

# 4 Historical Morphology – Overview and Update<sup>A</sup>

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The topic of historical morphology, examining the ways in which morphological entities and the morphological component of a grammar can change over time, subsumes a number of interrelated issues. Thus in this chapter,<sup>1</sup> several questions are addressed, all of which are diachronic in their focus:

- What can change in the morphological component?
- What aspects of the morphology are stable?
- Where does morphology come from?
- What triggers change in the morphology?
- Is a general theory of morphological change possible?

Moreover, through the answers given to these questions, but especially the first two, several examples of various types of morphological change are also presented.

## 1 What Can Change? What Is Stable?

The easy answer to the first two questions is that just about everything that can be taken as constituting morphology is subject to change, especially so once one realizes that regular sound change can alter the shape of morphs without concern for the effect of such a change in pronunciation on the morphological system;<sup>2</sup> thus, for example, once-distinct case endings can fall together by regular sound change (as a type of “syncretism”), as happened with the nominative plural, accusative plural, and genitive singular of (most) consonant-stem nouns in Sanskrit.<sup>3</sup> Still, morphological change goes beyond mere change induced by sound change, affecting not just the actual realizations of morphemes but also the categories for which these forms are exponents and the processes and operations by which these forms are realized. Thus it is possible to

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find change in the form taken by the various types of inflectional morphology, such as markings for person, number, gender, agreement, case, and the like, as well as the addition or loss or other alteration of such categories and the forms that express them; in the derivational processes by which stems are created and modified, and in the degree of productivity shown by these processes; in the morphological status (compound member, clitic, affix, etc.) of particular elements; in the overt or covert relationships among morphological elements, and more generally, in the number and nature of the entries for morphemes and words in the lexicon; etc. Some examples are provided below.<sup>4</sup>

For instance, the category of person in the verbal system of Greek has seen several changes in the form assumed by specific person (and number) endings. Ancient Greek allomorphy between *-sai* and *-ai* for the 2SG.MEDIOPASSIVE.PRESENT ending (generally<sup>5</sup> distributed as *-sai* after consonants, e.g., perfect indicative *tétrip-sai* ‘you have (been) rubbed ((for) yourself),’ from *tríb-* ‘rub’, and *-ai* after vowels, e.g., present indicative *timāi* ‘you honor (for) yourself,’ contracted from /timae-ai/, or *lúēi* ‘you are unloosing for yourself,’ contracted from /lúe-ai/) has been resolved (and ultimately, therefore, reduced) through the continuation of a process begun in Ancient Greek. (Note vowel-stem middle forms like *deiknu-sai* ‘you are showing (for) yourself’ already in Classical Greek) that resulted, via the extension of one allomorph into the domain of the other, in the generalization of the postconsonantal form into all positions in Modern Greek, giving, e.g., *timáse* ‘you honor yourself’ (as if from earlier \*tima-sai).) Similarly, the ending for 3PL.MEDIOPASSIVE.IMPERFECTIVE.PAST in some Modern Greek dialects has innovated a form *-ondustan* from the *-ondusan* found earlier (and elsewhere); the involvement (via a type of change often referred to as contamination or blending)<sup>6</sup> of the 1PL/2PL endings *-mastan* / *-sastan* is most likely responsible for the innovative form, inasmuch as the innovative form shows the introduction of an otherwise unexpected *-t-* in exactly the same point as it occurs in the 1PL/2PL endings. As a final example, also from verbal endings but from a different language group, there is the case of the West Germanic 2SG.ACTIVE ending; the inherited ending from Proto-Germanic was *\*-iz* (as in Gothic *-is*), yet it underwent the accretion of a marker *-t*, giving forms such as Old English *-est*, Old High German *-ist*, which is widely held to be a reflex of an enclitic form of the second person pronoun *þu*<sup>7</sup> bound onto the end of a verbal form (thus probably the result of cliticization, on which see below).

A change in the realization of number marking alone can be seen in the familiar case of the nominal plural marker /-s/ in English, for it has been spreading at the expense of other plural markers for centuries. For instance, the earlier English form *shoo-n*, as a plural of ‘shoe,’ with the plural ending *-n* still found in *oxen*, has given way to *shoe-s*, with the most frequent and indeed default plural ending *-s*; in this case, the marker has not passed from the language altogether, as *oxen* shows, but the domain of a particular marker has come to be more and more restricted and that of another has been expanded. The “battleground” here in the competition between morphemes is constituted by particular lexical items and the markings they select for.<sup>8</sup>

Somewhat parallel to such changes in the form of endings themselves are changes in effects associated with the addition of such endings. The affixation of the plural marker /-s/ in English occasions voicing of a stem-final fricative with a relatively small set of nouns, all inherited from Old English, e.g., *loaf* ([lowf]) / *loaves* ([lowv-z], *house* ([haws]) / *houses* ([hawz-əz]), *oath* ([owθ]) / *oaths* ([owð-z]), etc., though the

default case now is to have no such voicing, as indicated by the fact that nouns that have entered the language since the Old English period do not generally participate in this morphophonemic voicing, e.g., *class*, *gaff*, *gas*, *gauss*, *gross*, *gulf*, *mass*, *oaf*, *puff*, *safe*, *skiff*, etc.<sup>9</sup> Many nouns that do show this voicing are now fluctuating in the plural between pronunciations with and without the voicing, so that [owθs] for *oaths*, [(h)wɔrfs] for *wharves*, and (especially) [hawsəz] for *houses* can be heard quite frequently.<sup>9</sup> It is likely that the innovative pronunciations will eventually “win out”, thereby extending the domain of the default plural marking and essentially assimilating this class of nouns to the now-regular class.<sup>10</sup>

The creation of new markers also represents a change.<sup>c</sup> Thus when the early Germanic nominal suffix \*-es-, which originally was nothing more than a stem-forming element, i.e. an extension onto a root to form certain neuter noun stems, as indicated in the standard reconstruction NOM.SG \*lamb-iz ‘lamb’ versus NOM.PL \*lamb-iz-a,<sup>11</sup> was reinterpreted, after sound changes eliminated the final syllable of the singular and plural forms, as a marker of the plural, a change in the marking of (certain) plural nouns in Germanic came about.<sup>12</sup> The ultimate form of this marker, -(e)r with the triggering of umlaut in the root (e.g., OHG nominative singular *lamb* / nominative plural *lambir*, NHG *Wort* / *Wört-er* ‘word/words’) reflects the effects of other sound changes and reinterpretations involving umlaut in the root triggered by suffixation.<sup>13</sup>

With regard to case markings, one can note that evidence from unproductive “relic” forms embedded in fixed phrases points to an archaic Proto-Indo-European inflectional marker \*-s for the genitive singular of at least some root nouns, which was then replaced in various languages for the same nouns as \*-es or \*-os, affixes which existed as allomorphic variants marking genitive singular already in Proto-Indo-European, in use with different classes of nouns. For example, the Hittite form *nekuz* ‘of evening’ (phonetically [nek<sup>w</sup>ts]), in the fixed phrase *nekuz meḫur* ‘time of evening,’ with its \*-s ending, can be compared with Greek *nukt-ós*, Latin *noct-is*, with the innovative endings \*-os/-es.<sup>14</sup> Similarly, the genitive ending \*-os (as above, with a variant \*-es), which can be inferred for *n*-stem nouns such as *óno-ma* ‘name’ (with *-ma* from \*-m̥)<sup>15</sup> in Pre-Greek based on the evidence of Sanskrit *nāmn-as* and Latin *nomin-is* ‘of a name,’<sup>16</sup> underwent a cycle of changes in historical Greek. It was first altered through the accretion of a *-t-*, giving *-tos* (e.g., *ónómatos*); although the exact source of this *-t-* is disputed and although it is found ultimately in other cases, it seems to have arisen earliest with the genitive,<sup>17</sup> and so its appearance perhaps shows some influence from an ablative adverbial suffix \*-tos found in forms such as Sanskrit *ta-tas* ‘then, from there’ or Latin *caeli-tus* ‘from heaven.’ Whatever its source, though, it at first created a new genitive singular allomorph *-tos*, yet later when this *-t-* was extended throughout the paradigm, giving forms such as the dative singular *ónóma-t-i* (for expected \*ónomn-i, cf. Sanskrit locative *nāmn-i*), the *-t-* became a virtual stem extension.<sup>d</sup> At that point, one could analyze *ónoma* as having been “relexicalized” with a different base form /onomat-/, thereby reconstituting the genitive ending again as *-os* for this noun class.

Another relatively common type of change in the realization of case-endings involves the accretion of what was originally a postposition onto a case-suffix, creating a virtual new case form. This process seems to have been the source of various “secondary local” cases in (Old) Lithuanian (Stang 1966: 175–176, 228–232), such as the illative, e.g., *galvôn* ‘onto the head,’ formed from the accusative plus the

postposition \*n (with variant form \*na) 'in' (probably connected with Slavic *na* 'on') and the allative, e.g., *galvôspi* 'to(ward) the head,' formed from the genitive plus the postposition \*pie (an enclitic form of *priê* 'at'), where influence from neighboring (or substrate) Balto-Finnic languages is often suspected as providing at least a structural model.<sup>18</sup> Similar developments seem to underlie the creation of an innovative locative form in Oscan and Umbrian, e.g., Oscan *húrtín* 'in the garden' (so Buck 1928: 114), where a postposition *en* is responsible for the form of the ending,<sup>19</sup> and may be viewed in progress in the alternation between a full comitative postposition *ile* 'with' in modern Turkish (e.g., *Ahmet ile* 'with Ahmet,' *Fatma ile* 'with Fatma') and a bound suffix-like element *-(y)le* (with harmonic variant *-(y)la*) e.g., *Ahmetle*, *Fatmayla*). It should be noted, however, that though common, the development these combinations apparently show, from noun-plus-free-postposition to noun-plus-case-suffix, is not unidirectional; Nevis (1986), for instance, has demonstrated that in most dialects of Saame (previously known as Lappish), an inherited sequence of affixes \*-pta-k-ek/n marking abessive has become a clitic word (*taga*, with variant *haga*), and more specifically a stressless postposition, while in the Enontekiö dialect, it has progressed further to become a nonclitic adverb *taga*.<sup>20,E</sup>

As the Turkish example suggests, in Lithuanian and Oscan, there most likely was a period of synchronic variation between alternates before the ultimate generalization of a new case-form.<sup>21</sup> There can also be variation of a cross-linguistic sort here, in the sense that what is ostensibly the same development, with a postposition becoming a bound element on a nominal, might not lead to a new case-form if the overall "cut" of the language does not permit the analysis of the new form as a case-marked nominal. For instance, the special first and second person singular pronominal forms in Spanish, respectively, *migo* and *tigo*, that occur with the preposition *con* 'with' and which derive from Latin combinations of a pronoun with an enclitic postposition, e.g., *mē-cum* 'me-with,' could be analyzed as oblique case-marked pronouns. However, they are probably are not to be taken in that way, since there is no other evidence for such case-marking in the language, neither with pronouns other than these nor with nouns; one could just as easily, for instance, treat the element *-go* as part of a(n admittedly restricted) bipartite discontinuous "circumposition" *con...-go*.<sup>22,F</sup>

As examples involving the creation of new case forms show, inflectional categories, e.g., ALLATIVE in Old Lithuanian, can be added to a language. Indeed, a typical change involving categories is the addition of a whole new category and the exponents of that category, though sometimes the addition is actually more a renewal or reinforcement of a previously or already existing category, as with the LOCATIVE in Oscan. Loss of categories, though, also occurs. For instance, historical documentation reveals clearly that the dual was present as an inflectional category in the verbal, nominal, and pronominal systems of early Greek (cf. the Ancient Greek ending *-methon* noted above in endnote 6), yet there are no traces of the dual in any system in Modern Greek; similarly, a dual category is assumed for the Proto-Germanic verb based on its occurrence in Gothic and is attested for the personal pronouns of earlier stages of the Germanic languages (e.g., Old English *ic* 'I' / *wē* 'we/PL' / *wit* 'we/DU'), yet such pronominal forms are not found in any of the modern Germanic languages, and verbal dual forms occur nowhere else among the older, nor indeed the more recent, Germanic languages. Thus as an inflectional category, one for which paradigmatic forms exist or might be expected to exist, dual number is no longer present in Greek or Germanic.<sup>G</sup>

Similarly, there was a loss of a synthetic perfect tense between Ancient Greek and late Koine Greek, so that Ancient forms such as *léluka* ‘I have untied’ became obsolete relatively early on in the Post-Classical period; compare the merging of perfect and simple past tense for some speakers of Modern English, for whom *Did you eat yet?* is as acceptable as *Have you eaten yet?*. Actually, though, the reconstitution (and thus addition) of the category “perfect” occurred in the Medieval Greek period through the development of a periphrastic (analytic) perfect tense with ‘have’ as an auxiliary verb out of an earlier ‘have’ future/conditional tense.<sup>23,H</sup>

In the case of the Greek perfect, the Medieval innovation led to what was a new category, for there had been a period of several centuries in Post-Classical times when there was no distinct perfect tense. In some instances, though, it is not so much the creation of a new category but rather the renewal of the category through new morphological expression. The future in Greek provides a good example, for throughout its history, Greek has had a distinct future tense, contrasting formally and functionally with a present tense and a past tense, but the expression of the future has been quite different at different stages: the synthetic, suffixal, monolectic future in Ancient Greek (e.g., *grápsō* ‘I will write’) gave way in Post-Classical times to a variety of periphrastic futures with infinitives plus auxiliary verbs, first with ‘have,’ later with ‘want’ (e.g., *thélō grápsēin*, literally ‘I-want to-write’), in which the parts maintained some independence (e.g., they could be separated by adverbs or inverted), but which in turn have ultimately yielded a new synthetic, monolectic future formed with a bound inseparable prefixed marker (in Standard Modern Greek, *tha*, as in *tha grápsō* ‘I will write’).<sup>24</sup>

There can be change as well in the content of a category, which, while in a sense a semantic shift, nonetheless can have morphological consequences, in that the category comes to be realized on elements not originally in its domain. For instance, the Slavic languages have developed a subcategory of “animacy” within the set of nominal gender distinctions, marked formally by the use of genitive forms where accusatives occur for inanimates; in early stages of Slavic (as represented, for example, by the earliest layer of Old Church Slavonic), only certain types of male humans (e.g., adults or freemen as opposed to children or slaves) participated in such “animacy” marking, while later on, a wider range of nouns came to belong to this subcategory (e.g., in Russian, nouns for females show the animate declensional characteristic in the plural, and in the language formerly known as Serbo-Croatian and now referred to as Bosnian/Croatian/Montenegrin/Serbian, an animal noun such as *lava* ‘lion’ follows the animate pattern).<sup>25</sup>

Similar to change in the content of a category is the possibility of change in function/value of a morpheme: morphology involves the pairing of form with meaning, so it is appropriate to note here as well instances in which there is change in the function of a morpheme, even though that might also be better treated under the rubric of semantic change. For instance, the development of the German plural marker *-er* discussed above in section 1 clearly involves a reassignment of the function of the suffix *\*-iz-* ( $\Rightarrow$  *-er*) from being a derivational suffix serving to create a particular stem-class of nouns to being an inflectional marker of plural number. So also, the polarization of *was/were* allomorphy in some dialects of English to correlate with a positive/negative distinction, so that *were* is more likely to occur with *-n’t* than is *was* (Trudgill 1990, Schilling-Estes and Wolfram 1994), shows a reinterpretation of allomorphy that once signaled singular versus plural (or indicative versus subjunctive).

The changes illustrated so far have been fairly concrete, in that they concern the phonological realization of morphological categories or the categories themselves (which need some realization). There can also be change of a more abstract type, and a particularly fruitful area to examine is the matter of lexical relations. The components of grammar concerned with morphology, whether a separate morphological component or the lexicon, reflect the relationships that exist among forms of a language, whether through lexical “linking” rules, lexical redundancy rules, or common underlying forms. Significant changes can occur in the salience of certain relations, to the point where forms that were clearly related at an earlier stage of the language are just as clearly perceived by speakers at a later stage not to be related. Etymological dictionaries<sup>26</sup> provide dozens of examples involving separate lexical items that have lost any trace of a connection except for those speakers who have secondarily acquired knowledge of the relationship, e.g., *two* and *twine*, originally a ‘double thread’ (both from the earlier root for ‘two’), or *yellow* and *gall* (both originally from a root for ‘shine,’ but with different original vocalism and different suffixal formations),<sup>27</sup> to name just a few such sets from English. This situation frequently arises with words that are transparent compounds at one stage but lose their obvious composition. For instance, the modern English word *sheriff* derives from an Old English compound *scīrgerēfa*, literally the “reeve” (*gerēfa*) of the “shire” (*scīr*), but is not obviously connected in any way with Modern English *shire* or *reeve*; nor is *lord* plausibly connected synchronically with *loaf* or *ward*, the modern continuations of its Old English components (*hlāford*, literally “bread-guardian,” from *hlāf* ‘bread’ plus *weard* ‘guardian’). In these cases, both sound changes, which can obscure the once-obvious relationship, as with *l(-ord)* and *loaf*, and semantic changes, as with *(l-)ord* and *ward* (the latter no longer meaning ‘guardian’), can play a role in separating once-synchronically related lexical items.<sup>28</sup> And, borderline cases provide some difficulties of analysis; for instance, are the semantically still compatible words *two* and *twelve* to be synchronically related in Modern English, and if so, does *two* derive from a form with an underlying cluster /tw-/? To a certain degree, the answers to such questions will depend on meta-theoretical concerns, such as a decision on the degree of abstractness to be allowed in morphophonological analyses (on which, see below).

In the face of such examples of change, it is equally important to reflect on what does not or cannot change in the morphology. To the extent that there are well-established principles and constructs that are taken to be part of the basic theoretical framework for morphology, e.g., Lexical Integrity, Morphology-Free Syntax, disjunctive ordering for competing morphological rules, or the like, presumably these will not change; they are the theoretical building blocks of any account of the morphological component, and thus cannot change diachronically (though they can of course be altered by linguists in their descriptions/accounts if synchronic or diachronic facts make it clear, for instance, that syntax is not morphology-free, or the like).

Among these theoretical building blocks are some that have a significant impact on diachronic accounts of morphology, in particular those that allow for the determination of the borderlines between components of grammar. That is, it is widely recognized that there is interaction at least between morphology and phonology (witness the term “morphophonology,” and the possibility of phonological constraints on morphological rules) and between morphology and syntax (witness the term “morphosyntax”). Thus it becomes appropriate to ask how to tell when some phenomenon crosses the border from “pure” phonology into “morphology,” or vice-versa, or from “pure” syntax into

“morphology”; although there is a purely synchronic question here of how to characterize a given phenomenon in a given language for a given period of time, the matter of cross-ing component boundaries is also a diachronic issue. If a once-phonological phenom-e-non comes to be completely morphologically conditioned, and is considered to be part of the morphological component and not the phonological component, then there has been a change in the grammar of the language with regard to that phenomenon; the surface realization of the forms may not change, but the grammatical apparatus under-lying and producing or licensing those surface forms has changed. Thus when the vowel-fronting induced by a following high vowel (so-called “umlaut”) in early German came in later stages of the language, when the phonetic motivation for the fronting was obscured or absent on the surface, to be an effect associated with the addition of certain suffixes (e.g., the diminutive *-chen*, the noun plural *-e*, etc.) or with the expression of certain categories (e.g., plural of certain nouns which take no overt suffix, such as *Bruder* ‘brother,’ with plural *Brüder*), one interpretation is that the umlauting process is no longer phonological in nature but rather is a morphological process invoked by certain morphological categories.<sup>29</sup> Similarly, at a stage in which the expression of locatives in (pre-)Oscan was accomplished by a noun plus a postposition, syntactic rules that license postpositional phrases were responsible for the surface forms; when the noun fused with the postpositional element to such an extent that a virtual new case-marker was created, the responsibility for the ultimate expression of the locative would have moved out of the realm of syntax and into the morphological component.

These examples and the relevance of theoretical decisions separating components of grammar point to the need to recognize the impact that the theory of grammar one adopts has on diachronic analyses. For example, permitting a degree of abstractness in phonological analyses can often allow for a description that is purely phonological rather than morphological in nature. Umlaut in German, for instance, could still be considered to be purely phonological, if each suffix or category now associated with umlaut of a stem were represented underlyingly with a high front vowel to act as the triggering segment; deleting that segment before it could surface would have to be considered to be allowable abstraction. Similarly, the palatalizations of stem-final velars in various Slavic languages that accompany the attachment of certain suffixes (e.g., Russian adjectival *-nyj*, as in *vostoč-nyj* ‘eastern’ from the noun *vostok* ‘(the) east’) were once triggered by a suffix-initial short high front vowel (the “front jer”) that ultimately was lost in most positions in all the languages; thus a synchronic purely phonological analysis could be constructed simply by positing an abstract front jer that triggers the palatalization and is then deleted.<sup>30</sup>

## 2 Where Does Morphology Come From?

The examples in section 1 show that the primary source of morphology is material that is already present in the language, through the mediation of processes of reseg-mentation and reinterpretation applied in a variety of ways, as well as by other pro-cesses of change, e.g., sound changes, that lead to grammaticalization. In addition, morphology may enter a language through various forms of language contact.

Thus examples of blending or contamination involve preexisting material, as in the case of Greek 1DUAL.MEDIOPASSIVE ending (see endnote 6), where a “crossing” of

the 1PL.MEDIOPASSIVE ending *-metha* with the 2DUALMEDIOPASSIVE ending *-sthan* yielded *-methon*. In a parallel fashion, when a sequence of elements is resegmented, i.e., given a different “parsing” by speakers from what it previously or originally had, material already in the language is given a new life. The English *-ness* suffix, for instance, derives from a resegmentation of a Germanic abstract noun suffix *\*-assu-* attached to *n*-stem adjectives, with subsequent spread to different stem-types; thus *\*ebn-assu-* ‘equality’ (stem: *\*ebn-* ‘even, equal’) was treated as if it were *\*eb-nassu-*, and from there *\*-nassu-* could spread, as in Old English *ehtness* ‘persecution’ (from the verb *eht-an* ‘to pursue’) or *gōdness* ‘goodness’ (from the adjective *gōd*). The extreme productivity of this new suffix in Modern English, being able to be added to virtually any new adjective (e.g., *gauche-ness*, *uptight-ness*, etc.) shows how far beyond its original locus a form can go, and also how the productivity of a morpheme can change, since *-ness* originally had a more limited use.

Other types of reanalysis similarly draw on material present at one stage of a language in one form and transform it at a later stage. In many cases of desyntacticization, for instance, where once-syntactic phrases are reinterpreted as word-level units with affixes that derive from original free words or clitics, as in the Oscan locative discussed above, the same segmental material is involved, but with a different grammatical status. Sometimes, though, such reanalyses are accompanied (or even triggered) by phonological reductions, so that the result is just added segmental material with no clear morphological value; the *-t* of Old English *wit* ‘we two,’ for instance, comes from a phonologically regular reduction of the stem for ‘two’ in an unstressed position, that is from *\*we-dwo*, and similar cases involving old compounds, e.g., *sheriff* and *lord*, were noted above in section 1. Moreover, when sound changes obscure the conditioning factors for a phonologically-induced effect, and a new morphological process arises, as with umlaut in German, again what has occurred is the reanalysis of already existing material, in this case the fronting of a stem vowel that accompanies the addition of an affix; the new process is then available to spread into new contexts, having been freed from a connection to a particular phonological trigger. And, as noted in Joseph (2003), such a development is thus morphologically, and not phonologically, determined, so that the morphological component is added to without there being “grammaticalization” in its classical sense; this can be taken as a reason for preferring a term like “morphologization” over a seemingly more general one like “grammaticalization” (see also endnote C).

Sometimes semantic shifts are involved in such reanalyses. The well-known example of the new suffix *-gate* in English is a case in point. This suffix originated from the phrase *Watergate affair* (or *scandal* or the like), referring to the events in the aftermath of a burglary at the Watergate apartment complex that brought down the Nixon administration in the early 1970s, through a truncation of the phrase to *Watergate* (e.g., *Nixon resigned because of Watergate*) and a reanalysis in which the *-gate* part was treated as a suffix and not the compound-member it originally was in the place-name *Watergate*. It then spread, giving coinages such as *Irangate* (for a scandal in the 1980s involving selling arms to Iran), *Goobergate* (for a scandal alleged in 1979 to have involved then-President Carter’s peanut warehouse), and numerous others.<sup>31</sup> What is especially interesting about this reanalysis is that in the process of *-gate* becoming a suffix, there was a shift in its meaning, so that in *Xgate*, the suffix *-gate* (but not the free word *gate*) itself came to mean ‘a scandal involving X,’ an abbreviation, as it were, for ‘a scandal involving X reminiscent of the Watergate scandal.’<sup>1</sup>

Other processes similar to these that create pieces of words produce as well new lexical items and thus contribute to the morphological component, to the extent that it includes the lexicon. Without going into great detail, one can note active processes of word-formation such as compounding, acronymic coinage (e.g., *cpu* (pronounced [sɪpiju]) for *central processing unit*, *ram* ([ræm]) for *random-access memory*, *rom* ([ram]) for *read-only memory*, etc.), clipping (e.g., *dis* from (*show*) *disrespect*, *prep* from *prepare* and from *preparatory*, *vet* from *veteran* and from *veterinarian*, *rad* from *radical*,<sup>1</sup> etc.), lexical blends (e.g., *brunch* from *breakfast* crossed with *lunch*, etc.), phrasal truncations (such as the source of the word *street* via a truncation, with a semantic shift, of Latin *via strāta* ‘road (that has been) paved’ to simply *strāta*), and so on. It is worth noting here that whereas virtually any piece of a word can be “elevated” to status as a free word via clipping, even suffixes, inflectional morphemes seem to be resistant to such an “upgrading”; thus although *ism* as a free word meaning ‘distinctive doctrine, system, or theory’ (AHD 2000, s.v.) has been extracted out of *communism*, *socialism*, etc., instances in which suffixes like English *-ed* or *-s* become words for ‘past’ or ‘many’ or the like appear not to exist.

One final language-internal path for the development of morphology involves instances in which the conditions for an analysis motivating a sequence of sounds as a morpheme arise only somewhat accidentally. In particular, if a situation occurs in which speakers can recognize a relation among words, then whatever shared material there is among these words can be elevated to morphemic status. This process is especially evident with phonesthemes, material that shows vague associative meanings that are often sensory based, such as the initial sequence *gl-* in English for ‘brightly visible’, as in *gleam*, *glitter*, *glisten*, *glow*, and the like. Some linguists are hesitant to call these elements morphemes, and terms like quasi-morpheme, sub-morphemic unit, and others have been used on occasion, even though by most definitions, they fulfill the criteria for being full morphemes. Leaving aside the synchronic issue they pose for analysis, it is clear that they can come to have some systematic status in a grammar, for they can spread and be exploited in new words; for instance, *glitzy*, whether based on German *glitzern* ‘to glitter’ or a blend involving *ritzy*, nonetheless fits into the group of other “bright” *gl-* words. A good example of this process is afforded by the accumulation of words in English that end in *-ag* ([-æɡ]) and have a general meaning referring to ‘slow, tired, or tedious action,’ specifically *drag* ‘lag behind,’ *fag* ‘grow weary,’ *flag* ‘droop,’ and *lag* ‘straggle,’ all attested in Middle English but of various sources (some Scandinavian borrowings, some inherited from earlier stages of English); once there were four words with a similar meaning and a similar form had entered the language by the thirteenth or so century, an analysis was possible of this *-ag* as a (sub-)morphemic element. That it had some reality as such a unit is shown by the fact that these words “attracted” a semantically related word with a different form into their “orbit” with a concomitant change in its form; *sag* ‘sink, droop’ in an early form (sixteenth century) ended in *-k*, yet a perceived association with *drag*/*fag*/*flag*/*lag* and the availability of *-ag* as a marker of that group brought it more in line with the other members, giving ultimately *sag*.<sup>k</sup>

The example of *-gate* above also shows language contact as a source of new morphology in a language, for it has spread as a borrowed derivational suffix into languages other than English; Schuhmacher (1989) has noted its presence in German, Kontra (1992) gives several instances of *-gate* from Hungarian, and Joseph (1992)

provides examples from Greek and Serbo-Croatian (what would now be called Bosnian-Croatian-Serbian). Numerous examples of borrowed derivational morphology are to be found in the Latinate vocabulary in English, but it should be noted also that inflectional morphology can be borrowed. Various foreign plurals in English, such as *criteria*, *schemata*, *alumnae*, etc., illustrate this point, as do the occurrence of Turkish plural endings in some (now often obsolete) words in Albanian of Turkish origin, e.g., *baba-llarë* 'fathers,' *bej-lerë* 'landlords,' etc. (Newmark et al. 1982: 143),<sup>32</sup> and the verb paradigms in the Aleut dialect spoken on the island of Mednyj, which show Russian person/number endings added onto native stems, e.g., *uŋuč-i-ju* 'I sit' / *uŋuč-i-it* '(s)he sits,' etc. (Thomason and Kaufman 1988: 233–238).<sup>1</sup>

Although it is widely believed that inflectional morphology is particularly resistant to borrowing and to being affected by language contact, Thomason and Kaufman (1988) have shown that what is crucial is the social context in which the contact and borrowing occurs. Thus the intense contact and the degree of bilingualism needed to effect contact-induced change involving inflectional morphology simply happen not to arise very often, so that any rarity of such change is not a linguistic question per se. Moreover, the spread of derivational morphology across languages may actually take place through the spread of whole words, which are then "parsed" in the borrowing language; the *-gate* suffix in Greek, for instance, occurred first in labels for scandals that followed the English names directly (e.g., "Irangate") before being used for Greek-internal scandals.

### 3 What Triggers Change in the Morphology?

Historical linguists tend to divide causes of change into those internal to the linguistic system itself and those that are external, i.e., due to language contact.<sup>M</sup> The discussion in section 2 shows that language contact indeed is one potential cause of morphological change, and under the right social conditions for the contact, virtually any morphological element (inflectional, derivational, bound, free, whatever) can be transferred from one language to another. Examining contact-induced morphological change then becomes more a matter – an important one to be sure – of cataloguing the changes and determining the sociolinguistic milieu in which the contact occurs.<sup>33</sup> There is far more to say, however, about internal forces triggering change in the morphology.

From a consideration of the examples above, it emerges that much of morphological change involves "analogy," understood in a broad sense to take in any change due to the influence of one form over another.<sup>34</sup> This process is most evident in blending or contamination, where there is mutual influence, with a part of one form and a part of another combining, but it extends to other types of morphological change as well. For instance, the spread of *-t-* described above in the stem of Greek neuter nouns in *-ma* involved the influence of the genitive singular forms, the original locus of the *-t-*, over other forms within the paradigm. Such paradigm-internal analogy, often referred to as "leveling," is quite a common phenomenon. An interesting example, to be reexamined below from a different perspective, involves the reintroduction of *-w-* into the nominative of the adjective for 'small' in Latin: in early Latin, the adjective had nominative singular *paruos* and genitive *parw-ī*, and paradigmatic allomorphy *par-os* versus *parw-ī*

resulted when a sound change eliminated *-w-* before a round vowel; paradigm-internal analogical pressures led to the restoration of the *-w-*, giving ultimately the Classical Latin forms *parvus* / *parvī*.

Analogical influence among forms is not restricted to those that are paradigmatically related. Two elements that mark the same category but with different selectional properties can exert analogical pressures, leading to the spread of one at the expense of another.

Examples of such analogies include cases across form-classes where the elements involved are different morphemes, as with the spread of the *-s* plural in English at the expense of the *-(e)n* plural, discussed in section 1, as well as cases where one conditioned allomorphic variant extends its domain over another, thereby destroying the once-conditioned alternation, as with the spread of the Greek 2SG.MEDIOPASSIVE ending *-sai*, also discussed above.

Similarly, in cases of “folk etymology,” speakers reshape a word based on other forms that provide what they see as a semantically (somewhat) motivated “parsing” for it; for example *tofu* for some speakers is pronounced [tofu] as if a compound with *food*,<sup>N</sup> and *crayfish*, first borrowed from French in the fourteenth century as *crevice*, was remade as if containing the lexeme *fish*. In such cases, which are quite common with borrowings or words that are unfamiliar for reasons such as obsolescence, there is influence from one form being brought to bear on the shape of another. More generally, many cases of reanalysis/reinterpretation involve some analogical pressures, especially when the reanalysis is induced by models that exist elsewhere in the language; for instance, when Middle English *pease*, a singular noun meaning ‘pea,’ was reanalyzed as a plural, allowing for the creation (by a process known as “backformation”) of a singular *pea*, the influence of other plurals of the shape [...V-z] played a role.

Thus there is a cognitive dimension to (certain types of) morphological change, in the sense that it often involves speakers actively making connections among linguistic forms and actively reshaping their mental representations of forms.<sup>35</sup> Indeed, analogy as a general mode of thinking and reasoning has long been treated within the field of psychology, and studies by Esper (e.g., Esper 1925 and the posthumous Esper 1973) were an early attempt to determine the psychological basis for analogical change in language.<sup>36</sup> More recently, analogical change has been viewed from the perspective of a theory of signs; Anttila (1972/1989), for instance, has argued that the semiotic principle of “one form to one meaning” drives most of analogical change in that levelings, form-class analogies, folk etymology, and the like all create a better fit between form and meaning, while proponents of Natural Morphology<sup>37</sup> similarly work with the importance of degrees of iconicity in the form-meaning relationship and, for example, evaluate changes in the marking of inflectional categories or derivational relationships in terms of how they lead to a better fit with universal iconic principles. Even grammaticalization has been given a cognitive interpretation; Heine, Claudi, and Hünemeyer (1991: 150), for instance, have argued that “underlying grammaticalization there is a specific cognitive principle called the ‘principle of the exploitation of old means for novel functions’ by Werner and Kaplan (1963: 403)” and they note that in many cases, grammaticalization involves metaphorical extension from one cognitive domain, e.g., spatial relations, to another, e.g., temporal relations (as with *behind* in English).<sup>38</sup>

Moving away from these more cognitive, functional, and/or mentalistic views of what causes morphological change, one can find various formal approaches to analogy. The most notable<sup>39</sup> is a generative approach in which analogy is nothing more than

changes in the rule system that generates a given paradigm. The Latin case mentioned above whereby a paradigm of *parw-os/parw-* yielded *par-os/parw-* by sound change and finally *parvus/parv-* by paradigm leveling could be seen as the addition of a rule of  $w \rightarrow \emptyset$  before round vowels (the sound change) operating on an underlying form for the nominative with the *-w-*, and then the loss of that rule giving the underlying stem-final *-w-* a chance to surface once again. What is left unexplained in such an account is why the rule would be lost at all; early generative accounts (e.g., King 1969, Kiparsky 1968) simply gave a higher value to a grammar with fewer rules or features in the rules (but then where, as Andersen (1973: 766) asked, would added rules come from, and why would they even be added in the first place?), or unnatural rule orderings, whereas later accounts (especially Kiparsky 1971) gave higher value to grammars that generated paradigm-internal regularity, a condition that tacitly admits that the traditional reliance on the influence of related surface forms had some validity after all. Another type of generative reinterpretation of analogy is that given by Anderson (1988), who, as observed in endnotes 8 and 10, sees “analogies” such as the spread of the English *-s* plural or the loss of morphophonemic voicing in certain English plurals as being actually changes in the lexically idiosyncratic specifications for the inflectional markings, derivational processes, and the like selected by particular lexical items.

Finally, any discussion of causes must make reference to the fact that as is the case with all types of language change, the spread of morphological innovations is subject to social factors governing the evaluation of an innovation by speakers and its adoption by them. Indeed, if one takes the view that true language change occurs only when an innovation has spread throughout a speech community,<sup>40</sup> then the various processes described here only give a starting point for a morphological innovation, but do not describe ultimate morphological change in the languages in question. The presence of synchronic variation in some of the changes discussed above, as with the loss of morphophonemic voicing in English plurals, shows how the opportunity can arise for nonlinguistic factors to play a role in promoting or quashing an innovation.

## 4 Is a General Theory of Morphological Change Possible?

Over the years, there have been numerous attempts at developing a general theory of morphological change, and the approaches to the causes of morphological change outlined in the previous section actually represent some such attempts. To a greater or lesser extent, there have been successes in this regard. For instance, the recognition of a cognitive dimension to analogy and to grammaticalization has been significant, as has the corresponding understanding of the role of iconicity. The generative paradigm has been embraced by many, but a few further comments about it are in order.

Most important, as noted above, an account of analogical change in paradigms that is based on changes in the rules by which the paradigms are generated does not extend well to analogical changes that cannot involve any rules, such as blends or contamination. As Hock (1991: 256) points out, a development such as Middle English *femelle* (a loan word from French) becoming *female* by contamination with *male* does not involve any generative rules, yet it still took place and one would be hard-pressed to account for the change in the vocalism of this word without some reference to pressure

from the semantically related *male*. Similarly, the change discussed by Anttila (1972/1989: 89), in which the nominative singular of the uniquely inflected word for ‘month’ in the Elean dialect of Ancient Greek became *meús* (with genitive *mēn-ós*, versus, e.g., Attic nominative *meís*), based on the uniquely inflected word for the god Zeus (nominative *Zeús*, genitive *Zēn-ós*), could not involve any generative phonological rules since both words were the only members of their respective declensional classes and thus probably listed in the lexicon rather than rule governed in terms of their inflection.<sup>41</sup> On the other hand, the semiotic and cognitive views of analogy, for instance invoking a one-form-to-one-meaning principle, can provide a motivation not only for the putative cases of analogy as rule-change but also for those that could not involve rule change.<sup>42</sup> Moreover, cases of bi-directional leveling, as presented by Tiersma (1978) with data from Frisian, in which some paradigms involving a particular phonological rule are “leveled” as if the rule had been lost, while others involving the same rule are “leveled” as if the rule had been generalized, make it difficult to give any predictive value to a rule-based approach to analogy.<sup>43</sup> Finally, the recognition of paradigm uniformity as a part of the evaluation metric in Kiparsky (1971) is tantamount to recognizing analogy in its traditional sense. As Anttila (1972/1989: 129, 131) puts it: “What rule changes always describe, then, is the before-after relationship. They give a mechanism for description, not a historical explanation [...] Rule change is not a primary change mechanism, but an effect.”

This is not to say, however, that traditional analogy is not without some problems. As has frequently been pointed out, it often seems unconstrained, and there is an element of unpredictability with it: When will analogy occur? What direction will leveling take? Which forms will serve as models? etc. In part to address this uncertainty about the workings of analogy, some scholars have attempted to formulate a set of general tendencies or regularities governing analogy. The two most widely discussed schemes are those of Kuryłowicz (1945–1949)<sup>44</sup> and Manczak (1958). A full discussion of these proposals is beyond the scope of the present chapter,<sup>45</sup> but it is generally held that Kuryłowicz’s “laws” are, as Collinge (1985: 252) citing Anttila (1977: 76–80) puts it, more “qualitative and formal” in nature whereas Manczak’s tendencies are more “quantitative and probabilistic.” It can be noted also that some of their specific proposals complement one another, some are contradictory, some are tautologous and thus of little value, but some,<sup>46</sup> e.g., Manczak’s second tendency (“root alternation is more often abolished than introduced”) and Kuryłowicz’s first “law” (“a bipartite marker tends to replace an isofunctional morpheme consisting of only one of these elements”) are valuable tools in analyzing analogical changes, as they represent reflections of tensions present in language in general, respectively the need to have redundancy for clarity and the desire to eliminate unnecessary or unmotivated redundancy. Moreover, Kuryłowicz’s fourth “law” has, in the estimation of Hock (1991: 230), proven to be “a very reliable guide to historical linguistic research.” This “law,” which states that an innovative form takes on the primary function and the older form it replaces, if it remains at all, does so only in a secondary function, can be exemplified by the oft-cited case<sup>47</sup> of English *brethren*; this form, originally a plural of the kinship term *brother*, is now relegated to a restricted function in the meaning “fellow members of a church,” or the like, and significantly, cannot be used in the primary sense of *brothers* as a kinship term.

Other general tendencies of morphological change have been proposed and have proven quite useful. For instance, there is the important observation by Watkins (1962) that third person forms are the major “pivot” upon which new paradigms are

constituted.<sup>48</sup> However, as with other proposed principles, “Watkins’ Law” is also just a tendency;<sup>o</sup> the change of the 3PL past ending in Modern Greek to *-ondustan* discussed in section 1, which shows the effects of pressure from 1PL and 2PL endings on the 3PL, might constitute a counterexample, for instance.

In the end, it must be admitted that much of morphological change involves lexically particular developments, and it is significant that even the spread of analogical changes seems to be tied to particular lexical items; thus unlike sound change, which generally shows regularity in that it applies equally to all candidates for the change that show the necessary phonetic environment, morphological change, especially analogical change, is sporadic in its propagation. Thus, as shown in section 1, even with the vast majority of nouns in English now showing an innovative *-s* plural, a few instances of the older *-(e)n* marker remain in *oxen*, *children*, and *brethren*.

Therefore, it may well be that for morphological change, a general theory, that is, a predictive theory, is not even possible, and all that can be done is the cataloguing of tendencies, which, however valid they may be, do not in any sense constitute inviolable predictions about what types of changes will necessarily occur in a given situation. In that sense, accounts of morphological change are generally retrospective only, looking back over a change that has occurred and attempting to make sense of it.

## 5 Conclusion

Although morphological change in general shows much that is unpredictable, the examples provided herein give a good overall view of the types of changes that are likely to be encountered in the histories of the languages of the world, the causes underlying these changes, and the ways linguists have gone about explaining the observed changes. One final observation on the extent of the domain of morphological change is in order. Much of morphological change, as described here, involves changes in lexical items – in their form, in their selectional properties, in their relations to other lexical items, and so on – and this is all the more so if inflectional affixes are listed in the lexicon instead of being introduced by morphological rules. It is generally accepted that at least certain types of sound changes involve lexeme-by-lexeme spread (the cases of so-called lexical diffusion, cf. Wang 1969 but especially Labov 1981, 1994) and it seems that in some instances, at least, the impetus for the spread of a pronunciation into new lexical items is essentially analogical in nature.<sup>49</sup> Also, there are many so-called irregular sound changes, e.g., metathesis or dissimilation, that apply only sporadically, and thus end up being lexically particular rather than phonologically general. Moreover, at least certain types of changes typically relegated to the study of syntactic change, for instance changes in agreement patterns, grammaticalization, movement from word to clitic to affix, reduction of once-biclausal structures to monoclausal,<sup>50</sup> and the like, then much of syntactic change other than word order change ultimately involves morphology or at least “morpho-syntax” in some way. Thus it is possible to argue that much, perhaps most, of language change has a morphological/morpholexical basis, or at least has some morphological involvement. Such a view would then provide some diachronic justification for the importance of morphology in language in general and thus for a morphological component in the grammars of particular languages.<sup>51</sup>

## NOTES

- A This chapter is a fresh version of Joseph (1998), a survey article published in an earlier handbook (Zwicky and Spencer 1998) by Blackwell Publishers, a company later purchased by the present publisher; as I said there pretty much all I wanted to say about the topic for this type of article, what I have done here is provide some additional insights and updates to the 1998 chapter, as well as some rewriting here and there as seemed appropriate. Where entirely new notes have been added, they are marked by capital letters (as with this one), while the notes in the 1998 version remain marked by numbers, though they too have in some instances been revised or added to. The bibliographic references have been updated, and the newly added ones should be self-evident (i.e., post-1998). Somewhat different takes on a survey of morphology viewed diachronically are provided in Joseph (2017) and Anderson (2015).
- 1 I gratefully acknowledge a fellowship from the American Council of Learned Societies Joint Committee on Eastern Europe and a sabbatical leave from the College of Humanities, The Ohio State University, both of which enabled me to produce the present piece, an earlier version of which appeared in *Ohio State University Working Papers in Linguistics* 46: 16–37 (1995). I would like to thank Rex Wallace, Nigel Vincent, and Richard Janda for helpful comments on this chapter. I owe a considerable intellectual debt to Joki Schindler, who opened my eyes in the 1970s to the wonders of diachronic morphology and whose stimulating lectures provided some of the examples included herein; I dedicate this work to his memory and trust that it serves as a lasting monument to his influence in our field.
  - 2 This statement conceals a large controversy which cannot adequately be discussed here, namely whether sound change, as the Neogrammarians conceived of it, is a purely mechanical phonetic process that is blind to the specific morphemes and words on which it operates and to their morphological composition, e.g., whether they are morphologically complex or monomorphemic. Thus in principle, one could imagine that sound changes could be morphologically conditioned, and so could fail to apply in, or could apply only to, certain categories or particular morphemes. The evidence, however, seems to be in favor of viewing sound change as being only phonetically conditioned in its outcome at least, with apparent cases of nonphonetic (so-called “grammatical”) conditioning being the result of phonetically conditioned sound change followed by analogical (morphological) change. See Hock (1976) for some discussion and relevant literature; more recently, Hill (2014) revisits the issue and provides penetrating discussion of a number of examples, ultimately supporting the Neogrammarian view. See also the chapters by Hinskens and Yu in this handbook for discussion of the Neogrammarian position from the phonetic side.
  - 3 These endings all have the form *-as* in Sanskrit, but, as comparisons with other Indo-European languages show, they derive from three different sources (GEN. SG *\*-os*, cf. Greek *pod-ós* ‘of a foot’; NOM. PL *\*-es*, cf. Greek *pód-es* ‘feet’; ACC.PL *\*-ns*, cf. Greek *pód-as* ‘feet’).
  - 4 These examples are drawn primarily from the languages I know best and thus am best able to vouch for; they therefore have what might be perceived as an Indo-European bias. However, there is every reason to believe that the same types of examples are to be found in other languages, and that the phenomena illustrated here are not Indo-European-only types of changes. See, for instance, Bloomfield (1946: §18–20), Anttila (1972/1989: 91, 97), Robertson (1975), Hock (1991: 200–202), and Dai (1990) for some examples from Algonquian, Estonian, Mayan, Maori, and Mandarin Chinese, respectively, to mention just a few well-established cases from other language families.

- 5 But see below regarding forms like *deiknusaí* that disturb this otherwise regular allomorphic pattern.
- 6 The Ancient Greek innovative 1DUAL.MEDIOPASSIVE ending *-methon*, which filled a gap in the paradigm (note the absence of a 1DUAL.ACTIVE form) and seems to have arisen as a blend of 1PL.MEDIOPASSIVE ending *-metha* with the 2DUAL.MEDIOPASSIVE ending *-sthon* (note also the 2DUAL.ACTIVE *-ton*), provides another example of a change in a personal ending due to blending/contamination. See Joseph (2009) for more examples from Greek.
- 7 The enclitic form, occurring as it does with a stop, presumably reflects a combinatory variant of *pu* after a sibilant.
- 8 See Anderson (1988) for discussion of the spread of the *s*-plural in English; he argues that the mechanism involved is the elimination of lexically specified idiosyncrasies and the emergence of the default marking; he notes that this interpretation is consistent with, and in fact predicted by, the principle of disjunctive ordering for morphological rules. For a similar example from German, where an *-s* marking for plural is spreading, see Janda (1990).
- B There are occasional extensions to loan words. For example, *oaf*, a borrowing from Norse, is given in the *Oxford English Dictionary* (OED) as allowing a plural *oaves* although *oafs* is more common (and *oaves* is not to be found in Brigham Young University's Corpus of Contemporary American English (COCA, <https://corpus.byu.edu/coca/>) where only *oafs* occurs (corpus accessed 21 June 2018)). A clearer example, perhaps, is *scarf*, which according to the OED is "not recorded before the middle of the 16th cent., but probably [is from] Old Northern French *escarpe* ... sash, sling for a wounded arm," and it has a plural *scarves* with voicing (*scarfs* also occurs, though far less often in COCA than *scarves* (36 instances versus 1416 instances of *scarves*), corpus accessed 21 June 2018). See also endnotes 9 and 10.
- 9 For instance, [owθs] and [(h)worfs] are given in AHD (1992) as (innovative) variants; 31 instances of *wharfs* occur in COCA (corpus accessed 21 June 2018). The pronunciation [hawsez] was enshrined in the dictionary only as of AHD (1992). Text-based corpora do not help with the plurals of *oath* or *house* because the orthography is ambiguous between the voiced and voiceless fricative pronunciations.
- 10 As with the spread of the *s*-plural (see endnote 8), this loss of morphophonemic voicing can be seen as the removal of an idiosyncratic specification from the lexical listing of each such noun. See also Anttila (1972/1989: 126–127) for discussion of this example and of parallel ones involving consonant gradation from Baltic Finnic. It should be noted that occasionally, the idiosyncratic marking has occasionally spread to a noun not originally undergoing this process. For example, *wife* was originally a neuter noun with no overt plural marker in Old English (i.e., singular *wīf* / plural *wīf*), so that the plural *wives* represents a spread of the synchronically irregular plural voicing pattern. The same can be said about *dwarves*, an innovative plural that now occurs alongside the older *dwarfs* (in the meaning 'little person,' thus excluding *dwarfs* meaning 'dwarf stars'), which is itself an innovative form based on singular *dwarf* replacing the older plural forms *dwerwhes* / *dwerwes* / *dwerows* / *dwarrows*. The plural *dwarves* may show some analogical pressure from *elf* / *elves*, a word often found in the same fairy-tale contexts as *dwarf* (Hock and Joseph 2009: 158–159).
- C Some linguists might treat at least some of these examples as cases of "grammaticalization," the creation of new grammatical items out of other, typically lexical, material. I choose instead here to focus on the details of particular instances, and generalize only so far as to treat this under the larger rubric of "grammatical change." I do this because for me, the movement of lexical items into grammatical functions is but one development out of many that can affect grammatical items, and need not be privileged with its own special label and set of principles, such as they are. Moreover, some of the claims made under

- the banner of “grammaticalization,” such as unidirectionality, are demonstrably false. See Joseph (2001a, 2003, 2004, 2006, 2011, 2014) for discussion of some relevant points, and see below, in this section, on Saame and endnote 20.
- 11 See, for example, Prokosch (1938) for this reconstruction.
  - 12 The situation is actually a bit more complicated, as is clear from the fact that early Old High German had *-ir-* in some singular forms, specifically the genitive, the dative, and the instrumental; as the suffix came to be interpreted purely as a marker of number, as the nominative forms would lead a speaker to surmise, it disappeared from the singular. Still, Salmons (1994: 224–5), in a thorough discussion of these facts, notes variability, in particular with regard to *-ir-*-less plural forms, throughout the Old High German period and dialect space, and concludes that *-ir-* as marking only plurality was not “firmly established in many dialects.” See also Anderson (1988) for an interpretation in terms of changes in lexical specifications.
  - 13 Note also that since in earlier stages of Germanic, *Wort* did not have this plural marking (cf. OHG SG *wort* / PL *wort*), the extension of this umlaut-plus-(e)r plural marking is a process parallel to the example given of the *-s* plural in English; see also endnotes 8 and 12.
  - 14 That this archaic inflection is embedded in a fixed phrase (similarly also Vedic Sanskrit *dan* ‘house/GEN.SG,’ from \**dem-s*, found in the fixed phrase *patir dan* ‘master of the house’) is not surprising, for it shows the retention of an older pattern in what is in essence a synchronically unanalyzable expression (like an idiom). From a methodological standpoint in doing historical morphology and morphological reconstruction, it is often useful to look to such expressions for clues as to earlier patterns.
  - 15 The reconstruction of the root for this word is somewhat controversial, and only the stem suffix is at issue here, so no attempt is made to give a complete reconstruction.
  - 16 The *\*-os/-es* ending in these languages may itself be a late Proto-Indo-European replacement for an earlier simple *\*-s* ending, based on such forms as the Old Irish genitive singular *anmae* ‘of a name,’ where the ending is from *\*-men-s* (so Thurneysen 1970: 60); hence the specification “Pre-Greek” is used here for the ending since it may not be the oldest form of this inflectional ending with this noun in Proto-Indo-European.
  - 17 A *-t-* extension is found with several other nominal stem classes in Greek, for instance, the neuter *-as* stems, but it is not found with all members of the class and a few specific nouns, e.g., *kréas* ‘meat,’ show it earliest in the genitive singular (fourth century BC), with spread to other case-forms coming much later. Even with a noun like *ónoma* which, as noted below, shows the extension of the *-t-* into other case forms, early (Homeric) Greek shows no (metrical) trace of the *-t-* in the dative plural (see Chantraine 1973: 74–75, 82–83).
  - D Anghelina (2004, 2008) traces the ways in which this *-t-* formative spread, sporadically within dialects and differentially across dialects, into various noun types of ancient Greek.
  - 18 See Thomason and Kaufman (1988: 242–243) for some discussion of the substratum hypothesis, though Stang (1966: 228–229) argues against this view.
  - 19 That this one-time postposition has become a true case ending in Oscan is shown by its appearance on an adjective, in apparent agreement with the noun it modifies; see Buck (1928: 114) for this interpretation. This innovative form presumably replaced an inherited locative, still found to a limited extent in Latin.
  - 20 Within the literature on grammaticalization (e.g., Traugott and Heine 1991, Hopper and Traugott 1993/2003), there is much discussion of the claim that grammaticalization developments are subject to a principle of unidirectionality, whereby movement is supposedly always from less grammatical to more grammatical, with meanings always going from concrete to abstract; see Joseph and Janda (1988), Campbell (1991), and Janda (1995, 2001) for discussion of some counterevidence to this claim. See Norde (2009) for a more recent discussion of “degrammaticaliza-

- tion" (movement on the grammaticalization "cline" that runs counter to unidirectionality; notes C and E also have some more recent references).
- E See now Ylikoski (2016) for further discussion specifically of Nevis's Saami case; Ylikoski offers some points of criticism for details of Nevis's interpretation but ultimately accepts the view that degrammaticalization is involved.
- 21 Compare also the situation with morphophonemic voicing in English plurals, discussed above (and see notes 9, B, and 10), and note the on-going variation in the marking of past participles in English, with older *-(e)n* in some verbs giving way to the wider-spread *-ed* (as in *sewn* / *sewed*, *shown* / *showed*, *proven* / *proved*, etc.).
- 22 The Spanish example suggests that changes in case-marking systems are not restricted to the distant past, though the failure of *-go* to spread to other pronouns (indeed, it has retreated somewhat from wider use in older stages of the language) or to use with a number of other prepositions (though see endnote F) argues that it is not really a case-marking device. Similarly, the innovative use in certain varieties of written English of *inwhich*, as in *Shopping is a task inwhich one should enjoy*, has led some researchers, e.g., Smith (1981), and Riley and Parker (1986), to analyze it as a new case form of the relative pronoun, though Montgomery and Bailey (1991), in an extensive study of the use of the form, argue persuasively against that interpretation. Nonetheless, such examples provide the opportunity to witness the fate of case-like forms that occur in a restricted domain of the grammar, and thus provide some insights into the general processes by which such forms can arise and take hold in a language. See also endnote F; Stewart and Joseph (2009) offer an interpretation of the Scots Gaelic pronominal case system in which it has undergone remarkable expansion, from five to fourteen cases.
- F There are occasional extensions of *-go* in that for some speakers it can occur also with pronominal objects of *sin* 'without' (essentially the semantic opposite of *con*), e.g., *sin tigo* 'without you.' While a Google search does not turn up instances of this innovative phrase in actual texts, occasional comments posted on the web about it point to its use by some speakers, e.g., "Pues en México, se oye "sinmigo" y "sintigo" ... Es usado, pero no correcto." ("Well, in Mexico, one hears "sinmigo" and "sintigo" ... it is used, but is not correct.") (<https://forum.wordreference.com/threads/sinmigo-sintigo-sinsigo.395582/> accessed 1 February 2020).
- G It can be noted further that once English lost the dual number, and in particular the dual pronouns, the meaning of original plurals changed from referring to more than two of an item to referring to more than one. This is especially evident in the pronouns, where, e.g., *we*, from the Old English plural *wē*, changed from having a canonical meaning of 'the three or more of us' to having the meaning of 'the two or more of us' when the dual pronoun *wit* (etymologically from a form of *wē* plus a form of *twā* 'two,' thus literally "we-two") fell out of use. Such developments are relevant to historical morphology under the traditional view of a morpheme as a pairing of a form and a meaning.
- 23 Most likely, the path of development was through the conditional tense (past tense of the future) shifting first to a pluperfect (compare the fluctuation in Modern English between a pluperfect form and what is formally a past tense of the future utilizing the modal *would* in *if*-clauses, e.g., *If I had only known* = *If I would have known*), from which a present perfect, and other perfect formations could have developed. See Joseph (1983: 62–64; 2000), for some discussion, an account that draws on and amplifies upon that in Thumb (1912: §227.1).
- H As with the plural pronoun vis-à-vis the dual in Old English (see endnote G), with

- the loss of the perfect as a category, there was a change in meaning for the remaining past tense form, as its function expanded to include perfect meanings.
- 24 The exact path from *thélō grápsein* to *tha yrápsō* is a bit convoluted and indirect but real nonetheless; see Joseph (1983: 64–67; 1990: ch. 5) for discussion and further details, and now also Joseph and Pappas (2002) and Markopoulos (2009). The only elements that can intervene between *tha* and the verb in Modern Greek are other bound forms, in particular the weak object pronouns, which lend themselves to analysis as affixes (see Joseph 1988, 2001b).
- 25 Even in Old Church Slavonic, there was some variability in category membership, and nouns for ‘slave,’ ‘child,’ various animals, etc. showed some fluctuation between animate and nonanimate inflection; see Lunt (1974: 46) and Meillet (1897) for some discussion. The descriptions in Comrie and Corbett (1993) provide a useful overview of the realization of animacy throughout the various Slavic languages. Thomason and Kaufman (1988: 249–250) suggest that this category may have developed through a Uralic substratum shifting to Slavic.
- 26 For English, the *American Heritage Dictionary of the English Language* (4<sup>th</sup> edition, 2000), with its “Appendix I: Indo-European Roots” (and see also Watkins 1985), is an excellent example of such a resource.
- 27 The source of modern English *yellow* is Old English *geolu*, from Proto-Germanic \*gelwaz; *gall* is from Old English *gealla*, from Proto-Germanic \*gallōn-. The Proto-Indo-European root here is \*ghel-.
- 28 Note also that words that are etymologically unrelated can come to be perceived by speakers at a later stage as related, perhaps even merged into different meanings of the same word. For instance, the body-part *ear* and *ear* as a designation of a piece of corn, are etymologically distinct (the former from Proto-Indo-European \*ous- ‘ear,’ the latter from \*ak- ‘sharp’), but are felt by many speakers to be different meanings of one polysemous lexical item.
- 29 See Janda (1982, 1983) for a thorough discussion of the relevant facts supporting this analysis of German umlaut. The productivity of umlaut does not in itself argue for it being phonological still; in that sense, the German situation is now similar in nature, though not in scope, to the very limited umlaut effects present still in English, e.g., in a few irregular plurals (*man / men*, *foot / feet*, etc.) and verbal derivatives (*drink / drench*, etc.).
- 30 Thus there is an important interaction with sound change to note here, for sound change can obscure or remove the conditioning elements for a phonological process, thereby rendering the process opaque from a phonological standpoint and making it more amenable to a morphologically-based analysis. Recall also that sound change can play a role in the reduction of compounds to monomorphemic words and of phrasal units, such as noun plus postposition, to monolexic expressions.
- 31 Many such *-gate* forms are documented in notes in *American Speech*; see Joseph (1992) for references.
- I The form *-gate* is generally just what the OED calls a “comb[ining] form” or “terminal element,” i.e., a bound form, but occasional upgrading to a free word does occur. For instance, in episode 6 of season 5 of the television show “VEEP,” which centers on the use of the highly offensive “c-word,” a character, in response to someone saying “I just blew the lid off of c\*\*tgate,” replies “It’s not a gate,” which provokes the further response “No, it’s very much a gate.” (See [https://tv.avclub.com/\[object%20Object\]](https://tv.avclub.com/[object%20Object]) (accessed 21 June 2018) for details on the episode.)
- J This last example has a decidedly slangy feel to it and has had a relatively short life span. Slang in general has a notoriously short “shelf-life,” so that more recent clippings (with some elaboration) such as *totes*, from *totally*, *peeps*, from *people*, and *fave*, from *favorite*, while

- current as of 2018, may soon feel as dated as *rad*.
- K See Samuels (1968) for discussion of this example and others like it.
- 32 Of course, some of these English forms are susceptible, seemingly more so than native plurals, to reanalysis as singular. The ostensible plural *criteria* is quite frequently used as a singular, and a plural *criteria*s can be heard as well; COCA (accessed 21 June 2018) offers 11 instances, one of which is Bill O'Reilly saying "that's one of the *criteria*s that [i.e., under which] you cannot have arms." Similarly, the Albanian plurals in *-llarë* / *-lerë* show the native plural suffix *-ë* added to the Turkish *-lar* / *-ler*, somewhat parallel to forms like *criteria*s; see Joseph (2016) and Friedman and Joseph (2019: chapter 6.1.4.1) for more detail on the spread of the Turkish plural marker in various languages of the Balkans.
- L Janse (2009), drawing on Dawkins (1916), discusses instances like the Mednyj Aleut case from Asia Minor Greek, involving Turkish inflectional elements added onto Greek verbal endings.
- M This dichotomy, while quite common in the literature over the past 50 years or so (see Joseph 2019 and Joseph and Dawson 2019 for some discussion), masks an important fact, namely that often there is interplay between internal and external factors, with language contact serving to enhance the selection or further development of a particular internal variant. Moreover, wherever an innovation might come from, it needs to spread within a speech community to become fully a part of the language, and spread ("diffusion") by its very nature involves an external dimension, i.e., external to an individual speaker, as the form comes to be used by other speakers.
- 33 The distinction drawn by Thomason and Kaufman (1988) between borrowing and language shift is a crucial one, with the latter situation being the contact vehicle for some of the more "exotic" morphological changes. Their discussion is perhaps the most complete enumeration of the wide range of possible contact-induced changes, including those affecting the morphology. See also endnote 25 above concerning a language-shift source for the introduction of the new animacy subcategory in Slavic.
- 34 See Anttila (1977) and Anttila and Brewer (1977) for basic discussion and bibliography on analogy in language change.
- N Overt spellings of this word as <toefood> can be found, and there is even a Twitter hashtag (see <https://twitter.com/hashtag/toefood> (accessed 21 June 2018)), suggesting that there is some cognitive reality to the claim that this is a folk etymological reshaping based on the similarity in form between *fu* and *food* and the semantic closeness, since *tofu* is a type of *food*. Note that it is hard to motivate the emergence of the final [-d] as a phonological development.
- 35 Analogy can also provide direct evidence for the existence of the tight relations among members of clusters of forms that allow for an inference of a (psychologically) real category. For instance, the fact that *drag* / *fag* / *flag* / *lag* could affect [sæk] and draw it into their "orbit" as *sag*, as discussed above, is prima facie evidence of the strength of the connections among these four words. Similarly, the dialectal extension of the *-th* nominalizing suffix, which shows limited productivity within the domain of dimension adjectives (cf. *wide* / *width*, *deep* / *depth*, etc.) to *high*, giving [hayt] (thus also with some contamination from *height* to explain the occurrence of the *-t-*) can be seen as evidence of the subcategory within which the suffix is productive.
- 36 Another perspective on the cognitive dimension in analogy is provided by Andersen's introduction of the role of abductive reasoning in analogical reanalysis, as discussed most notably in Andersen (1973), (1980).

- 37 Especially the work by Wolfgang Dressler, Willi Mayerthaler, Wolfgang Wurzel, and others; see for instance Dressler et al. (1987), Mayerthaler (1981), and Wurzel (1984). See also Shapiro (1990) (with references) where a somewhat different view of the role of semiotics in language change, as applied to morphophonemics, is to be found.
- 38 Of course, not all grammaticalization involves morphological change, except insofar as it affects lexical items. The papers in Traugott and Heine (1991) contain numerous references to the cognitive dimension of grammaticalization; see also Hopper and Traugott (1993/2003) for discussion and references.
- 39 See also the work by Skousen in which an explicit and formal definition of analogy is used to create a predictive model of language structure; among the tests for this approach, described in Skousen (1989: ch. 5), is its application to historical drift in the formation of the Finnish past tense.
- 40 This view has long been associated with William Labov and is expressed particularly forcefully in Labov (1994: 45): "In line with the general approach to language as a property of the speech community, I would prefer to avoid a focus on the individual, since the language has not in effect changed unless the change is accepted as part of the language by other speakers."
- 41 One could say of course that there has been a change in the morphological rules that introduce the stem variants for 'month,' but that still brings one no closer to understanding why the change occurred. Once 'Zeus' and 'month' share the same patterns of alternation, then a generalization over these two forms is possible, allowing for some simplification in the grammar. However, the change cannot have occurred just to simplify the morphological rules for 'Zeus' somewhat by giving them wider applicability, since a greater simplification would have arisen had the stem-alternation for this noun been eliminated altogether (as it was in some dialects that innovated a nominative *Zēn*).
- 42 Thus *female* makes more "sense," and thus is a better fit between form and meaning, when formally paired with its antonym *male*; similarly, providing a "partner" for the unique stem-alternations of 'Zeus' makes the *Zeus-* / *Zēn*-alternation less irregular, and thus more motivated and easier to deal with from a cognitive standpoint.
- 43 Similarly, note forms such as *dwarves* in English, mentioned above in endnote 10, that run counter to the general leveling out of stem differences due to voicing of fricatives in the plural.
- 44 See Winters (1995) for an English translation, with some commentary, of this important, oft-cited yet generally little-read paper.
- 45 See Vincent (1974), Collinge (1985: 249–253), Hock (1991: chapter 10), and Winters (1995) for more detailed discussion and comparison of the two schemes.
- 46 The statements of these principles and their comparison are taken from the illuminating account in Hock (1991: chapter 10).
- 47 See Robertson (1975) for an example of the fourth law from Mayan.
- 48 See Collinge (1985: 239–240) for discussion and references.
- O A tendency perhaps, but a reasonably well-instantiated one; see Janse (2009) for examples from Cappadocian Greek.
- 49 For example, a possible scenario for lexically diffuse spread of a sound change is the following: if lexical item X shows variation in pronunciation between X and X', and item Y has some of the same phonological features as item X, speakers might extend, analogically using X as the model, the variant pronunciation X' to Y, so that Y comes to show variation between Y and Y'. If the competition is ultimately resolved in favor of X' and Y', the sound change would have been generalized.
- 50 See for example, DeLancey (1991), regarding such clause reduction in Modern Tibetan (discussed in Hopper and Traugott 1993: 198–201).

- 51 In Joseph and Janda (1988), the claim is advanced that grammars are “morpho-centric,” and the prevalence noted above in section 1 of diachronic movement into morphology (from syntax and from phonology), as opposed to the relative rarity of movement out of morphology, is taken as diachronic evidence for the centrality of morphology. This claim is based on an assumption that facts from diachrony can have relevance to the construction and evaluation of synchronic grammars, and to the extent that it is valid, provides some support for treating such facts as important.

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