

The myth of phonetic erosion

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1. Introduction

What is EROSION in historical linguistics? This paper stems from a paradox: the notion is widely used in some branches of historical linguistics, often in the collocations PHONETIC EROSION and PHONOLOGICAL EROSION, and this implies that it should be something that historical (and theoretical) phonologists talk about and investigate, and yet, it is not. It is not described in handbooks or other fundamental work on historical phonology, nor it is a focus of study in the field. In this article, we consider how this contradictory state of affairs has arisen, and how we should resolve it.

Why should we care? We take the perspective of historical phonologists, and assume that one of the things that we want to know is: which things exist in historical phonology? What are the categories of changes and concepts that are meaningful? And how do they derive that meaning? What do we need to identify explanations for? The question here is: is phonetic/phonological erosion a thing? That is, is it the same kind of thing as VOWEL HARMONY or TONOGENESIS? The first of these is a coherent type of linguistic phenomenon that has been innovated into many languages, and is worth typologising (considering, for example, which kinds of phonological properties can spread, and which kinds of phonological domains they can spread in); the second involves the same kinds of things being innovated into languages (high rises, low rises, low-high-low contours *etc*) and it is worth typologising over their diachronic sources. Is phonetic/phonological erosion like them? Our title gives away our conclusion: we think that it is not. We should not waste our time trying to understand the notion – we should not try to typologise over it. We should not use it to explain which kinds of changes can occur as examples of it, nor should we use it to explain other phenomena in (historical) linguistics.

Rather than using the unwieldy label ‘phonetic/phonological erosion’, we simply use PHONETIC-EROSION, because that is more common in the literature (“phonetic erosion” had 1,370 results and “phonological erosion” had 1,250 on Google Scholar in July 2026, when we were writing the paper). We consider references to either phrase without distinction in our discussion, however, and we think this is in line with practice in the field – the two are used interchangeably (often by the same author). This is, in fact, our first reason to be cautious about the notion: if it is not clear whether it is a phonetic or phonological phenomenon, then it is not clear that the notion can be coherent.

In what follows, we will need to consider GRAMMATICALISATION, a major topic of historical linguistic discussion in both functionalist and formalist approaches. It may seem surprising that an article which declares itself to be focusing on historical phonology should engage with a concept based on semantico-syntactic notions (given that grammaticalisation involves lexical items becoming (more) functional). We think this surprising, too, and it is our second reason to be cautious about PHONETIC-EROSION: if the notion is ancillary to semantico-syntactic factors, then the question does arise as to whether it is a phonological category.

In this article, we consider two ways in which PHONETIC-EROSION could be meaningful and useful in historical linguistics (in sections 3 and 4, respectively, with section 5 bringing the discussions together). It could be meaningful if it refers to a set of phonological changes which share some property(ies) that distinguish them from other changes, and which are not already accounted for by other concept(s): it could be meaningful if it has a phonological correlate. Secondly, PHONETIC-EROSION could derive meaning from its role in grammaticalisation, if it can be shown to exist in a consistent and predictable relationship with other elements of a grammaticalisation mechanism. Before this discussion, section 2 sets out some background (and section 6 concludes).

2. PHONETIC-EROSION and grammaticalisation in historical linguistics

In the introduction, we claimed that PHONETIC-EROSION is not discussed much by historical phonologists. This is empirically demonstrable: EROSION (and its synonyms) occur only once in the 37 chapters of Honeybone & Salmons' (2015) *Handbook of Historical Phonology*, but they occur in 7 of the 31 chapters of Ledgeway & Roberts' (2017) *Handbook of Historical Syntax*, and in 27 of the 65 chapters in Heine & Narrog's (2011) *Handbook of Grammaticalization*. PHONETIC-EROSION is mainly used by those primarily interested in the diachronic development of functional morphemes, such as auxiliaries, prepositions, clitics, and affixes, or other functional structures: those who study grammaticalisation and/or aspects of historical syntax. Things are complicated by the facts that (i) EROSION has been used in different ways in historical linguistics, and (ii) authors have used other terms to refer to what we call PHONETIC-EROSION, as well. Neither point need detain us long, but they are worth acknowledging.

In terms of (i), EROSION is sometimes used as a synonym for LENITION, which is a notion that – while still not fully understood – has a firm place in historical and theoretical phonology, covering a number of types of change which are not covered under any other type (spirantisation and debuccalisation, for example – see, among much other work, Honeybone 2008, Szigetvári 2008). For example, Blust (1991) discusses “the erosion sequence **p* > [f] > [h] > zero in Austronesian languages”, referring to what is mostly elsewhere called a ‘lenition trajectory’. The notion of PHONETIC-EROSION that we focus on here is not a synonym for LENITION.

Narrog & Heine (2021, 334) give an explicit definition of the notion that we *are* focusing on in their *Glossary*: “**erosion** (or **phonetic reduction**): loss of phonetic features that a linguistic expression experiences in the course of grammaticalization.” This shows the connection to grammaticalisation and also issues relating to (ii) – these authors see PHONETIC-EROSION as synonymous with PHONETIC REDUCTION. The term REDUCTION is often used in phonological work to refer to vowel changes in unstressed positions as in Crosswhite (1999), Harris (2005), but that is not what Narrog & Heine mean. The PHONETIC-EROSION notion is much bigger than VOWEL REDUCTION. Elsewhere in the same volume, Narrog & Heine (2021, 212) describe the notion in focus here using a further term, writing that, in Mayan languages, “there is more phonological attrition, that is erosion,” than in Mixe-Zoquean languages. The term ATTRITION is often seen as a synonym for PHONETIC-EROSION, along with REDUCTION (and also WEAKENING and DECAY), with some

authors preferring one and some the other, and some using several synonymously. Rajendran (2020, 3) shows the latter: “Phonetic erosion (also called phonological attrition or phonological reduction) is another process that is often linked to grammaticalization.” In a detailed consideration of the history of grammaticalisation, Lindström (2004, 394) writes about “phonological reduction (or attrition as it is usually called in the grammaticalisation literature)”. It may be true that ATTRITION has often been used in the past, but we agree with Round (2011), one of the few previous phonologically-detailed discussions of the notion, that EROSION is the term that is currently most closely identified with it at the phonological level. We use PHONETIC-EROSION in this article, setting aside this terminological variety.

The connection to grammaticalisation will form a substantial part of our discussion. Grammaticalisation has become a major area of study in historical linguistics since the 1970s (although relevant ideas have been discussed throughout historical linguistics’ history – since the 18th century, at least – see Lindström 2004, and see Campbell & Janda 2001 for especially the late 20th-century, when some key ideas were crystalising). Arguments about the nature of grammaticalisation arise across the linguistic spectrum. We consider two major conceptions: firstly, the notion that there is a *grammaticalisation process*, a multistep process of historical change where there is a direct (possibly even causal) link between semantic change, syntactic change, and PHONETIC-EROSION. Under this conception, primarily associated with functionalist approaches, the semantico-syntactic and phonological changes are considered as aspects of one grammaticalisation-type historical phenomenon. For example, Bybee & Pagliuca (1985, 60) claim that in grammaticalisation (which they call ‘grammaticization’), “semantic change is paralleled over a long period of time by phonetic erosion”; Bybee, Perkins & Pagliuca (1994, 19) add that the “degree of semantic grammaticization should be reflected in the degree of formal reduction or shortening” (1994, 107), and Bybee (2015, 124) writes that “grammaticalization involves changes of different aspects of the affected construction: its phonetic form, its grammatical behavior, and its meaning.” Heine and colleagues also frequently discuss this link. Heine (1993, 106), for example, writes that “reduction, or erosion, as we call it ... is in fact predicted by grammaticalization theory: Once a lexeme is conventionalized as a grammatical marker, it tends to undergo erosion; that is, its phonological substance is likely to be reduced in some way”, and Heine & Narrog (2021, 78) write that “[e]rosion means that a linguistic expression undergoing grammaticalization and being used frequently loses part of its phonetic substance”. We refer to this conception as a ‘Grammaticalisation Process.’

The other conception of grammaticalisation, primarily associated with formalist approaches, refers to a fundamentally syntactic change: increasingly functionality, i.e., a lexical item becoming functional or a functional item becoming more functional. In this article we will use ‘grammaticalisation’ (by itself) to refer to this more restricted interpretation. Even when defined in this way, grammaticalisation is often linked to PHONETIC-EROSION. Roberts and colleagues’ work shows this, for example: as part of a discussion of the grammaticalisation of the English modals from lexical to auxiliary verbs, Roberts (1993, 261) writes that infinitival “-en had weakened to a purely orthographic -e”, and Roberts & Roussou (1999, 1024) add that “subjunctive inflection was gradually

eroded,” with both of these changes seen as triggering the reanalysis involved in the auxiliarisation. Two of the terms linked to the PHONETIC-EROSION concept (‘weaken’ and ‘erode’) are thus seen here as crucially involved in the grammaticalisation of auxiliaries.

Despite the difference in the scope of the term *grammaticalisation*, a link between semantico-syntactic and phonological change is presupposed by both formal and functional work. We will consider ideas from both approaches, with the key questions being the extent to which PHONETIC-EROSION is crucially connected with grammaticalisation, and the extent to which a temporal ordering is predicted between them. We explore this in section 4.

3. Is PHONETIC-EROSION a type of phonological change?

In the introduction, we argued that practice in the field (the field, that is, where PHONETIC-EROSION is considered a type of linguistic change, typically linked in some way to grammaticalisation) is not to differentiate between describing erosion as a ‘phonetic’ or ‘phonological’ phenomenon. This really is the case. While some authors tend more to talk of it as a ‘phonetic’ change and others to talk of it as a ‘phonological’ change, many use both labels interchangeably. For example, Heine (1993, 122) describes the change from /me/ to /m/ (in Ewe) as a case of “phonetic erosion”, while Heine (1997, 62) describes the change from /ɲec, wic/ to /ɲe, wi/ (in Acholi) as “examples of phonological erosion”. We cannot discern any difference in the way that the terms are used, and this strikes us as evidence of a confusion about what kind of change(s) might be meant by the notion.

Should we care about acknowledging a difference between ‘phonetic change’ and ‘phonological change’? Yes: the issue is a central one in historical phonology. The modelling of phonologisation relies, for example, on recognising a distinction between universal phonetic tendencies in speech, and stable phonological synchronic processes which can derive from them. For example, the ‘lifecycle of phonological processes’ model (see, for instance, Bermúdez-Otero 2015, Sen 2016, Iosad 2020, building on earlier ideas, including Baudouin de Courtenay 1895, Hyman 1976, Kiparsky 1995), which attempts to make sense of phonologisation (and the possible subsequent pathway to lexicalisation), distinguishes between multiple entirely different things: (i) purely physically/physiologically-motivated universal speech-based phenomena, (ii) ‘phonetic implementation rules’ which are language-specific, but gradient, highly variable regularities of speech-planning-and-production, and (iii) stabilised language-specific categorical phonological processes. (i) and (ii) are aspects of phonetics, while (iii) is the realm of phonology, and the diachronic development of (ii) is thus a ‘phonetic change’, while the reanalysis of (ii) into (iii) is a ‘phonological change’ (the latter also applies to the restructuring of underlying representations if derived (‘allophonic’) forms are reinterpreted as stored (‘underlying’)). For most phonologists, the distinction between phonetics and phonology is fundamental, with the former belonging to the realm of bodily or acoustic pressures, while the latter is a cognitive thing.

Perhaps we should not overemphasise the use of terminology – if the intended referents are clear, then terminological clarity and consistency may not be so important.

Unfortunately, we do not think that the kinds of change grouped together as PHONETIC-EROSION allow the concept to be meaningful. It is common in the field to describe the changes involved as affecting ‘substance’. Norde (2010, 133), for example, acknowledges the role of the “loss of phonological substance” in grammaticalisation. This notion of ‘loss’ links to the definition of PHONETIC-EROSION in section 2: that it involves the “loss of phonetic features” (Narrog & Heine 2021, 334). It is worth noting that Norde (2009, 66) also talks of change in the amount of “phonetic substance” – both ‘phonetic’ and ‘phonological’ are widely used to describe the ‘substance’ involved, without discrimination. The idea of ‘substance’ thus occurs often in discussions of PHONETIC-EROSION. Lehmann (1995, 126), for example, writes that “[p]honological attrition (called erosion in Heine & Reh 1984:21ff and decay elsewhere) is the gradual loss of phonological substance.” However, it is not clear to us what the ‘loss of substance’ means exactly, or that it could reasonably cover the kind of things that are included as cases of PHONETIC-EROSION. It is also not clear to us what kinds of things count as ‘phonetic features’ in such discussion – it cannot be what phonologists mean by phonological (distinctive) features, such as [voice] or [continuant], because that does not fit with the types of change that are discussed.

Which changes count as cases of PHONETIC-EROSION? Thus far, we have seen cases of segmental loss count: Heine (1993, 1997) described the loss of a vowel (/me/ > /m/) and a consonant (/ɲec, wic/ > /ɲe, wi/) as cases, and Roberts (1993) described the loss of *-en* (/en/ > Ø) as a case, involving the loss of both a consonant and vowel (perhaps: the loss of a syllable?). However, phonological change does not typically involve the direct loss of full segments. The phonological history of cases of (endogenous) loss that involve diachronic correspondences like *e* > Ø or *tʃ* > Ø (<*ce* > ə > Ø and *tʃ* > ʃ > h > Ø – the former involving vowel reduction and the latter consonantal lenition. ‘Reduction’ and ‘lenition’ cropped up in section 2 as terms sometimes mixed in with the notion of PHONETIC-EROSION, but this is not a vindication of that usage: vowel reduction and consonantal lenition are concepts that we already have – it is not clear that it helps to call them ‘erosion’, too. The other case of loss just mentioned, that of *-en*, also surely did not occur in one change – final-nasal-loss often involves the transphonologisation of nasality onto a preceding vowel, after a stage of predictable nasalisation, after which the nasal consonant is lost (along these lines, perhaps: *en* > *ẽn* > *ẽn* > *ẽ* > Ø).

It is not obvious that all changes involved here could involve the ‘loss of substance’. Does *e* > ə or *ʃ* > h reduce substance? In mainstream phonological theories, /e/ is as complex as /ə/, and /ʃ/ as complex as /h/, each with as many feature specifications as the other. There *are* frameworks in which these changes involve the loss of featural specifications (as in Element Theory, following Harris 1990, Backley 2011), but these are abstract and closely theoretically-defined models which we have not seen adopted in any grammaticalisation literature. Unless this kind of model is explicitly adopted, most of the changes involved in this kind of segmental loss cannot be seen as the ‘loss of substance’.

Heine & Reh (1984, 23) admit as much: “Erosion does not necessarily lead to a loss in phonetic substance; it may also involve a change in marking whereby a highly marked segment is replaced by a less marked one.” The examples they give include a nasal vowel becoming oral and a non-default tone becoming a default tone. These involve phonological merger through neutralisation, and – again – we have not seen any attempt in related literature to link these changes to ‘loss’.¹ If *not all* examples of PHONETIC-EROSION involve any kind of loss then, by definition, PHONETIC-EROSION cannot be understood (i.e., be unified as a category of phonological change) as ‘the loss of phonetic/phonological substance’.

The conclusion of this section will be that there is no property that all changes have in common that are included as cases of PHONETIC-EROSION by those who use the notion in the way in focus in this article. That applies to those just considered, and also to other types of change counted as PHONETIC-EROSION in the literature. There is no ‘agreed’ list of types of change that count as PHONETIC-EROSION, in part perhaps because there is considerable disagreement about what grammaticalisation is and how it proceeds (as discussed in sections 2 and 4). One list is given in Narrog & Heine (2011, 80):

Kinds of phonological erosion

- a. Loss of phonetic segments, including full syllables.
- b. Loss of suprasegmental features, such as stress, tonal distinctions, or intonation.
- c. Loss of phonological autonomy and adaptation to adjacent phonological units.
- d. Phonological simplification.
- e. Boundary loss

We have considered examples of (a), observing that the changes involved in this are not all easy to fit in with a notion of PHONETIC-EROSION. It is not completely clear to us what would count as cases of (d). The one example that Narrog & Heine give is *gb* > *g* in Ewe, which seems fair to see as simplification (from a labial-velar stop, with two places of articulation, to a velar stop, with one). But for the notion to extend beyond this, we need a theory of phonological complexity, which we have not found in the grammaticalisation literature. We also note that the Ewe case is more complex than Narrog & Heine describe. They say that “the noun *gbé* ‘location, direction’ gave rise to the ingressive aspect marker *-gé*, and the verb *gbɔ* ‘to return’ to the repetitive aspect prefix *-ga*”, showing the *gb* > *g* change in grammaticalisation contexts, but Capo (1991, 53 – Capo calls the language Gbe, rather than Ewe) shows that this change has happened in some dialects of Ewe/Gbe (e.g., Awlan), but not others (e.g., Wací), and that the same change has happened in Awlan in non-grammaticalisation contexts, too, for example in the noun ‘jaw’ *əglã* (where /*gb*/ is retained in other dialects, such as Kpase *gbla*), so it is not clear that the change has anything to do with grammaticalisation. As Newmeyer (2001, 200) points out (also citing Joseph 1996), we need to be careful to be sure that any phonological changes claimed as

¹ The appeal to ‘markedness’ here is not meaningful, as Heine & Reh do not describe or appeal to a theory of markedness. Their words show that they do not see ‘marked’ entities as having more structure than ‘unmarked’ entities, so the term may simply mean that ‘marked’ entities are less common than ‘unmarked’ one.

cases of grammaticalisation-related PHONETIC-EROSION are not simply changes that are affecting all lexical items: “many phonetic reductions observed in grammaticalization are simply the effects of regular *phonological* change occurring elsewhere in the language and have no bearing on *grammaticalization* per se”. Hopper & Traugott (1993), high-profile work which embraces grammaticalisation in largely the same way as Heine, make a similar point, recognising that changes of the type that get called PHONETIC-EROSION are often not peculiar to grammaticalisation contexts “but are simply part of the same processes of assimilation, attrition, and other kinds of reduction that are found more generally in non-prominent syllables and across junctures” (1993, 147).

Others see phonological change that is related to grammaticalisation applying to the loss of whole words. Robert & Roussou (2003, 160), when discussing ‘Jespersen’s Cycle’ of the emergence of forms of negation, write that in the transition from negation using *ne...not* (in English) and *ne...pas* (in French) to simply using *not* and *pas*, that “the higher negation was unstressed and consequently dropped. This is then a purely phonologically driven change.” We discuss the relationship of this kind of putative PHONETIC-EROSION to grammaticalisation in the following section, and note here simply two things. One is that this views PHONETIC-EROSION as able to remove whole lexical items (is this, again, through a gradual pathway of multiple changes?), shown again in Robert & Roussou’s (2003, 119) claim that “the development of *that*-complementizers from demonstrative pronouns illustrates several features that are typical of grammaticalization as we see this process. First, there is phonological reduction (loss of older particles *ei*, *þe*; reduction of *that* to [ðæt]) ...”. Both the loss of whole words, and vowel reduction (originally, *that* had /æ/) are seen here as part of the PHONETIC-EROSION notion. The other thing that we note here is that Robert & Roussou link the loss of *ne* to stress.

The role of prosodic change is central to much discussion of PHONETIC-EROSION. It is referred to in (b), and is relevant to (c) and (e), too. The main example for both (c) and (e) that Narrog & Heine give is the development of (*be*) *gonna* from *be going to* in English (a classic example for grammaticalisation). Considerable phonological change has occurred here, including the reduction of the vowel in *go*, the loss of /ɪ/, the coronalisation of /ŋ/, the loss of /t/ (through stages of lenition?), and the reduction of the vowel in *to*, but key among the changes is the cliticisation of *to* to the verb, entailing it losing its prosodic autonomy, which Narrog & Heine (2011, 81) describe as the loss of a “phonetic boundary”.

Cliticisation and the loss of stress are often seen as aspects of PHONETIC-EROSION. Givón (2000, 120-121), for example, while engaging with a “number of general principles of grammaticalization” writes that “[m]orphemes cliticize to large lexical stems because they are de-stressed and thus cannot stand alone as phonological words”, describing the development of ‘less lexical’ morphemes. Narrog & Heine (2021, 80) illustrate this, too: “[t]he grammaticalization of the English adjective *full* to the derivational suffix *-ful* ... as it entails a loss of the ability to be stressed”, which can be seen as a kind of cliticisation, involving the inability of *ful(l)*, as a derivational morpheme, to project a prosodic word, hence slipping on the prosodic hierarchy, and requiring a prosodic-word-projecting item to host it (such as the noun *sin* in the form *sinful*). The “reduction of *that* to [ðæt]” that we

saw Robert & Roussou discuss above occurs because the word, as a function word, has no stress. We know that “vowel reduction ... targets positions that are prosodically or morphologically weak, most especially unstressed syllables” (Harris 2005, 119) – once again, we already have these concepts in (historical) phonology: we do not need another concept to explain them.

We wrote above that it is not clear what kinds of things count as ‘phonetic features’, such that the loss of them might involve the ‘loss of substance’, giving a coherent definition to the notion of PHONETIC-EROSION. We think this should be even more apparent now: the kinds of change discussed as PHONETIC-EROSION include stages on vowel reduction and consonantal lenition trajectories and segmental merger/neutralisation (changes in feature and tonal specifications), the loss of segmenthood, the loss of the ability to host a stress and the development of cliticisation. Lehmann (1995, 126) makes an effort to unify these changes with some engagement with phonological concepts, writing that “the significans of a sign is represented as a two-dimensional matrix of marked phonological features” and that “attrition may be described as the successive subtraction of phonological features”, but this does not work as an attempt to characterise the notion systematically. The types of changes just considered (and others that have been asserted as cases of PHONETIC-EROSION) do not all involve the loss of what phonologists see as ‘phonological features’ (as above, this involves subsegmental units like [voice] or [continuant]). If the idea is that phonologists are wrong about what counts as ‘phonological features’, this requires the proposal of a better coherent set of ‘phonological features’ based on independently-justified systematic reasoning. We have not found anything like this in the literature that discusses PHONETIC-EROSION.

The stress-related focus forces us to recognise another issue: not all languages have stress (this is a controversial issue – see, for example, Hyman 2006, 2014 – but there is no doubt that word-prosodic systems vary massively). This being the case, we might wonder if all languages undergo the kinds of changes that have been discussed here as PHONETIC-EROSION. We need not wonder: it is acknowledged that they do not. It has been known for a while in grammaticalisation-related literature that, for example, “East Asian and mainland Southeast Asian languages represent a type of grammaticalization that is characterized by its limited coevolution of meaning and form” (Heine 2018, 18, citing work like Bisang 2011) – that is, changes that affect the *form* of lexical items (those described as PHONETIC-EROSION) are very limited in (South)East Asian languages, while semantico-syntactic changes of the grammaticalisation-type are not limited. This is commonly linked to the observation that such languages typically have very different prosodic systems to canonical stress-languages, often with lexical tone and few syllables per morpheme.

Schiering (2010) makes a related point, focusing on cliticisation, with a typologically-orientated study of the phenomenon. As we have seen, the development of a free lexical item into a clitic is widely seen as a facet of grammaticalisation (with clitics commonly being functional items). Schiering is sceptical of the idea that PHONETIC-EROSION is tightly connected to grammaticalisation, writing that “reduction and loss of phonological substance is by no means a universal concomitant of grammaticalization” (2010, 84) in part because changes which seem to involve the *opposite* of this also occur in the vicinity

of cliticisation-related grammaticalisation-type events, and also because “‘erosion’ is only applicable in languages which make use of stress” (2010, 76). Schiering does not fully reject the notion of PHONETIC-EROSION as meaningless (because he does not engage with all the arguments that we set out in this article), but he is clear that the kinds of changes that we have seen discussed as cases of PHONETIC-EROSION only occur sometimes in the diachronic vicinity of a grammaticalisation event, and, crucially, only in certain languages.

From this section’s discussion, we conclude that PHONETIC-EROSION cannot be seen as meaningful on the argument that it refers to a coherent category of phonological changes which share some property that distinguish them from other changes. The kinds of changes that are included as putative cases of PHONETIC-EROSION are phonologically diverse, and cannot be connected as phenomena that involve the ‘loss of phonetic/phonological substance’, in part because they are diverse and in part because there is no coherent definition of ‘phonetic’ or ‘phonological substance’. The categories of phonological change that we have considered in this section are all accounted for using already existing (and generally necessary) concepts, some of which are related to change in the stress of syllables (in languages which have stress). There is no phonological correlate of EROSION. It is not a phonological concept.

4. Can PHONETIC-EROSION be defined by its relationship to grammaticalisation?

If PHONETIC-EROSION does not refer to any (category of) phonological process or change (as shown in the previous section), there is only one option for the term to be meaningful: that meaning must be defined by the relationship of the notion to grammaticalisation. As discussed in section 2, the argument for a link between grammaticalisation and PHONETIC-EROSION has been made in both formalist and functionalist approaches, very explicitly in the latter. This section attempts to make sense of the proposed relationship between grammaticalisation and PHONETIC-EROSION. We consider how a notion of relational definition can work in principle in the following section 5. Here we focus on what has been said about relational links in work on grammaticalisation.

In section 4.1, we evaluate the hypothesis that grammaticalisation and PHONETIC-EROSION exist in a mechanistic relationship whereby one necessarily precedes the other. We determine that if this causal ordering holds, it would be possible to define PHONETIC-EROSION as any type of phonological change that affects a having-been-grammaticalised or about-to-be-grammaticalised structure.² In section 4.2 we evaluate the hypothesis that PHONETIC-EROSION and grammaticalisation are necessarily connected, but their relative ordering does not matter. Again, we suppose that demonstrating necessary co-occurrence with grammaticalisation would be sufficient to define PHONETIC-EROSION as a meaningful term in historical linguistics. Ultimately, however, we find support for neither hypothesis, concluding that there is no necessary or systematic relationship between grammaticalisation and PHONETIC-EROSION.

² Of course, all the standard caveats about the temporal relation of two historical events apply here.

4.1. Is there a directional causal relationship between grammaticalisation and PHONETIC-EROSION?

In the functionalist literature, grammaticalisation is often characterised as a process of linguistic change whereby multiple stages follow from each other, as below (from Heine 2003, 578-9).

Technically, the grammaticalization of linguistic expressions involves four interrelated mechanisms.

- i. desemanticization (or ‘bleaching,’ semantic reduction): loss in meaning content;
- ii. extension (or context generalization): use in new contexts;
- iii. decategorialization: loss in morphosyntactic properties characteristic of source forms, including the loss of independent word status (cliticization, affixation);
- iv. erosion (or ‘phonetic reduction’), that is, loss in phonetic substance.

[...] but to the extent that jointly they are responsible for grammaticalization taking place, they can be said to constitute different components of one and the same general process.

[...] The result of this process is that grammaticalization exhibits a chain-like structure.

We set aside the “loss in phonetic substance” claim here, as we showed it to be unsuitable as a definition for PHONETIC-EROSION above. We assume, for the sake of argument, that some other definition for PHONETIC-EROSION may be found that can allow us to consider its potential to be meaningful. Heine’s characterisation of grammaticalisation as “chain-like” process and the explicit ordering of his model implies a causal relationship between the stages, whereby the completion of one stage entails the commencement of the next (or the curtailment of the process). The ordering predicts that stage (iv), erosion, should not precede stage (ii), extension (this is made explicit in Heine 2018, where Heine argues for a “meaning-first” approach in his model of grammaticalisation: that change in meaning precedes change in form). We take Heine’s model as a prediction that grammaticalisation causes PHONETIC-EROSION in the Gramaticalisation Process. We refer to this as the *resultative erosion hypothesis*.

Evidence can be found to support the resultative hypothesis as there are many instances in the literature where PHONETIC-EROSION can be seen to follow grammaticalisation. For example, in Suriname (an English based creole) the demonstrative *disi* is reanalysed to a higher functional position, as a relative clause marker a full two centuries before the sound change affecting (or so-called PHONETIC-EROSION of) the form to *di* is observed (Narrog & Heine 2021).

The case of *going to*, mentioned above and discussed extensively in the grammaticalisation literature (Hopper & Traugott 1993, Haspelmath 1999, Dietrich 2024, inter alia), is a classic example of resultative PHONETIC-EROSION. The phrase began as a form of the lexical verb *go*, meaning ‘to move through space’. The claim is that, in the Grammaticalisation Process, the construction was first bleached of its spatial meaning, with the scope of application then broadening to refer to movement through time, and then *going to* became conventionalised as a future marker. In this new functional role,

going to is argued to be subject to optional PHONETIC-EROSION such that it can be realised as *going to* and *gonna*. This is only possible following grammaticalisation as the lexical word *going* cannot be realised as *gonna*.

Jespersen's Cycle (also introduced above) provides further cases where those working on grammaticalisation have argued that semantico-syntactic changes have led to PHONETIC-EROSION. The Middle English *ne...not* negation was a result of *not* being grammaticalised, being added to the form *ne*, which was the typical Old English form of negation. Following this, in Early Modern English, the preverbal *ne* was dropped (total PHONETIC-EROSION), with the same kind of thing observed in Modern French *ne...pas*, where the optional omission of *ne* is attributed to the earlier grammaticalisation of the postverbal negator *pas* (Roberts 1993). In these cases, grammaticalisation is argued to cause PHONETIC-EROSION (Roberts & Roussou 2003).

However, there is significant evidence to refute the resultative erosion hypothesis, i.e., cases of PHONETIC-EROSION preceding grammaticalisation without seeming to have been itself caused by grammaticalisation. Roberts & Roussou determine PHONETIC-EROSION to be causal in the development of the Modern Greek negator *dhen* from the earlier Greek pronoun *oudeís* ('no one, nothing'), writing "[c]ause: loss of *ou* due to phonological change" (2003, 197). Additionally, Trudgill (2018) argues for a set of cases from East Anglian English where "the evidence is in favour of the impetus for grammaticalisation beginning with the phonetics and only subsequently spreading to semantics" (2018, 146), including the development of the conjunction *yet* ('and also not'), due to the PHONETIC-EROSION and subsequent grammaticalisation of the lexical item *nor yet*, explicitly arguing that "reduction and elision processes" along the lines of "[nɔ: jɪ? > nə jɪ? > nɪɪ? > njɪ? > jɪ?]" must have occurred first (2018, 138).

On this basis, although there is substantial evidence in favour of Heine's claim that PHONETIC-EROSION can be the final stage of a Grammaticalisation Process, there is also substantial evidence of PHONETIC-EROSION causing syntactic grammaticalisation. The conclusion seems to be that grammaticalisation can cause PHONETIC-EROSION *and* PHONETIC-EROSION can cause grammaticalisation. Although there is evidence for causal relationships between instances of PHONETIC-EROSION and grammaticalisation, this relationship cannot be claimed to be firmly directional (i.e., grammaticalisation does not necessarily cause PHONETIC-EROSION), so there is not clear evidence for a wider single mechanism of change.

4.2. Is there a necessary but non-directional relationship between PHONETIC-EROSION and grammaticalisation?

Although section 4.1 showed that there is no evidence for a strict direction of causality between grammaticalisation and the kinds of changes that are often called PHONETIC-EROSION, PHONETIC-EROSION may still be definable in relation to grammaticalisation. In their Minimalist account of grammaticalisation, Roberts & Roussou (2003) see PHONETIC-EROSION as a special type of phonological change that affects only grammaticalisation-relevant elements, but they do not make strong claims about the directionality of this relationship:

Of course, phonological change goes on all the time, and is in principle quite independent of syntactic change. But the kind of phonological reduction which is associated with grammaticalization appears to be more radical than standard phonological change, and of course only affects grammaticalized elements; it is not exceptionless in the traditional neogrammarian sense (cf. the different possibilities of reducing the vowel of the noun *can* and that of the modal *can* to schwa). (Roberts & Roussou 2003, 224-225)

According to them, grammaticalisation is the creation of functional material (which fits in higher syntactic heads) and since functional material is “prosodically subminimal” (2003, 228), the process of raising to a higher head is necessarily concomitant with PHONETIC-EROSION. Unlike Heine (2003), they do not posit an explicitly multi-step grammaticalisation mechanism where each step causes the next, rather they imply that grammaticalisation and PHONETIC-EROSION are two sides of the same phenomenon. In this way, PHONETIC-EROSION could be taken to be meaningful if the phonological changes involved really are particularly “radical”.

Roberts & Roussou take the development of Romance determiners from Latin *ille* (a functional item with both demonstrative and pronominal roles) as evidence for their position, comparing the stress-bearing bisyllabic [ˈil.lɛ] to the radically reduced, stressless French definite article, which can be [lə] (in the masculine singular). However, the phonological changes that occurred here are not unique to the grammaticalised element. Romance third person subject pronouns (3SP) also developed from *ille*, compared to which they are also radically phonologically reduced, but they were not grammaticalised. Like, the definite article, French 3SP masculine singular [il], for example, has also lost an entire syllable and the ability to bear stress, but no functional raising occurred (despite also deriving from *ille*, from the pronominal form). Here, PHONETIC-EROSION took place without any concomitant grammaticalisation.

This observation (that the kinds of changes grouped together as PHONETIC-EROSION also take place without any connection to grammaticalisation) has been made many times, including by grammaticalisation-theorists (but no conclusion seems to have been drawn from it). Schiering (2010) and Elerick (2023), for example, make the point explicitly that grammaticalisation and PHONETIC-EROSION occur independently of each other. Heine (1994) cites a classic example of this from German: *haben* (‘have’) and *sein* (‘be’) were grammaticalised, developing to auxiliaries during the Old High German period, yet they remain phonologically identical to their lexical (non-grammaticalised) counterparts. Heine (1993) notes the opposite kind of situation in English, where the verb *be* may be realised as [z], [s] or [ɪz] (substantially ‘reduced’ forms) even when functioning as a lexical verb e.g., *he’s sick* [hiːz sɪk], reinforcing that grammaticalisation and PHONETIC-EROSION do not necessarily co-occur. Grammaticalisation can thus clearly occur without PHONETIC-EROSION and PHONETIC-EROSION can occur without grammaticalisation. All this refutes the hypothesis that PHONETIC-EROSION is a special type of phonological change entailed by grammaticalisation.

In sum, not only is there no evidence for a directional causal relationship between grammaticalisation and PHONETIC-EROSION, there is also no evidence for any inherent or obligatory relationship between them. Consequently, we can conclude that PHONETIC-EROSION cannot be defined by its relationship to grammaticalisation, as no such relationship exists. We expand on why this is important in the next section.

5. PHONETIC-EROSION is not meaningful under either possible definition

This paper has attempted to make sense of the term PHONETIC-EROSION which, although common in historical linguistic literature, does not really appear in phonological work. In section 1, we laid out two ways in which PHONETIC-EROSION could be meaningful, and in sections 3 and 4 we attempted (and failed) to define PHONETIC-EROSION in these terms. In this section we will expand on these two definitions, showing that, by virtue of satisfying neither of them the term, PHONETIC-EROSION is vacuous. As a consequence of this we conclude that while causal relationships can be identified between specific examples of phonological change and specific examples of grammaticalisation, no general causal relationship between grammaticalisation and PHONETIC-EROSION can be posited, on account of the fact that PHONETIC-EROSION does not exist.

Objects or events can derive meaning, or be defined, in one of two ways: objectively or relationally. Some objects/events can be intensionally defined with reference to a set of shared properties ('objectively'). For example, the event *astronomical night* can be defined as the period when the sun is at least 18 degrees below the horizon. The definition of *astronomical night* corresponds to observable properties of the physical world, and its meaning is not dependent on relational ordering. Although astronomical night typically follows *astronomical twilight*, where the sun is between 12 and 18 degrees below the horizon, if some freak astronomical event occurred causing the sun to skip straight from 5 degrees below the horizon (*nautical twilight*) to 19 degrees below, this event could still be identified as astronomical night.

Although astronomical night exists on a scale of darkness, it is not defined by its position on that scale, so changing the order of the scale does not affect the meaning of astronomical night. For relationally-defined events, this is not the case – as these events are defined explicitly by their position in a wider system, their meaning can be extricated from that system. For example, the event *Thursday* can be defined as 'the day between Wednesday and Friday and the fourth day in the Monday-start week.' Thursday has no natural properties – you cannot look at the natural world and identify "thursdayness" in the air. The meaning of 'Thursday' is dependent on its relation to the wider system. If we decided to reorder the week – Monday, Wednesday, Tuesday, Friday, Thursday, Saturday, Sunday – *Thursday* loses all former meaning. The original definition now refers to two distinct events, neither of which is Thursday. 'The day between Wednesday and Friday' now refers to *Tuesday* and 'the fourth day of the Monday-start week' now corresponds to *Friday*. Thus, although it is not necessary for an event to have natural properties to be meaningful, if an event has no properties of its own it is reliant on its role, position, or order in a system for meaning.

In order to derive meaning from a system ('relationally'), an event must have a consistent part to play in that system. The above example highlights how the days of the week are only meaningful in relation to each other. This same reasoning applies in causal mechanisms. If we define components of a causal mechanism on the basis of their position in that mechanism, we cannot expect that definition to hold if the order of the mechanism turns out not to be as expected. There is no expectation that any two independently definable objects/events in the world exist in a uniform causal relationship. For example, it is both true that 'smoking causes cancer' and in the case, of John, who starts smoking only after being diagnosed with cancer (because his life expectancy is short and it won't make any difference if he smokes now or not), that 'cancer causes smoking'; the fact that cancer can also cause smoking does not negate the fact that smoking causes cancer. However, if cancer was defined only as 'a disease caused by smoking' the fact that John only started smoking after veridically being diagnosed with cancer would undermine the definition of 'cancer', rendering it essentially meaningless. Therefore, in this example, 'smoking' and 'cancer' exist in a causal relationship but not a definitional one. We cannot define either 'smoking' or 'cancer' by its relation to the other because that relationship is not constant. If $A > B > C > D$ (where '>' means 'causes') then B can be defined as 'an event that is caused by A and directly causes C'. Here B is in both a causal and a definitional relationship with A and C. However, if $A > B > D > C$ is also a possible order of the mechanism, the nature of the relationship changes. B is still in a causal relationship with A and C – it is still caused by A and still causes C, albeit via D – but the original definition of B no longer holds. Since the position of B in the mechanism is not consistent, B cannot be defined by its position. In this way, defining an event by reference to its role in a causal mechanism introduces a stringent ordering requirement not present in simple causal relations.

If there can be shown to be a necessary relationship between grammaticalisation and PHONETIC-EROSION, i.e., if PHONETIC-EROSION can be shown to be a step in a Grammaticalisation Process, there is motivation for a relational definition of PHONETIC-EROSION. Adopting a relational definition of this sort would allow predictions to be made about the type of linguistic situations in which grammaticalisation is likely to occur without getting caught up in the particulars of which phonological change does what, exactly. However, for such a definition to hold it must be shown that PHONETIC-EROSION relates to grammaticalisation in a predictable manner. One of the following must be true:

- a. PHONETIC-EROSION always causes grammaticalisation
- b. Grammaticalisation always causes PHONETIC-EROSION
- c. In some explicitly definable condition PHONETIC-EROSION causes grammaticalisation whereas in some complementary condition grammaticalisation causes PHONETIC-EROSION

However, as shown in section 4, none of these things are true. There is no robust identifiable pattern in the causal relationship between grammaticalisation and PHONETIC-EROSION. We have shown that grammaticalisation may cause PHONETIC-EROSION, that PHONETIC-EROSION may cause grammaticalisation, and that grammaticalisation may occur without PHONETIC-EROSION. In section 3, we have shown that the processes that are called PHONETIC-EROSION when close to grammaticalisation are common phonological changes in

their own right, which fit into otherwise definable categories, and frequently occur with no relation to grammaticalisation.

If PHONETIC-EROSION were a phonological process or a category of phonological change, it would be perfectly fine to propose that it causes grammaticalisation in some cases and results from grammaticalisation in others. However, since it does not refer to any coherent concept in phonology (as seen in section 3), the meaning of the term PHONETIC-EROSION is reliant on its position within a broader causal mechanism, i.e., the Grammaticalisation Process. Given that it cannot get meaning from this position (as seen in section 4), we conclude that there can be no such thing as PHONETIC-EROSION.

6. Conclusions

To an extent, our criticism of PHONETIC-EROSION echoes arguments that have come before. Campbell (2001), for example, argues that grammaticalisation is a useful idea to describe certain diachronic events, but that it has nothing to do with phonological change. We go further than this, however, arguing that the very aspect of phonological change that is typically evoked in connection with grammaticalisation – what we have called PHONETIC-EROSION, although it has several synonyms in the literature (‘attrition’, ‘reduction’, ‘weakening’, ‘decay’...) – is meaningless, and is not something that historical linguists should waste their time investigating. We have shown (in ways not considered before), how a potential relational definition between PHONETIC-EROSION and the semantico-syntactic aspects of grammaticalisation fails in every respect, but we have also argued that the notion is not coherent phonologically (or phonetically), anyway. The kinds of change discussed under this heading are both phonologically diverse and all understood using categories that we otherwise need.

If there is any correlation at all between the kinds of changes that have been grouped under the notion PHONETIC-EROSION and grammaticalisation-type changes (and we are not sure that there is: this is often claimed, but to our knowledge has never been *shown* to be the case), we largely agree with Joseph (2004, 53), who writes that such “phonetic ‘erosion’ or ‘reduction’ would not directly be a result of grammatical status; rather it could reflect the effects of low prosodic prominence that function words often show”. Functional items often do not have stress (in languages which have stress), and at least some of the changes that get grouped under the notion PHONETIC-EROSION are stress-related changes. They are not unifiable in this respect, however: they may involve the loss of stress, or involve changes that can sometimes happen or that typically happen in unstressed phonological environments (such as lenition and vowel reduction).

We believe that consequences should follow from these conclusions (consequences that ask for consistency). Writers such as Heine and Lehmann know that the kinds of changes that they group together as PHONETIC-EROSION do not always or only occur in connection with grammaticalisation, but they still define grammaticalisation as including/entailing PHONETIC-EROSION. For example, Heine & Narrog (2021), consider the “four mechanisms” that Heine postulates as (what we call) the ‘Grammaticalisation Process’ (listed at the start of section 4.1), and reflect on issues of the type discussed towards the end of section

4.2 (that changes of the type they group as PHONETIC-EROSION also take place without any connection to grammaticalisation, and that semantico-syntactic grammaticalisation-type changes can occur without changes of the type grouped as PHONETIC-EROSION), but yet they still conclude that “the four mechanisms are needed to account for processes of grammaticalization” (2021, 322). Lehmann (1995) talks of “parameters”, rather than “mechanisms”, with a similar set of notions to those on Heine’s list, including “phonological attrition”, “desemanticisation”, “obligatorification”, “coalescence” (an “increase in bondedness”), and – while acknowledging that changes of the type grouped together as PHONETIC-EROSION (‘attrition’) do not always connect to grammaticalisation – still says “it is only by the interplay of all of them that grammaticalization comes about” (1995, 127). This strikes us as contradictory: the claim seems to be that PHONETIC-EROSION is *not* essential for grammaticalisation to occur, and yet it *is* essential for grammaticalisation to occur. We think that this contradiction in reasoning shows again that it is wrong to try to work with the notion of PHONETIC-EROSION.

As it can neither be defined objectively nor relationally, we conclude that PHONETIC EROSION is a myth which should play no role in historical or theoretical linguistics.

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