

# The Cambridge Handbook of Morphology

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## Morphological Change

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### 1 Introduction: What is Morphology?

The various chapters in this work make it clear what morphology is and what is encompassed by the notion of “morphology”; nonetheless, it is probably good to start this chapter with a sense of what morphology is from my point of view, in order to be clear about what change in the morphology means. After that, various dimensions relevant to the matter of morphological change are explored, and during the course of the discussion of these dimensions, rich exemplification of morphological change of various types is offered.

I start with a general statement about the goal of a grammar — a grammatical account — as conceived of by linguists: the grammar that is licensed by, i.e. developed within the framework of, a linguistic theory should be a reflection of a speaker’s knowledge of and competence in his or her language. “Knowledge” and “competence” here do not mean a practical command of the language, but rather the set of combinatorics and related adjustments that are necessary for speakers to produce meaningful utterances. Moreover, I make the assumption that there are different components of a grammar, each with its own aspects but with principles of interaction between them as well.

Within such a conceptualization of the purpose and general architecture of a grammar, we can start with the obvious as to what morphology is and where it fits in: it is about the forms (cf. Greek *μορφή* ([*morphós*]) ‘form, shape’) of a language. The most obvious manifestation of form is the word, so clearly, morphology is (somehow) related to words. Speakers for the most part know what the words of their language are, and we can call a speaker’s catalogue of words his/her lexicon. It is safe to say that any given speaker’s lexicon overlaps considerably with the lexicon of any other given speaker in the relevant speech community without any two speakers’ lexicons necessarily being identical.

If words are involved in morphology, then so also are the elements that make up words, not so much the sounds, though those are not irrelevant (Inkelas, Chapter 19), but rather the «chunks» — the distinct and recognizable pieces — that make up the word and give it some internal structure. Traditionally, such word-formative pieces have been called morphemes (Bauer, Chapter 13). Speakers seem to be aware of such pieces, though perhaps not always in as clear a manner as linguists might think (Clahsen, Chapter 28), so that the existence in the grammar of a catalogue of morphemes, including all such word-formational elements, can be justified (but see Blevins, Chapter 3). Moreover, principles by which words are formed and regularities of word-formation fall within the domain of morphology.

Words have meaning, and as a result, it is reasonable to recognize a distinct component of grammar that deals with at least certain aspects of combinatorial meaning, that is, a

semantic component. However, it is difficult at some level of analysis at least,<sup>1</sup> to separate meaning from the pieces to which meanings ultimately are attached. This means that at least lexical meaning and, further, under certain assumptions (see below), morphemic meaning, must be registered somewhere in the grammar. The lexicon is the obvious such place.

It is fair to ask then what information is to be included in the entries in the lexicon. The traditional (American Structuralist) view of lexicon was that it is a repository of all of the idiosyncratic information about words, such as the nonpredictable aspects of their pronunciation and alternations in their form (morphophonemics), their meaning, their combinatorics, and the like. Such information, however, proves not to be all that cataloguing idiosyncrasies entails. Once one realizes that idiosyncrasies involving lexical items can include the obligatory occurrence in certain syntactic structures (e.g. the English idiom *What gives?* occurs only in direct and indirect questions, and the verb *rumor* occurs only in the passive, as in *John is rumored to be a member of the Vegetarian Party*) as well as highly restricted phonological information (e.g. the English indefinite article has a largely phonologically determined allomorphy, *a ~ an*, that shows a unique alternation in form that is unparalleled elsewhere in the language), it becomes clear that aspects of syntax (e.g. question formation) and phonology (*n ~ Ø* roughly prevocalic ~ preconsonantal<sup>2</sup>) must be built into the lexicon. In this way, the lexicon becomes a much more vital part of the overall grammar than American Structuralists envisioned.

Thus, we have not so much a lexicon and a morphology as a morpho-lexicon, enriched with syntax and phonology, and necessarily touching base with semantics. With regard to change, this means that changes in all aspects that go into a lexical entry in principle are a type of morphological change, i.e. a change in the form of words and word-pieces, in morphemes that is, and all that is associated with them. This view is elaborated on below in §§2 and 3.

Further, there are several issues in the analysis of morphemes need to be mentioned here. First, in order to talk coherently about change in morphemes and change in morphology, one has to be able to identify the pieces that figure in morphological change. For the sake of having some point of reference for being able to talk coherently about change, I adopt the American Structuralist discovery procedure by which one matches recurrent forms with recurrent meanings in order to segment words into morphemic pieces and gives each word an exhaustive analysis, so that no piece is left unidentified. While this procedure most evidently is based on a notion that morphemes are «things», concrete pieces such as roots and affixes, that is, that are generally concatenated together,<sup>3</sup> it does not rule out the identification of processes such as ablaut or consonant gradations — as well as affixation, of course — that become evident as finer and finer comparisons are made between and among related forms and related meanings. The distinction between morphemes as things and morphemes as

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<sup>1</sup> By stating things this way, I am leaving open the possibility that one could describe and analyze form in itself, without reference to meaning, as in the “Separation Hypothesis” (Beard 1995); for the purposes of describing morphological change, it seems not to matter whether form is separated from meaning at some level of analysis, as long as there is a level at which form and meaning are linked (as there surely must be, given that forms ultimately express meaning). See Bonami & Stump, Chapter 17.

<sup>2</sup> I say “roughly” because of variation for some speakers (or across speakers) before *#h-* (cf. *a/an* historian).

<sup>3</sup> Or intercalated, as the case may be, as in the folding in of vocalic patterns into consonantal shells, such as is found in the Semitic languages.

processes figures in important ways in the discussion below of morphological change, since processes can arise sometimes through the reinterpretation of the effects of the concatenation of morphemes as «things».

I therefore lay my cards on the table in the following way regarding morphology as a necessary prelude to understanding morphological change. For me, morphology, in the form of the enriched morpho-lexicon described above, is central to the organization of grammar and covers a large amount of “space” within the overall architecture of grammar. Given its centrality and considerable scope, changes involving morphology are (therefore) quite widespread and frequent. Moreover, evidence from language change suggests that speakers generally opt for morphological solutions to matters of linguistic analysis wherever possible, say over syntactic solutions or phonological solutions, where by “solution”, I mean which traditional component of the grammar (phonology, morphology, syntax, etc.<sup>4</sup>) is the locus for the statements in the grammar regarding the analysis of a particular linguistic phenomenon.

## 2 What can change?

In short, the answer to what can change in the morphology is the same as the answer to what can change in language in general; that is, anything can change that is not part of the basic rock-bottom set of principles that define a communication system as a human language.

Moreover, given the broad conceptualization of morphology in terms of a morpho-lexicon in §1, one dimension of morphological change is any change in the material in individual lexical entries or the creation of new lexical entries themselves. Thus, changes in the meaning, or range of meanings, associated with a given lexical item, largely through processes of metaphorical extension or metonymic transfer, can in this view be construed as morphological changes since they entail a change in one dimension of a morpheme, and thus a change in the overall morpheme. Similarly, changes in the phonetic realization of a morpheme, through the operation of regular sound change or other means (e.g. analogy) by which a morpheme’s shape can be altered, can be construed as a type of morphological change, a trivial one perhaps but a change nonetheless.

With regard to the effects of sound changes, a subsidiary issue arises: with the accumulation of sound changes, basically the lexical representations on the sound side stay the same only at the expense of abstractness, i.e. a greater distance between underlying forms and surface forms. At some point, all phonological theories recognize the need for relexicalization, so that no phonologist, with the exception of Ted Lightner, as seen in Lightner 1975, 1983, starts an analysis of English with underlying representations (or the equivalent in a constraint-based grammar, such as GEN forms that would be ruled out immediately) that look like reconstructed Proto-Indo-European (PIE), with phonological rules (or constraints) that recapitulate the sound changes that occurred between PIE and various Indo-European languages that fed into the modern English lexicon. For instance, one might relate the forms *cycle*, *pole*, *tele-* (as in *telephone*), and *wheel* — as Lightner overtly does (see 1983: 167 regarding the last three and 1983: 218 regarding *cycle*) — by positing a basic root /kw(e)l-/ for them that occurs with different vocalism (and other slight differences) for the different forms

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<sup>4</sup> I say “etc.” here so as not to preclude the possibility that phonetics or semantics or something else might form its own component of grammar.

and shows synchronic phonological developments in particular environments such as /kw/ => p /\_\_o, /kw/ => t /\_\_e, or /kw/ => hw (=> w in most dialects) so as to give the various attested forms; the respective etymologies of these words — wheel as a native Germanic outcome of a reduplicated \*kwekwlo-, cycle as a borrowing from the Greek outcome of this reduplicated form, tele- as a borrowing from a Greek form with e-vocalism in the root (actually, ē), \*kwel-/kwēl-, and pole as a borrowing from a Latin form that is based on a borrowing from a Greek form with o-vocalism, \*kwol-(o-) — reveal exactly such proto-forms and sound change developments. One has to wonder about the learnability of representations and the ability of speakers to make the lexical connections that could lead to an underlying /kwel-/ for these words,<sup>5</sup> so that there is surely a need to constrain such representations and thus for speakers periodically to “update” the lexical forms of words after the operation of sound changes.

This type of morphological change — change in the lexical representations and the nonphonetically<sup>6</sup> based generalizations that mediate between lexical forms and surface forms — is highly theory-bound: there is less such change in theories that tolerate high degrees of abstractness, because the effects of sound changes can (typically) be modeled as an increase in the number of phonological rules while the lexical representations can stay the same. Since most approaches to modeling phonology have some at least implicit limits on the amount of abstractness allowed, such relexicalizing change is presumably quite common. And in a theory that has no rules or constraints per se but rather builds different allomorphs into lexical entries, this type of morphological change consists of the addition of new allomorphs into the entry for a given morpheme.

The nature of the mediation between underlying forms and surface forms can change, and this constitutes another type of morphological change, in a certain way. That is, if one assumes that sound changes start with a phonetic basis,<sup>7</sup> so that their effects can be thought of as automatic exceptionless phonological adjustments at first that only later gain exceptions due to the operation of other sound changes that alter the environments or the outcomes of the first change, or to the workings of analogy (see §3.2 below, especially if an original segment is restored analogically based on alternations it is involved in), or to borrowings, it can end up that a once-phonetic adjustment becomes morphologized, tied only to specific morphological or morpholexical categories. Such adjustments, such once-phonological rules, can then be recast in the grammar as morphologically determined and thereby become part of the morphological component of grammar.

An example from the history of German should make this point clear. Umlaut in German, and for that matter, in most of Germanic, refers to changes in a vowel of a root that

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<sup>5</sup> Lightner’s strategy here is to talk in terms of a grammar of a speaker with “perfect knowledge of a language” (1975: 634); such obscure lexical connections are part of that “perfect knowledge”.

<sup>6</sup> “Nonphonetically” is important, as I assume that if an allomorph arises synchronically entirely through the workings of purely phonetically determined processes, such as devoicing of a voiced stop adjacent to a voiceless stop, with no reference to morphological conditions, it would not have to be listed in a lexical entry under any theory.

<sup>7</sup> I assume here essentially the Neogrammarian view of sound change as being entirely phonetically determined; see Janda and Joseph 2003a for a model of sound change — the “Big Bang” model — in which sound changes start as Neogrammarian-like “events” but then go off in different directions, including a greater degree of morphological conditioning.

originally were triggered by a vocoid – vowel or glide – in the next syllable, typically a derivational or inflectional suffix. For instance, some noun plurals were marked by a suffix containing –i and by concomitant fronting of the root vowel in anticipation of the suffixal vowel. Thus Proto-Germanic \*lūs ‘louse’, modern German *Laus*, originally had a plural \*lūs-iz; the root vowel \*ū was fronted to [y:] due to the –i- in the suffix, and that fronted root vowel is the source of the vowel in the modern German plural *Läuse* [lojzə] (cf. also English *louse/lice*, with a parallel history). What is significant from our standpoint here is that while the root alternation between the singular and the plural started as a phonetically determined fronting of a vowel in one syllable due to the high front vowel (i) in the immediately following syllable, in modern German, the suffixal vowel is no longer a high front vowel but rather is the mid-central vowel [ə]. There is thus no phonetic motivation for the vowel change, which, incidentally, in this word is not even fully a matter of fronting, except as to the glide, being [aw] in the singular vs. [oj] in the plural; some plurals, though, do show fronting vis-à-vis the singular, as with *Buch* ‘book’ ([bux]) / *Bücher* ‘books’ ([byçər]). Given that the vowel change has come to be removed from having a phonetic basis, it seems now to be more a morphological phenomenon, associated with the marking of plurality (among other categories<sup>8</sup>) and not a matter of a(n automatic) phonological adjustment that a particular suffixal shape requires. In fact, in some nouns, the vowel change is not even accompanied by any sort of triggering suffix: *Bruder* ([brudər]) ‘brother’, for instance, has a plural *Brüder* ([brydər]). Thus, for the modern language, only a fairly abstract analysis, in which there is a plural-marking suffix that has an –i- in it underlyingly and surfaces as a [ə] or Ø depending on the noun involved, could treat umlaut as having no morphological involvement, and even then, the ə/Ø outcome could be viewed as morpholexically determined inasmuch as some underlying /i/ vowels do not surface as ə or Ø. For *Brüder*, one could justifiably say that plural is realized only by a morphological process of fronting the root vowel, without any overt affixation; even an analysis with an underlying plural suffix with –i- would have to have umlaut realized on a syllable two away from the abstract triggering element. Similar misgivings can be expressed for other categories marked by umlaut (see footnote 7).

Thus some changes in the phonemic shape of morphemes (“morphophonemic alternations”) undoubtedly do have a phonetic origin and maintain that phonetic aspect, as in the Latin *b ~ p* alternations such as *scrib-ō* ‘I write’ vs. *scrip-tus* ‘having been written’ or *urb-is* ‘of a city’ vs. *urb-s* ([urp-s]) ‘city’ (nominative). Many others, however, lose their phonetic motivation and are simply tied to particular morphological categories, as with German umlaut, or Celtic initial mutations,<sup>9</sup> or, most likely, Proto-Indo-European vowel gradation (also known as ablaut or apophony), to give an example involving the use of inferencing in what amounts

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<sup>8</sup> For instance, it appears in the derivation of certain nominalized forms of adjectives, as in *Länge* ([lɛŋə]) ‘length’ from *lang* ([laŋ]) ‘long’, in comparatives, as in *älter* ‘older’ from *alt* ‘old’, etc.

<sup>9</sup> See Thurneysen 1946, for instance, on Old Irish, where words that originally ended in a vowel trigger lenition changes (weakenings) on the initial segment of a following word, and those originally ending in a nasal trigger certain nasalization effects. The historical loss of final syllables eliminated the original triggering elements but the lenition and nasalization effects remain, generally tied to the realization of particular morphosyntactic categories and constructs, such as marking of direct objects, occurrence of object-centered relative clauses, and the like.

therefore to morphological reconstruction.<sup>10</sup> Thus the morphological component of the grammar can change if new morphophonemic variants emerge via phonetic adjustments or if the triggering mechanism itself undergoes a change, leading to a change in the nature of the source of the variant.

In a similar vein to treating changes in lexical representations as falling within the ambit of morphological change, we can say that really any addition to the lexicon constitutes a type of morphological change. Such a broad conceptualization of morphological change would thus include any new words that are borrowed from another language (e.g. *taco* from Mexican Spanish), or any new coinages (e.g. *googol* '10<sup>100</sup>', coined in 1940 by mathematicians Edward Kasner and James R. Newman), or any forms that move from a highly specific domain into more general use, as when the brand-name *Xerox*, itself a coinage dating to 1952 and based on the name of the relevant photocopying process — *xerography*, from Greek elements *xero-* 'dry' and *graph-* 'write' — expanded into use as a generic term for any xerographically produced photocopy, even if not made with Xerox corporation machines; the shift in domain of use essentially created a new lexical item, hence a new morphological element, a new root.<sup>11</sup>

Such creation is not restricted to lexical forms; grammatical markers can also arise, in many instances from lexical forms, typically adverbs or prepositions but other elements can be involved too, that come to be univerbated onto the forms they modify or co-occur with. The similarity between the ending *-aśśäl* of Tocharian A comitative forms, e.g. *yukaśśäl* 'with the horse', and the particle *śla* meaning 'with', makes it an easy etymological inference to assume that the case ending derives from an original phrasal combination of 'horse' with a postposition 'with'. Similar phrase-to-inflected-word developments are seen in the Oscan locative, e.g. *húrtín* 'in the garden', apparently from *húrti-* 'garden' with the adpositional element *\*en* 'in', and the Spanish adverbial suffix *-mente* from an ablative case form of Latin *ment-* 'mind' (thus *obstinadamente* 'obstinately' was originally 'with an obstinate mind' (Latin *obstinātā mente*)), to mention just a few well-known such cases.<sup>12</sup> And periphrastic combinations in the verbal system are a rich source of verbal inflexion; the Romance future tense, as in French *finir-ai* 'I will finish', from a late Latin periphrasis of an infinitive plus 'have' (thus, *finire habeō* 'I have (i.e. am obliged in the future) to finish'). In most of these cases, there are semantic shifts and prosodic adjustments involved as well, so that the changes actually reflect the contributions of

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<sup>10</sup> And it is certainly the case that ablaut in all of the attested Indo-European languages is morphological in nature; consider English *sing/sang/sung/song*, reflexes of PIE e-grade, o-grade, zero-grade, and lengthened o-grade, respectively, where the vowel changes signal morphological categories of present tense, past tense, past participle, and nominalization, respectively.

<sup>11</sup> And, as a noun in English, it could be the basis for a derived verb, inflected just as a verb should be. Thus to *xerox*, with present tense *xeroxes* and past tense *xeroxed*, entered English some time after the noun (first attested as a verb in 1965).

<sup>12</sup> There is more to say about each of these: the Oscan ending is also used with adjectives modifying a locative noun, suggesting that the *-n* is truly a case ending and fully part of the morphology of the nominal system; in Tocharian, however, one finds so-called "Gruppenflexion" ('group inflection') with comitatives and other such formations, in which the ending occurs on only the last element in the noun phrase (e.g. with ADJ + N or with coordinated nouns), suggesting that it is not a case ending proper but rather a phrasal affix (or the like); and in Spanish, *-mente* behaves like the Gruppenflexion of Tocharian (*rápida y claramente* 'rapidly and clearly') and shows evidence of having been reintroduced from Latin at some point as a learned borrowing. Still, these examples make the point of lexical sources for grammatical — derivational and inflectional — material.



a complex of several developments. Other sources of grammatical material and other changes involving grammatical material are discussed in §3.2 below.

### **3 What are the Conditions for Change?**

The small number of examples presented already offer some insight into two key sets of factors that need to be addressed in a consideration of the conditions that lead to morphological change. These are the same that analysts must confront for any change: conditions internal to a given linguistic system, such as the sound changes that alter the shapes of morphemes or that bring about shifts in the nature of the triggering mechanism for morphophonemic alternations, and conditions external to a given linguistic system, such as the introduction of loanwords into a language from a different language.

#### *3.1 Internal causation vs. external causation*

It must be borne in mind that in a certain sense, all change involves external factors in some way, at least insofar as the spread of an innovation is concerned. That is, innovations often go through a speech community from speaker to speaker, by contact between speakers and the adoption by one speaker of another speaker's use of a particular word or pronunciation or turn of phrase.<sup>13</sup> It is also the case that the recognition on the part of one speaker of what constitutes an innovation may come through contact with at least some other speaker (or set of speakers). Thus there is always an external dimension in the recognition and adoption of an innovation.

Still, ultimately the innovation must come from somewhere and it is vain to think that the introduction of an innovation into a system can only be a matter of contact; after all, where did the speakers of the donor language get that innovative form in the first place? Even if they got it by contact with speakers of some other language, at some point a reduction sort of argument says that there must have been some speaker(s) somewhere for whom the innovation originated through system-internal factors. Thus for a full accounting of causation in language change, one must look both to internal and to external causes.

#### *3.2 System-internal causes*

Of the system-internal factors in morphological change, some are rather trivial. As noted in §1, once one allows for relexicalizations — reformulations of lexical entries — any sound change can potentially affect the shape of lexical entries, and thus affect the morphology through the morpho-lexicon. And if sound change is driven by the working of the system of phonetic production and perception, as is widely believed, then sound change counts as a system-internal cause of some morphological change. The same can be said for semantic change in terms of an effect on the content of lexical entries, and, if the semantic shifts are severe enough, as when *prove* 'demonstrate, establish as true' came to mean in 19th century British usage 'of bread or dough: to become aerated by the fermentation of yeast prior to baking', one can envision a sort of "mitosis", leading to the creation of a new lexical entry altogether.

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<sup>13</sup> Not all spread of an innovation is due to contact as it is possible for different (sets of) speakers in different parts of a speech community to independently come up with the same innovation; see Janda and Joseph 2003b: 83 on this notion.

But the system-internal mechanism of language change most associated with morphological change is analogy, which essentially involves the establishing of associations between and among linguistic forms (morphs) and changes due to those associations. It is best to operate with a broad sense of analogy by which any influence of one form, or piece of a form, over another constitutes an analogical linkage and if that linkage leads to a change, that change can be called an analogical change or an analogy.<sup>14</sup>

These associations and influences are largely cognitive in their basis and in a certain sense are inevitable, given the networks of relations among morphemes that speakers seem to be aware of, along all sorts of dimensions — for instance, phonic, formal, and/or semantic (Ackerman and Malouf, Chapter 12). They are system-internal because the structure of the lexicon depends on the existence of linkages among morphemes and lexemes, and the evidence both diachronically of analogical change and synchronically of psycholinguistic effects, such as the tip-of-the-tongue phenomenon or semantic or phonic priming effects, points to a lexicon with all sorts of connections among entries.

As far as analogical change is concerned, such associations mean that the influences that lead to morphological change can come from a number of different directions. By far the most studied sort of analogy is that involving grammatical forms, but one can see analogical influences outside of grammar in blends (e.g., *laxadaisical* as a variant of *lackadaisical*, affected by a phonic and semantic connection with *lax*), in folk etymologies (e.g., *sparrow grass* for *asparagus*, due to the sound and the meaning, or *mushroom* for *macaroon*, based on the sound of the words and the shape of the cookie), and in renewals and recompositions (e.g., *forehead* as [forhEd] replacing [forId]), among others.

As for grammatical analogy, it is seen in the leveling out of allomorphy within paradigms (e.g. Latin nominative *honōs* ‘honor’ becoming *honor* due to influence from the oblique stem *honor-*, as in accusative *honorem* or genitive *honoris*, or *wharves* as the plural of *wharf* being replaced by *wharfs* in American English, eliminating the *wharf-/wharv-* allomorphy) and in the encroachment of one realization of an inflectional category into the domain of another (e.g., earlier English *holp* as the past tense of *help* marked by vowel change (ablaut) giving way to *helped*, with the more prevalent dental suffix realization of past tense; so also *climbed* for *clomb*, *writhed* for *wrothe*, among many others). But the grammatical effects of analogical changes can be somewhat more subtle, almost like blends. For example, at one stage in early Modern Greek, the first person plural (1PL) nonactive (mediopassive) ending was *-meste* (from an Ancient Greek variant ending *-mestha*). For many speakers, this ending changed to *-maste*, with a different vocalism in the first syllable, due, it seems, to a perceived connection with, i.e. influence from, the pronominal form for 1PL oblique (accusative/genitive) *mas*. Interestingly, Greek speakers also changed the second plural (2PL) ending in the same paradigm, *-este* (from Ancient Greek *-esthe*), to *-osaste* through a perceived connection with, and thus influence from, the innovative 1PL ending, aided by the form of the 2PL oblique pronoun *sas* and the pattern of apparent pronominal incorporation that the 1PL form gave. And, analogy can affect periphrastic combinations: early Modern English used *be* as the auxiliary with the perfect of

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<sup>14</sup> It is perhaps unfortunate that there is no universally agreed upon terminology distinguishing the mechanism of analogy from the result of analogy.

become, as in the King James version of Exodus 15:2, He is become my salvation; in present-day English, by analogy to other perfects, it would seem, have is now used, i.e. he has become.

These are but a few examples of the innumerable analogical changes that have shaped morphemes across scores of languages over centuries and centuries. As noted above, analogical change is almost inevitable, since speakers know and draw on so many connections among forms. But it is fair to ask what motivates the connections and the resulting analogical changes.

One principle that seems to cover many cases of analogy is the semiotically based principle of “one form to one meaning”, and indeed, in analogical change, speakers often seem to be striving towards that semiotic ideal, even if it is never fully achieved across the language as a whole. That is, leveling out the  $s \sim r$  allomorphy in the paradigm of Latin *honos-* eliminates an irregularity, an extra bit of information that needs to be accounted for somehow, even if it is a fairly regular alternation statable in purely phonological terms ( $s \Rightarrow r / V\_V$ ). Eliminating the unmotivated voicing in the plural of *wharf* makes that noun more regular, though until all such morphophonemic plural voicing is leveled out (*wife/wives*, *knife/knives*, and others remain), the one-form-to-one-meaning dictum does not hold in general for all English plurals. The same can be said for extending the dental preterite suffix into use with verbs it did not occur with before, for the  $-ed \sim$  ablaut past “allomorphy”<sup>15</sup> is being leveled out but ablaut preterites still remain. The extension of *have* over *be* in the perfect, however, now approaches a fully general situation, though there is perhaps some variation still with *go* (*She is gone* remains, with a slightly different nuance of meaning as opposed to *She has gone*).

In general, it can be said that speakers seem to opt for overt and concrete marking of categories, so that forms that become opaque for some reason are subject to change. The plural of *child* once was just with an *r*-suffix, *cildru*, reflecting a pluralization marking that occurred with a half-dozen or so nouns in earlier English, e.g. *lamb / lambru* ‘lamb / lambs’, *cealf / cealfru* ‘calf / calves’, etc. However, as those other nouns changed their pluralization pattern to a more prevalent type with  $-s$ , *cildru* was isolated and thus opaque, not looking much like a plural; the addition of  $-en$ , at the time a more widely occurring plural marker, recharacterized the plural of *child* as an overt plural, albeit one that ended up once again isolated in later stages of English.

A somewhat more complicated case of making an opaque form more transparently marked is the case of the Latin third person singular (3SG) ‘eats’. The Latin outcome of a Proto-Indo-European underlying form  $/*H1\acute{e}d-ti/$  ‘he eats’,<sup>16</sup> with a surface realization  $*H1\acute{e}tsti$  (with  $*tst$  from  $/*dt/$  or  $/*tt/$ ) would be expected to have been  $\acute{e}s*$ , a form that is unattested but presumed because PIE  $*tst$  regularly yields Latin *ss*,<sup>17</sup> which would have been simplified in final

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<sup>15</sup> The scare quotes here are to signal that there are linguists who would say that  $-ed$  and ablaut are not truly allomorphs because they represent different forms, even if their function and meaning are the same; in such a view, which I personally see as an entirely reasonable position to take,  $-ed$  would have allomorphs  $[t]$ ,  $[d]$ , and  $[\acute{e}d]$  and ablaut’s allomorphs would presumably be defined by variant patterns of alternation such as  $[aj]/[o]$  (*drive/drove*),  $[aj]/[aw]$  (*find/found*),  $[l]/[\acute{e}]$  (*dig/dug*), etc.

<sup>16</sup> This is actually a morphologically based reconstruction — root  $*H1ed-$  with 3SG present tense ending  $*-ti$  — that can be taken to represent the underlying representation of the PIE form that would on the surface have been something like  $*H1\acute{e}tsti$ . (The symbol  $< H1 >$  stands for one of the so-called “laryngeal” consonants, the exact phonetics of which are somewhat uncertain, and irrelevant for the point at hand.)

<sup>17</sup> As in *sessus* ‘having sat’, from  $*sed-to-$ .

position. How is the actually occurring form, *ēst*, to be explained? Once one notices that the *-t* is the 3SG present ending throughout the whole of the Latin verbal system, the answer becomes clear: the form *ēs\** was anomalous as a Latin 3SG present verb, lacking the usual marking that such a verb should have. It was thus opaque as a 3SG form so that analogically regularizing it, renewing the 3SG marking that was lost by regular sound change, made it more transparent as a 3SG form. Another way of viewing this change is semiotic in nature: the more transparent form *ēst* shows a better fit between form and meaning: each element of meaning, ‘eat’ and ‘3SG.present’, has an overt element of form corresponding to it.

Since paradigms, whether defined strictly in terms of related cells of inflection or more loosely in terms of patterns present in the language, e.g. across different realizations of inflection or involving derivational relationships, figure prominently in analogically driven morphological change, it is worth considering where paradigms come from in the first place. It turns out that despite the regularity and uniformity that paradigms typically present (e.g. a novel verb created recently in Greek, *klikaro* ‘to click on a link on the internet’ has a full panoply of personal forms in all the moods and tenses (*klikaro* ‘I click’, *klikarume* ‘we click’, *klikara* ‘I was clicking’, *klikare* ‘click!’, *exo klikari* ‘I have clicked’, etc.), there is evidence that they are, or can be, built up form by form. The Ancient Greek verb *ēmí* ‘I say’ occurs in only four forms:

1SG.PRES	<i>ēmí</i>	1SG.PAST	<i>ēn</i>
3SG.PRES	<i>ēsí</i>	3SG.PAST	<i>ē</i>

but it was innovatively built up, with regular personal endings, from the 3SG.PAST form *ē*, as it is the only form in the (defective) paradigm that derives directly from a PIE proto-form, *\*ēg-t*.<sup>18</sup> Clearly, a full paradigm was not constituted because only three additional forms were created with *ē* as the basis. Third person forms are often the basis for the (re)constitution of a paradigm, an observation made by, and exploited, by Calvert Watkins in his 1962 account of the origin of a form of the Old Irish preterite. For Watkins, the third person singular was a useful starting point for a (new) paradigm as it could be interpreted as formally unmarked (with zero-marking), matching its status as functionally unmarked.<sup>19</sup>

These examples are meant to suggest that analogy is pervasive, permeating and shaping the entire morphological system, as speakers make connections among forms and act on those connections, apparently driven semiotically to match form and meaning as best as possible. In many instances, the matching is only local, as with *wharf/wharfs* (but not, yet, *wife/\*wifes* or *knife/\*knives*). But this accords with the view of Joseph and Janda 1988, who, following the lead of Jespersen and others, argue that analogy is always a matter of local generalization, i.e. of

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<sup>18</sup> The root here is that seen in Latin *ad-ag-ium* ‘saying’ and *aiiō* ‘I say’ (< *\*ag-jō*), with zero-grade forms versus the Greek full-grade. The three novel forms in Greek must be innovations since a 1SG present form *\*ēg-mi* would have given Greek *ēgmi\**, not *ēmi*, past *\*ē g-m̐* would have given *ēga\**, and 3SG present *\*ēg-ti* would have given *ēksi\**.

<sup>19</sup> This path of development has come to be called “Watkins’ Law” in the literature, though Watkins himself disavowed any “law-like” regularity to it, seeing it only as an interesting way in which several languages dealt with the problem of developing paradigms. The functional unmarkedness of the 3SG form comes from it being the form that is the “other”, nonpersonal (as opposed to first and second person, which necessarily reflect persons) and nonsubjective (like second person, but as opposed to first person, which is necessarily subjective).

speakers acting on the limited set of forms available to them or, more realistically, within their immediate scope of awareness.

### 3.3 System-external causes

Talking about system-external causes for morphological change actually means talking about morphology in language contact situations. Contact with different languages, or different dialects of one's own language, for that matter, opens up the possibility for new material — new words, new morphemes — to enter the language. And, while it is generally believed that morphology, especially inflectional morphology, is hard to borrow, there are numerous cases to cite of just that occurring. I give a few select examples here by way of illustration.

- various local dialects of Greek, e.g. that spoken in Megara (Attica), due to contact with speakers of the southern Albanian (Tosk) dialect known as Arvanitika, which has been spoken in Greece for some 600 years, use the Albanian diminutive suffix –zə on Greek roots, as in *liyaza* 'a little', formed from Greek *liya* 'a little' plus the Arvanitika diminutive.
- in virtually all of the languages of the Balkans, due to intense contact with Turkish speakers in the period of the Ottoman Empire, the Turkish agentive/occupational suffix –çI/-cl<sup>20</sup> can be found, e.g. Greek *taksi-dzis* 'taxi-driver', Macedonian *lov-džija* 'hunter'.
- the Turkish plural suffix –lar/-ler has been borrowed into several Balkan languages, used mostly with Turkish nouns (for males of high standing), but in some instances with non-Turkish stems; Albanian, for instance, has *baballarë* 'fathers' (cf. Turkish *babalar*), and *dervishlerë* 'dervishes' (cf. Turkish *dervişler*), among others, and dialectally has *mbretler* 'kings' (with *mbret* from Latin *imperator* 'emperor'), while Macedonian has *kardašlar* 'brothers', and *efendiler* 'gentlemen', among several others, and Bulgarian has *agalar* 'Turkish noblemen', along with numerous others (as documented by Grannes 1977).
- Cappadocian Greek, under heavy influence from Turkish, has incorporated the Turkish first person plural past ending –k, onto the native Greek ending –misti for the first person plural forms of the past nonactive, giving an ending –misti-k (cf. Janse 2009).

It may be that in at least some of these cases of suffixal borrowing, the suffix first entered the language as part of a whole word and was then extracted from that word and given a "life" apart from the lexeme through which it came into the language. That would explain its use with non-source language material, as with *mbretler* or *lov-džija* above. Such an account, however, does not work so well for the Cappadocian Greek example; Janse argues that it is the

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<sup>20</sup> I use a capital letter, here –I, for the high vowel that shows harmonic alternations in the features of frontness and rounding, based on the features of the final vowel of the stem the suffix attaches to. The suffix itself is subject to some phonological adaptation as it is borrowed.

phonic similarity of the Greek ending –misti to a Turkish pluperfect formation with suffixes –miş- and -ti-that triggers the addition of the Turkish ending to the Greek.

It should be noted that just as opacity plays a role in system-internal morphological change (see §3.2), it also figures in externally driven change. A form entering a system from the outside, as a borrowing, is almost by definition opaque within the borrowing system. It starts out as an “alien” element. It is not surprising, therefore, that borrowed items can take on a value in the recipient language that is different from that in the donor language. For instance, the inflectional suffix –di- for past tense in Turkish has been borrowed into Greek in a number of Turkish verbs, but serves only as a derivational element, creating a verbal stem, as far as Greek is concerned; thus the noun boya- ‘paint’ is the basis for a verb boya-d-iz- ‘to paint’, where –iz- is a widespread (native Greek) verbalizing suffix and the –d- creates the stem to which the verbalizer attaches — the Turkish root is boya- and the basis for the Greek verb, boyadı, is an inflected form in Turkish meaning ‘(s)he painted’. Similarly, the Turkish plural marker –lar that entered various Balkan languages in some instances was treated as opaque as far as marking plurality was concerned, and was augmented by a native plural suffix, e.g. the –ë in Albanian baballarë ‘fathers’ or –i in Serbian hođalari ‘Moslem clerics’.

#### **4 More on Analogy — Conflicting tendencies**

In the same way that internal and external factors present differing paths of causality for morphological change, so too are there differing tendencies, sometimes seemingly at odds with one another, in other aspects of morphological change through analogy. In particular, analogy can be seen as involving simplification, but at the same time, there are ways in which analogy can lead to complication in the grammar.

The simplifying aspect of analogy, already touched on in §3.2, has to do with a reduction of arbitrary elements, such as the –s-/–r- stem alternation in Latin honōs/honor-is. A paradigm with –r- throughout is less exceptional, so that in a real sense, the paradigm is simpler. Similarly, if personal pronouns and verb endings are connected by speakers in some way, then a set consisting of Modern Greek 1PL pronoun mas and 1PL ending –omaste offers a more straightforward, hence simpler, connection than mas and –omeste. And if personal endings form a network of related elements, then the set with 1PL –omaste and 2PL –osaste forms a more coherent and rational network than –omaste and –este would; further, when 3PL –ondusan became -ondustan, as it has in some dialects, the plural endings are united in that they all have –st- as an element linking them.<sup>21</sup> Even the Latin marking of ‘eats’ with 3SG –t (ēs\* ==> ēs-t) is a simplification, as it removes the lone exception to the otherwise 100% true generalization that the Latin 3SG is marked by –t.

Admittedly, the simplification may be illusory and only locally valid, as noted in §3.2, but there are clear cases where the outcome of analogy is a complication of the grammar. Hogg 1980 draws attention to the fate of the –m in eom ‘am’ in Old English (OE), where this final consonant, while once an overt marker of first person singular (cf. Latin su-m ‘I am’, era-m ‘I was’, (Aeolic) Greek em-mi ‘I am’, didō-mi ‘I give’, Sanskrit as-mi ‘I am’, dadā-mi ‘I give’), was

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<sup>21</sup> As it happens, 3PL –ondus(t)an is analyzable as also incorporating a pronoun, as the 3PL oblique pronoun is tus and –t- would automatically voice to –d- after a nasal (thus /-on-tus-(t)an/ with pronominal tus would give –ondus(t)an).

isolated within OE and thus simply part of an unanalyzable form.<sup>22</sup> For some dialects of OE, the 1SG subjunctive form *bēo* ‘(that) I be’, was influenced by the unanalyzable *eom* and became *bēom*. This analogical extension of *–m* into subjunctive form, whether induced by rhyming or by a grammatical connection, or both, meant that, under the principles of morphological analysis enunciated in §1, the indicative and the subjunctive could be segmented, as *eo-m* and *beo-m* respectively.<sup>23</sup> This constitutes a complication in the grammar because it introduces a new 1SG ending of very limited distribution whose exceptional occurrence must be learned as isolated facts that not subject to particularly significant generalizing; its further spread on an occasional basis to *fleo-m* ‘I flee’, while giving the ending a bit more “heft” and “life” in the grammar, does not further the quest for a meaningful generalization as to its use.

The key to understanding these conflicting effects – simplification and complication – of analogy is recognizing the essentially localized scope of an analogical change, and at the same time of the connections underlying the change that speakers are able to make among forms. Thus, simplification occurs on a local scale but there can be concomitant complication on a more global scale in the grammar as a whole.

## 5 Some (Unintended) Consequences of Morphological Change

The examples seen in previous sections offer a view of morphological change that is more centered on changes in morphemes themselves than anything else. But some of these changes have consequences for the overall grammar of the language in question that are worth considering. For instance, the borrowing into Albanian of the two allomorphs of the Turkish plural suffix, both back harmonic *–lar* and front harmonic *–ler*, means that for a small part of the grammar of Albanian, namely plural marking for a subset of nouns (e.g. *baballarë* versus *dervishlerë*), vowel harmony must be encoded somehow; a phonological solution is unlikely given the restricted nature of the distribution of the allomorphs, so apparatus like lexical listing of allomorphs which are then linked by a redundancy rule would probably be needed. But the general point of a structural addition to the morphophonology of the language should be clear.

The same can be said about the emergence of a structural pattern with pronoun incorporation in Greek verb endings; once forms like *mas* and *sas* can be seen as playing a role in the shape of personal endings, then essentially a new pattern has been created, with the localized analogies giving the basis for such an analysis.<sup>24</sup>

And, the opacity that led to forms like *cildru* or *baballar* being augmented by, or recast with, more transparently plural endings, giving *children* and *baballarë* respectively, has the effect of leading to double marking, at least from an etymological standpoint, of in this case

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<sup>22</sup> Note that other forms of the present of ‘be’ in OE, e.g. second singular *eart*, third singular *is*, and plural *indon*, give no basis for analyzing *eom* in a way that would segment off the *–m* due to the exhaustiveness principle (see §1), unless one adopts a highly abstract analysis (see §2).

<sup>23</sup> I suggest this segmentation because *bēo-* as a stem occurs in other forms of the paradigm, e.g. plural *bēoð* ‘that we/you/they be’.

<sup>24</sup> The potential role of the singular forms should not be overlooked. The first person singular (1SG) nonactive past ending is *–(o)mun*, which derives by regular sound change from earlier Greek *–omēn*; a connection with the 1SG oblique pronoun *mu* can be surmised as a plausible influence, all the more so since the second person singular (2SG) ending is *–osun*, from earlier *–ou* with the involvement of a variant 2SG ending *–so* but conceivably also the 1SG *–omun* and the 2SG genitive pronoun *su*. So the singular forms offer a possible model as well for pronoun incorporation in the endings,

plurality, just like the double marking for 1PL in the Cappadocian Greek form. It is important to stress that the multiple occurrences of inflectional material do not necessarily constitute double marking synchronically, but to the extent that in some of the Balkan languages Turkish plurals can occur without native endings, e.g. Bulgarian *agalar* ‘Turkish noblemen’, the augmented form *agalari*, with the native plural suffix, might well be considered synchronic double marking.

These sorts of higher-level consequences — higher-level in that they have a more abstract effect in the grammar as a whole beyond the effect on the morpheme itself — are almost like accidental side-effects that the principles of morphological analysis lead one to. They can be thought of as “unintended consequences” because they emerge in the aftermath of a change and are not the goal of the change itself; thus the goal of borrowing Turkish plurals was not to introduce vowel harmony into a language but rather to have a way of characterizing these otherwise alien nouns as plurals – vowel harmony is just what one gets when allomorphic alternants are borrowed as such.<sup>25</sup> Still, unintended or not, they represent further ways in which the morphology of the language changes, system-internally but on occasion with external material serving as the basis.

## 6 Directionality in Morphological Change

In §4, conflicting tendencies in analogical change towards simplification in some circumstances and complication in others are shown to be resolvable by viewing analogy as involving generalizations at a localized level, thus simplification locally versus complication more globally. This means that an apparent directionality in morphological change, with analogical change always moving in a particular direction, is not exactly wrong but not exactly right either. Such an outcome suggests that other instances where directionality might be an issue in morphological change might benefit from more careful scrutiny.

For instance, regarding the examples cited in §3.2 and §4 of verb endings being affected by pronouns, it is fair to ask if the influence can go in the other direction here. If pronouns affect verb endings because they are ways in which the same categories of person and number are realized, then it stands to reason that a verb ending should be able in principle to affect a pronoun, and sure enough, there are attested cases. In the Italic branch of Indo-European, and into the modern Romance languages, the 1PL verb ending begins with *-m-* (e.g. Latin *-mus*, Spanish *-mos*) and the 1PL pronoun begins with *n-* (e.g. Latin *nos*, Spanish *nos(otros)*). That mismatch was actually resolved in a manner like the Greek cases in New Mexican Spanish where the 1PL ending has come to be *-nos* in some forms, e.g. *hablabanos* ‘we were speaking’ (Janda 1985). It is thus particularly interesting that there are varieties of Spanish, e.g. Judeo-Spanish, that have the 1PL pronoun with initial *m-* (*mosotros*), due to the influence of the personal ending.

In the case of paradigm-internal analogy, in the Latin change of *honor* to *honor* discussed in §3.2 and §4, the nominative case was leveled out in favor of the stem occurring in

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<sup>25</sup> There may well be an ideological dimension to be recognized here as well, in that borrowing speakers could well have overlooked the vowel harmony (as they seem to have done for the most part with the *-çl/-cl* occupational suffix); keeping *-lar* and *-ler* may reflect a desire on the part of some speakers to sound more Turkish or to show solidarity with Turkish, or the like,



oblique cases. The directionality here may have been driven by type frequency, since the obliques outnumber the nominative in the paradigm overall or even by token frequency, but as it happens, the other direction of leveling also occurs. Ancient Greek ‘one’ was originally \*hem (from PIE \*sem, cognate with English same) in the neuter nominative/accusative, with a genitive \*hem-os and a dative \*hem-ei. A sound change of word-final m > n occurred, giving the following paradigm (the dative is attested in Mycenaean Greek) with allomorphs hen-/hem-:

NOM/ACC	hen
GEN	hem-os*
DAT	hem-ei

In Classical Greek, the allomorphy was resolved in favor of the nominative allomorph, giving:

NOM/ACC	hen
GEN	hen-os
DAT	hen-i

Other factors may have been at work here, such as the functional basicness of nominative as opposed to oblique, which of course conflicts with the frequency-based account of the honos-to-honor leveling. But that is exactly the point: different factors can yield different results, and thus different directionalities in analogy.<sup>26</sup> And, while some historical linguists have attempted to lay out principles for directions of analogical change, most notably Kuryłowicz 1945–49 and Mańczak 1957, these have generally yielded recurring tendencies that sometimes are in conflict with one another.<sup>27</sup>

On a somewhat grander scale, looking at movement between components of grammar, cases such as umlaut in German (and Germanic more generally) discussed in §2 or Irish mutations discussed in footnote 8 show that phonologically determined phenomena can become morphologized and thus best handled in the morphological component of the grammar. But under the right conditions, movement in the other direction, from a morphologically determined phenomenon to a phonologically determined one can occur. Joseph and Janda 1988 highlight the case of the past tense prefix e- (the “augment”) in the passage from Ancient Greek to Modern Greek: in Classical Greek the augment was an obligatory part of the past tense, and thus was part of the morphological structure of all such forms; in some varieties of Modern Greek, especially the standard language, the augment appears only when it is stressed. Thus the classical forms on the left have given way to the modern forms on the right:<sup>28</sup>

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<sup>26</sup> Note also that just as wharves is giving way to wharfs, the innovative form dwarves with voicing in the plural seems to be gaining on the older dwarfs (itself an analogical formation).

<sup>27</sup> Hock 1986/1991: Chapter 10 offers a concise but illuminating presentation of these two works, with an overt comparison of the different claims they make. See Winters 1995 for a translation of the Kuryłowicz piece, with some discussion. Anttila 1977 is an extremely useful and thorough overview of the state-of-the-art regarding theorizing about analogy.

<sup>28</sup> With other changes evident as well, of course; especially decisive here was the loss of unstressed initial vowels.

égraphon	'I was writing'	=>	éyrafa
egráphomen	'we were writing'	=>	yráfame

Given that accent in such past tense forms is predictably on the antepenultimate syllable, the appearance of the augment is phonologically determined, so that the once-morphological phenomenon is now a matter of phonology.

Finally, just as the developments with the Tocharian comitative and especially the Oscan locative show the movement from a phrasal, and thus syntactic, combination to a word-level, and thus morphological, combination, there are counter-directional cases whereby an affixal element that was part of a word-level combination takes on free word status, with thus a degree of syntactic freedom that the earlier affix did not have. Méndez Dosuna 1997, for instance, documents the development of the Modern Greek free adverb *ksaná* 'again' out of the combination of two bound prefixes, *eks-ana-*, that occurred obligatorily attached to verbs. Thus earlier *eks-ana-blépō* 'I see again' yielded not only a prefixed verb *ksana-vlépo* 'I see again' but also a phrasal combination — note the stress on *ksaná* and its mobility, indicating that it is an independent word — *ksaná vlépo*, also *vlépo ksaná*, 'I see again'.

As this last example suggests, these cases of movement between components can also be interpreted in terms of changes in the morphological status of particular elements, e.g. word or affix; and, in theories that recognize a separate morphological "atom" of "clitic",<sup>29</sup> changes from word to clitic to affix. The not-fully-affix-like behavior of the Tocharian *-ássāl* discussed in footnote 11 could lead some linguists to treat it as a clitic. However, if the positioning of words and clitics is a matter of syntax, as some would have it, and the appearance of affixes a matter of morphology, then it is reasonable to view such changes in status as movement between components.

Up to this point, I have not mentioned the term "grammaticalization" per se but many of the changes could be brought under the umbrella of this term, especially if "grammaticalization" is viewed simply as the emergence of grammatical forms and grammatical processes. I adopt this characterization here, recognizing though that many linguists make much more of the notion, seeing it as the movement from lexical elements to grammatical ones and from less grammatical elements to more grammatical ones, and claiming, further, that (see, e.g., Hopper and Traugott 1993/2003) grammaticalization is unidirectional. By "unidirectionality" here is meant that only movement in the direction of greater grammatical status is allowed. Thus changes of grammatical to lexical or from more grammatical to less grammatical are claimed to be impossible. Counter-directional cases such as Greek *ksaná* are counter-examples to such a "Unidirectionality Principle", and it is not clear how the interesting multi-directionality of analogy or the movement between components would be treated.

Moreover, other instances of "counter-directional" movement can be found, so counter-examples are not just an isolated case like *ksaná*, as compelling as it is. For instance,

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<sup>29</sup> I myself do not recognize "clitic" as a basic morphological building block, choosing to follow Zwicky 1994 in theorizing that there are no clitics per se, and that the elements that some linguists might call "clitics" are in fact either atypical words or atypical affixes. See Joseph 2001 for an application of this thinking to the analysis of Greek so-called "clitics".

unidirectionality would predict that a change by which an inflectional morpheme becomes a derivational morpheme would not occur, inasmuch as derivation is less grammatical than inflection; that is, derivation is tied to the lexicon and is involved in the creation of new lexical stems, whereas inflection serves a purely grammatical purpose.

Nonetheless, there are documentable instances of inflection turning into derivation. Testing such a claim demands careful morphological analysis as one cannot know the analysis of a diachronic development without understanding the proper analysis of the starting point and the endpoint; accordingly, I follow here the tenets of morpheme identification outlined in §1, matching recurring form with recurring meaning. As it happens, taking these tenets seriously leads to an interesting novel counterexample to unidirectionality, not previously discussed in the literature.<sup>30</sup>

In particular, in Old English (OE), the 3sg neuter pronoun showed the following forms:

Nom	hit	‘it’
Acc	hit	‘it’
Gen	his	‘its’

These forms are analyzable morphemically as *hi-t* and *hi-s*, in that *hi-* recurs, matching the meaning ‘it’, and the principle of exhaustive parsing identifies *-t* as a grammatical ending, and thus an inflectional marker, for nominative/accusative neuter, a segmentation that is verified by the recurrence of *-t* with the same value in *hwæ-t* ‘what?’ and *þæ-t* ‘that’. As for the segmentation *hi-s*, that is verified by other pronominal genitives such as *hwæ-s* ‘of-what?’ and *þæ-s* ‘of-that’. In later English, e.g. by the early modern period, the neuter pronominal forms have changed to:

Nom	it
Acc	it
Gen	its

through the irregular loss of *h-*, a change which is irrelevant here, and the reshaping of the genitive form by the addition of the regular genitive/possessive ending *-s* (as in *stone’s*) to the

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<sup>30</sup> Not all claims about grammaticalization have followed rigorous principles of morphemic identification, leading to claims that are empty or simply wrong. For instance, Hopper 1994, in talking about “phonogenesis”, his label for once-meaningful morphemic pieces losing morphemic value and taking on a role of simply adding to the phonological “bulk” of a morpheme, gives the *-i-* of *handiwork* as an example, inasmuch as it comes from an earlier English *-ge-* with a collectivizing sense (*hand-geweorc* ‘(collection of) things worked on by hand’ but now, he says, only adds phonological material to the word and is no longer a morpheme. However, *hand* is a morpheme, and *work* is a morpheme, so that the principle of exhaustive analysis (see §1) demands that *-i-* be recognized as a morpheme; it no longer contributes to the meaning of the form and so can be said to have (been) desemanticized, but it does serve a function as a compositional element, “gluing” together *hand* and *work* in this particular compound. It may well be, as Greg Stump has pointed out to me, that many speakers have folk-etymologized (i.e. reanalyzed) *handiwork* as a compound of *handy* and *work* (compare *handyman*, *Handi Wipes* (name of a paper towels), and uses such as *handy with a wrench*); such a combination would be noncompositional in meaning, but folk-etymologies are not necessarily semantically impeccable anyway (as the examples in §3.2 suggest). Still, a relation between *hand* and *handi/y* would make segmentation of *handiwork* into *hand-i-work* a possible analysis.

stem it. What is significant for claims about unidirectionality in grammatical change is that the stem it is analyzable into i-t, with the -t found also in the pronouns what and that, seemingly as in OE. The difference between OE and NE in this regard though is that in OE, -t has a grammatical value, whereas in NE it serves a stem-forming function only. This means that in OE, -t was an inflectional marker whereas in NE, it serves a derivational purpose. Thus the change seen here represents a move in which a morpheme goes from being more grammatical to being less grammatical, contrary to the hypothesis of unidirectionality of grammaticalization.<sup>31</sup> Unidirectionality cannot be an absolute constraint on grammatical change, even if it might be a robust tendency.<sup>32</sup>

## 7 Conclusion

In this survey of morphological change, it has been argued that a broad view of what constitutes morphology is illuminating for understanding the pervasiveness of morphological change. Moreover, an argument can be made from diachrony as to the role that morphology plays in language overall. Given how many different strands of linguistic behavior interact in morphological change, and how morphology is an apparent “destination” for many changes – a necessary one if the Unidirectionality Principle is right, a preferred one if it holds in even a weakened form – then on diachronic grounds, one would be justified to consider morphology as occupying a central position in the architecture of grammar. And especially if we view diachrony as the transition through successive synchronic states, the historical facts argue for the centrality of morphology in synchrony as well.

Hamlet, when asked by Polonius “What do you read, my lord?”, responds “Words, words, words”; interestingly, he does not say “Sentences, sentences, sentences” or “Meanings, meanings, meanings”, or “Sounds, sounds, sounds”, or even “Letters, letters, letters”! It seems as if Shakespeare himself understood the relevance and importance — what we can interpret as the centrality — of morphology to speakers, a centrality that the evidence of morphological change itself supports.

## References

- Anttila, Raimo 1977. *Analogy*. The Hague: Mouton de Gruyter.
- Beard, Robert 1995. *Lexeme-Morpheme Base Morphology: A general theory of inflection and word formation*. Albany: SUNY Press.
- Grannes, Alf 1977. The use of the Turkish pluralizer -lär in South Slavic and Albanian. *The New Zealand Slavonic Journal* 3.2, 83–93.
- Haspelmath, Martin 2004. On directionality in language change with particular reference to grammaticalization. In Olga Fischer, Muriel Norde, & Harry Perridon (eds.), *Up and down the cline: The nature of grammaticalization*, 7–44. Amsterdam and Philadelphia: John Benjamins.

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<sup>31</sup> See Joseph 2011, 2014 for other examples of this sort, some involving “Watkins’ Law” (see §3.2 and footnote 19). In general the literature on unidirectionality is huge, too much so to survey here; Norde 2009 has a useful summary with insightful discussion of the general debate over this principle – see also Joseph 2004 and Haspelmath 2004.

<sup>32</sup> But see Joseph 2014 on the difficulty of enumerating grammaticalization and counter-grammaticalization cases so as to compare the numbers of directional changes in a meaningful way.

- Hock, Hans Henrich 1986/1991. *Principles of Historical Linguistics*. Berlin: Mouton de Gruyter (2nd ed., 1991).
- Hogg, Richard 1980. Analogy as a Source of Morphological Complexity. *Folia Linguistica Historica* 1.2, 277–84.
- Hopper, Paul 1994. Phonogenesis. In William Pagliuca (ed.), *Perspectives on grammaticalization*, 29–45. Amsterdam: John Benjamins.
- Hopper, Paul, and Elizabeth C. Traugott 1993/2003. *Grammaticalization*. Cambridge: Cambridge University Press (2nd ed., 2003).
- Janda, Richard D. 1985. From agreement affix to subject “clitic”-and bound root: *mos* > *-nos* vs. *(-)nos(-)* and *nos-otros* in New Mexican and other regional Spanish dialects. *CLS* 31.1, 118–39.
- Janda, Richard D., and Brian D. Joseph 2003a. Reconsidering the Canons of Sound Change: Towards a Big Bang Theory. In Barry Blake, & Kate Burridge (eds.), *Historical Linguistics 2001. Selected Papers from the 15th International Conference on Historical Linguistics, Melbourne, 13–17 August 2001*, 205–19. Amsterdam: John Benjamins.
- Janda, Richard D., and Brian D. Joseph 2003b. On Language, Change, and Language Change — Or, Of History, Linguistics, and Historical Linguistics. In Brian D. Joseph, & Richard D. Janda (eds.), *Handbook of Historical Linguistics*, 3–180. Oxford: Blackwell.
- Janse, Mark 2009. Watkins’ Law and the development of agglutinative inflections in Asia Minor Greek. *Journal of Greek Linguistics* 9, 93–109.
- Joseph, Brian D. 2001. Defining “Word” in Modern Greek: A Response to Philippaki-Warbuton & Spyropoulos 1999. In G. Booij, & J. van Marle (eds.), *Yearbook of Morphology 2001*, 87–114.
- Joseph, Brian D. 2004. Rescuing Traditional (Historical) Linguistics from Grammaticalization “Theory”. In Olga Fischer, Muriel Norde, & Harry Perridon (eds.), *Up and Down the Cline — The Nature of Grammaticalization*, 44–71. Amsterdam: John Benjamins.
- Joseph, Brian D. 2011. Grammaticalization: A General Critique. In Heiko Narrog, & Bernd Heine (eds.), *Handbook of Grammaticalization*, 193–205. Oxford: Oxford University Press.
- Joseph, Brian D. 2014. What counts as (an instance of) Grammaticalization? In Ferdinand von Mengden, & Horst Simon (eds.), *Refining Grammaticalization*, 1–23 (Special issue of *Folia Linguistica*, Vol. 48.2).
- Joseph, Brian D., and Richard D. Janda 1988. The How and Why of Diachronic Morphologization and Demorphologization. In Michael Hammond and Michael Noonan (eds.), *Theoretical Morphology: Approaches in Modern Linguistics*, 193–210. San Diego: Academic Press.
- Kuryłowicz, Jerzy 1945–49. La nature des procès dits ‘analogiques’. *Acta Linguistica* 5, 15–37.
- Lightner, Theodore 1975. The Role of Derivational Morphology in Generative Grammar. *Language* 51, 617–638.
- Lightner, Theodore 1983. *Introduction to English Derivational Morphology*. Amsterdam: John Benjamins.
- Mańczak, Witold 1957. Tendences générales des changements analogiques. *Lingua* 7, 298–325; 387–420.
- Méndez Dosuna, Julian 1997. Fusion, fission, and relevance in language change: deuniverbation in Greek verb morphology. *Studies in Language* 21, 577–612.
- Norde, Muriel 2009. *Degrammaticalization*. Oxford: Oxford University Press.

- Thurneysen, Rudolph 1946. *A Grammar of Old Irish* (translated from the German by D. A. Binchy and Osborn Bergin). Dublin: The Dublin Institute for Advanced Studies.
- Watkins, Calvert W. 1962. Indo-European origins of the Celtic verb I. The sigmatic aorist. Dublin: The Dublin Institute for Advanced Studies.
- Winters, Margaret E. 1995. Jerzy Kurylowicz: the so-called laws of analogy. *Diachronica* 12, 113–45.
- Zwicky, Arnold 1994. What is a clitic? In Joel A. Nevis; Brian D. Joseph; Dieter Wanner, & Arnold M. Zwicky (eds.), *Clitics. A Comprehensive Bibliography, 1892–1991*, xii–xx. Amsterdam: John Benjamins.