the criticism I have offered here, I readily admit that grammaticalization, when viewed properly and when suitably enhanced with notions from traditional historical linguistics, enriches our field. Nonetheless, there is an important correlate to the position taken at the outset, in §1, of grammaticalization as a result, not a process. That is, one can develop an Occam's Razor-style argument, one based on parsimony, for treating grammaticalization as the result of independently needed processes of change, rather than taking it to be a process on its own. That is, the traditional triad of regular (Neogrammarian) sound change, analogy, and borrowing, using this last simply as a cover term for a much more complex "universe" of contact-based effects<sup>22</sup> and taking semantic change to be essentially metaphor and thus essentially analogical in nature, gives us all we need in the way of mechanisms of change. Adding grammaticalization to these as a further mechanism adds something extraneous, something that duplicates the effects of these mechanisms. Thus it is not needed as a separate and distinct mechanism, or process, of change and is best taken to be a result of the workings of these independently needed processes. Moreover, this triad is satisfying since it corresponds precisely to the different dimensions of language: language is physiological in nature, realized through our speech organs, and Neogrammarian phonetically determined sound change corresponds to that dimension; language is cognitive in nature, residing in and emerging out of our brains, and analogy, as a basic cognitive tool for understanding the world, corresponds to that dimension; and language is social in nature, existing in the interactions we have with other speakers, and borrowing, representing contact effects more generally, corresponds to that dimension. Adding grammaticalization to this roster would not, it seems to me, correspond to any particular dimension of language and would duplicate what the traditional triad offers.

## REFERENCES

- Anderson, Stephen R. 1992. *A-Morphous Morphology*. Cambridge: Cambridge University Press.
- Arlotto, Anthony. 1972. *Introduction to historical linguistics*. Boston: Houghton Mifflin.
- Borer, Hagit. 1984. The projection principle and rules of morphology. *Proceedings of the North Eastern Linguistics Society* 14.16-33.

<sup>22</sup> That is, besides borrowing per se, contact effects include language shift, interference (first language onto second language, and vice versa), calquing, creolization, and no doubt more. My use of the term *borrowing* here is just an attempt at economy of expression.

Bowden, John. 1992. *Behind the Preposition: Grammaticalisation of Locatives in Oceanic Languages*. Canberra: Dept. of Linguistics, Research School of Pacific Studies, Australian National University.

Campbell, Lyle, ed. 2001. *Grammaticalization: A Critical Assessment* (special issue of *Language Sciences* 23.2-3).

Collinge, Neville E. 1985. *The laws of Indo-European*. Amsterdam: John Benjamins.

De Smet, Hendrik & Olga Fischer. 2017. The role of analogy in language change: Supporting constructions. *The Changing English Language: Psycholinguistic Perspectives*, ed. by Marianne Hundt, Sandra Mollin, & Simone E. Pfenninger, 240-268. Cambridge: Cambridge University Press.

Diewald, Gabrielle. 1997. *Grammatikalisierung: Eine Einführung in Sein und Werden grammatischer Formen*. Tübingen: Niemeyer.

Fischer, Olga. 2000. Grammaticalisation: Unidirectional, non-reversible? The case of *to* before the infinitive in English. In Fischer et al., 149-170.

Fischer, Olga. 2009. Grammaticalization as analogically driven change? *VIEW[Z]. Vienna English Working Papers* 18, 2: 3-23.

Fischer, Olga. 2011. Grammaticalization as analogically driven change? *Handbook of Grammaticalization*, ed. by Heiko Narrog & Bernd Heine, 31-42. Oxford: Oxford University Press.

Fischer, Olga & Anette Rosenbach. 2000. Introduction. In Fischer et al, 1-38.

Fischer, Olga, Anette Rosenbach, & Dieter Stein, eds. 2000. *Pathways of Change: Grammaticalization in English*. Amsterdam: John Benjamins.

Givón, Talmy. 1971. Historical syntax and synchronic morphology: An archaeologist's field trip. *Papers from the Regional Meeting of the Chicago Linguistic Society* 7.394-415.

Haspelmath, Martin. 2004. Directionality in language change, with special reference to unidirectionality in grammaticalization. *Up and down the Cline*, ed. by Olga Fischer, Muriel Norde, & Harry Perridon, 17-44. Amsterdam: Benjamins.

Heine, Bernd. 1993. *Auxiliaries: Cognitive Forces and Grammaticalization*. New York: Oxford University Press.

Heine, Bernd. 1997. *Possession: Cognitive Sources, Forces, and Grammaticalization*. Cambridge: Cambridge University Press.

Heine, Bernd, Ulrike Claudi, & Friederike Hünemeyer. 1991. *Grammaticalization: A Conceptual Framework*. Chicago: University of Chicago Press.

Heine, Bernd & Tania Kuteva. 2002. *World Lexicon of Grammaticalization*. Cambridge: Cambridge University Press [1<sup>st</sup> edition].

Hogg, Richard. 1980. Analogy as a Source of Morphological Complexity. *Folia Linguistica Historica* 1.2: 277-84.

Hopper, Paul J. 1994. Phonogenesis. In Pagliuca, pp. 29-45.

Hopper, Paul J. & Elizabeth C. Traugott. 1993. *Grammaticalization*. Cambridge: Cambridge University Press.

Hopper, Paul J. & Elizabeth C. Traugott. 2003. *Grammaticalization*. 2<sup>nd</sup> edition. Cambridge: Cambridge University Press.

Householder, Fred & Gregory Nagy. 1972. *Greek: A survey of recent work*. The Hague: Mouton.

Janda, Richard D. 2001. Beyond "pathways" and "unidirectionality": on the discontinuity of language transmission and the counterability of grammaticalization. In Campbell, pp. 265-340).

Janda, Richard D. & Brian D. Joseph. 2003. On Language, Change, and Language Change — Or, Of History, Linguistics, and Historical Linguistics. In Joseph & Janda, pp. 3-180.

- Janse, Mark. 2009. Watkins' Law and the development of agglutinative inflections in Asia Minor Greek. *Journal of Greek Linguistics* 9: 32-48.
- Jasanoff, Jay & Brian D. Joseph 2015. Calvert Ward Watkins. Obituary. *Language* 91.1: 245-252.
- Joseph, Brian D. 1980. Watkins' Law and the Modern Greek Preterite. *Die Sprache* 26: 179-184.
- Joseph, Brian D. 2001. Is There Such a Thing as 'Grammaticalization'? *Language Sciences* 23: 163-186.
- Joseph, Brian D. 2003. Morphologization from Syntax. In Joseph & Janda, pp. 472-492.
- Joseph, Brian D. 2004. Rescuing Traditional (Historical) Linguistics from Grammaticalization "Theory". *Up and Down the Cline - The Nature of Grammaticalization*, ed. by Olga Fischer, Muriel Norde, & Harry Perridon, 44-71. Amsterdam: John Benjamins.
- Joseph, Brian D. 2006. How accommodating of change is grammaticalization? The case of "lateral shifts". *Logos and Language. Journal of General Linguistics and Language Theory* 6.2: 1-7.
- Joseph, Brian D. 2010. Internal reconstruction. *The Continuum Companion to Historical Linguistics*, ed. by Silvia Luraghi & Vit Bubenik, 52-58. London: Continuum Publishers.
- Joseph, Brian D. 2011a. Grammaticalization: A General Critique. *Handbook of Grammaticalization*, ed. by Heiko Narrog & Bernd Heine, 193-205. Oxford: Oxford University Press.
- Joseph, Brian D. 2011b. Historical Linguistics and Sociolinguistics – Strange bedfellows or natural friends? *Language and History, Linguistics and Historiography*, ed. by Nils Langer, Steffan Davies, & Wim Vandenbussche, 67-88. Bern: Peter Lang.
- Joseph, Brian D. 2014. What counts as (an instance of) Grammaticalization? *Refining Grammaticalization* ed. by Ferdinand von Mengden & Horst Simon. Special issue of *Folia Linguistica* 48.2: 1-23.
- Joseph, Brian D. 2017. Morphological Change. *The Cambridge Handbook of Morphology*, ed. by Andrew Hippisley & Gregory Stump, 743-764. Cambridge: Cambridge University Press.
- Joseph, Brian D. 2021. On the Relationship between Grammaticalization and Historical Comparative Linguistics. To appear in *Grammaticalization and Studies of Grammar*, Vol. X (The Commercial Press, Yichang, China)
- Joseph, Brian D. & Richard D. Janda, eds. 2003. *Handbook of Historical Linguistics*. Oxford: Blackwell.
- Joseph, Brian D. & Angela Ralli. 2022. Something out of nothing: Degrammaticalizing grammaticalization. To appear in *Papers from the 24<sup>th</sup> International Conference on Historical Linguistics (ICHL24)*, Canberra. Amsterdam: John Benjamins.
- Karlssoon, Keith. 1981. *Syntax and Affixation: The Evolution of MENTE in Latin and Romance*. Tübingen: Niemeyer. (*Beihefte zur Zeitschrift für romanische Philologie*, 182.)
- Kurylowicz, Jerzy. 1965. The evolution of grammatical categories, *Diogenes* 51: 55-71.
- Kuteva, Tania, Bernd Heine, Bo Hong, Haiping Long, Heiko Narrog, & Seongha Rhee. 2019. *World Lexicon of Grammaticalization* 2<sup>nd</sup> edition. Cambridge: Cambridge University Press [Revision of Heine & Kuteva 2002].
- Kuteva, Tania. 2001. *Auxiliation: An Enquiry into the Nature of Grammaticalization*. Oxford: Oxford University Press.
- Labov, William. 1994. *Principles of Linguistic Change. Volume I: Internal Factors*. Oxford: Blackwell.
- Lass, Roger. 2000. Remarks on (uni)directionality. In Fischer et al., 207-228.
- Lehmann, Christian. 1982/1995. *Thoughts on Grammaticalization*. München: LINCOM Europa. [Originally published as *Thoughts on grammaticalization: a programmatic sketch*. V. 1. Köln: Institut für Sprachwissenschaft der Universität, 1982. (Arbeiten des Kölner Universalienprojekts; 48).]
- Lehmann, Christian. 2015. *Thoughts on Grammaticalization*. 3<sup>rd</sup> edition. Berlin: Language Science Press [Revision of Lehmann 1982/1995].

- 
- Lessau, Donald A. 1994. *A Dictionary of Grammaticalization* (3 volumes). Bochum: Universitätsverlag Dr. N. Brockmeyer.
- Murtoff, Jennifer. 1999. Spanish adverbs in *-mente*. Paper presented in Diachronic Morphology Workshop, The Ohio State University, 1 June 1999.
- Newmeyer, Frederick J. 2001. Deconstructing grammaticalization. In Campbell, pp. 187–229.
- Norde, Muriel. 2009. *Degrammaticalization*. Oxford: Oxford University Press.
- Pagliuca, William, ed. 1994. *Perspectives on Grammaticalization*. Amsterdam: John Benjamins.
- Ramat, Anna Giacalone & Paul J. Hopper, eds. 1998. *The Limits of Grammaticalization*. Amsterdam: John Benjamins.
- Ringe, Don. 2003. Internal reconstruction. In Joseph & Janda 2003, pp. 244-261.
- Thumb, Albert. 1912. *Handbook of the Modern Greek vernacular: Grammar, texts, glossary*. (Translated from the second improved and enlarged German edition (1910) by S. Angus.) Edinburgh: T. & T. Clark.
- Traugott, Elizabeth C. & Bernd Heine, eds. 1991. *Approaches to Grammaticalization* (2 Volumes). Amsterdam: John Benjamins.
- Watkins, Calvert W. 1962. *Indo-European origins of the Celtic verb*. vol. I. *The sigmatic aorist*. Dublin: Institute for Advanced Studies.
- Wischer, Ilse & Gabriele Diewald, eds. 2002. *New Reflections on Grammaticalization*. Amsterdam: John Benjamins.
- Ziegeler, Debra. 2000. *Hypothetical Modality: Grammaticalisation in an L2 Dialect*. Amsterdam: John Benjamins.