

Diachrony

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1 Situating the study of inflection in language change

1.1 Introduction

Work on both the origins of morphological inflection and the operations which apply to morphology in language change dates almost to the beginning of the modern era of historical linguistics. Even in the early Nineteenth Century, for example, Bopp (1816) sought to compare morphology between related languages and to use those comparisons as evidence for linguistic relationship; he also paid considerable attention to arguing for the origin of such inflection in independent words.

More recently, a strand of work in morphology has been concerned with the contributions of historical linguistics to the synchronic analysis of morphology. Some things can only be perceived when they move; likewise, some aspects of morphology are most clearly observed when taking into account the evidence of change. Such changes give us insights into how speakers treat the internal organisation of word forms within their language, for example. Chafe (2008:261) makes perhaps the strongest statement of such a view, when he writes “I believe it is impossible to understand language design without taking account of language change, seeing historical processes as shaping the fundamental nature of language.”

Those historical processes are two-fold. First, there is change through language acquisition: in the process of acquiring language, children may come to different generalizations about the structure of their language from the generalizations their parents made (see e.g. Lightfoot 1991, Aitchison 2003, Andersen 1973). Secondly, there is a social component to change: for a change to be actualized within a language, a certain number of speakers must converge on the same analysis, otherwise

the new change cannot spread through a community (Andersen 2001, Harris and Campbell 1995). The changes that we see in language are also shaped in various ways — by constraints on cognitive processing (Yu 2010), by prior structures in the language (Blevins 2004), and by language production (Ohala 2001). Finally, there is a stochastic element in language change; paths of change are not determinative. All these elements are necessary for a general theory of morphological change. To address all such areas with respect to morphology in a single article, however, would be impossible; moreover, most recent work on morphological change has not situated morphology within a research paradigm that views language change in this way. That is, research which builds on the interfaces between the social, the psychological, and the systemic is rather less common than research concerned with questions such as what types of change are possible or natural. Research has thus focused on questions internal to the linguistic system rather than research which relates language change to speaker behaviour.

Here I am concerned in particular with situating current work in morphological change in the wider literature on morphology. I first consider the changes which target morphology, and inflection in particular. That is, are there changes which affect only inflection? Are there areas of morphology which are immune from other types of change, such as regular sound change? Can sound change be conditioned by morphology? These questions are addressed in Section 2. Authors have also been concerned with characterising the nature of morphological change in terms of how ‘natural’ such changes are, what might condition ‘unnatural’ changes, and how this relates to the question of autonomy in morphological change. These are also questions addressed in this section. In Section 3, I discuss sources of morphology; how free words are grammaticalised and into paradigms; how changes can remodel existing morphology, and how new paradigms can be created.

Morphology has played an important role in the proposal and justification of genetic relationships. Some families, such as Algic (Sapir 1913, Goddard 1975), were initially established solely on the resemblances of morphology; in other cases, such as the recent proposal of a Yenisei-Na-Dené family including languages across both sides of the Bering Strait, the establishment of the family relies crucially on the evidence of morphology. In Section 4 I turn to an examination of how morphology has been used to establish language families, and the principles and assumptions

that underlie this use of evidence (in contrast to sound change or lexical items). There are many diachronic issues in inflection, and there is not space to consider all of them. Some morphological issues have assumed particular prominence in work on individual language families. In Pama-Nyungan, for example, morphology, and in particular nominal inflectional morphology and pronouns, have comprised an important part of the evidence for the establishment of subgroups.

Another area that cannot receive attention here (except in passing) is the relationship between morphology and other aspects of language. It is, of course, artificial to consider language change without reference to the social dimensions of change, such as variation within a speech community (see further Kossman; this volume) and the actualisation of change through a group of speakers (Andersen 2001, Timberlake 1977). Also discussed here only in passing change in morphology and its typological correlates (cf. McWhorter 2008, Kiparsky 2008). We seldom have enough data to be able to see how morphology and syntax interact at the micro-level in language change; whether, for example, word order flexibility precedes development of robust agreement inflection or follows it, or is developed contemporaneously (that is, the same processes that lead to one also facilitate the other). This correlation between morphological form and syntactic parameters is ~~seen~~ most clearly in polysynthetic languages, where there are robust syntactic correlates of extensive morphology. While solving problems like this is beyond the scope of this paper, it is clearly an important area of morphological change.

Finally, I will be paying little attention to morphological change and social constraints. While there has recently been prominent work in the role of cultural constraints on grammaticalization (Evans 2003b, Evans and Levinson 2009), and while there is clearly a cultural element to types of grammaticalization (particularly in derivational morphology and the grammaticalization of social categories in language, such as honorifics and “kintax” (Evans 2003b)), detailed discussion here is beyond the scope of this paper. My goal has been to synthesise work in diverse areas of historical linguistics which is of particular relevance for synchronic morphologists.

2 Life-cycles of inflection: types of change in inflection

Several previous authors have identified a typology of the changes which take place in morphology. The most comprehensive of these are Koch (1996) and Anderson (1988); their changes include, in addition to regular sound change which operates on fully inflected forms, various types of boundary shift (such as the absorption of material into stems or the reanalysis of one morpheme as two¹), and analogical changes such as paradigm regularization. Other views of morphological change have focused either on the creation of inflectional material through grammaticalisation,² or on analogical changes (Lahiri 2003). Of the four chapters on morphological change in Joseph and Janda (2003), for example, two deal with analogy, one (Anttila 2003) discusses naturalness, and one focuses on the creation of morphological material from syntax.

2.1 Typologies of Morphological Change

In this section I present an overview of types of morphological change, drawing heavily from Anderson (1988), Koch (1996), and Chafe (1998, 1999) (see also Haspelmath 1994). The typology of boundary changes is due to Koch (1996), while those of morphological interaction are largely accounted for in Chafe (1999). The overall categorization of changes, however, is my own. Morphological change can be divided into four different areas, which are summarised in (1) below and discussed in more detail in the following sections.

- (1) a. Change in the formal realisation of morphemes (allomorphy) (Section 2.1.1)
- b. Change in the placement of boundaries between morphemes (Section 2.1.2)
- c. Creation, loss and change of morphological categories (Section 2.1.3)
- d. Change in morpheme ordering (Section 2.1.4)
- e. Change in the content, meaning or function (Section 2.1.5)

Note that topics such as ‘analogy’, ‘refunctionalization’ and morphophonology are here not treated as unitary, but are instead spread over several sub-areas of change. This treatment is deliberate. After all, analogical change is not a unitary

phenomenon; rather, analogy is a description of a mechanism by which forms which are related in some way interact with each other.³ Furthermore, in providing subtypes of morphological change, I do not mean to imply that more than one type of change cannot happen simultaneously.

2.1.1 Changes in Formal Realization

Morphology can change through sound change. That is, sound changes apply to fully inflected words, and not to word pieces. Such a statement is unsurprising, of course, since sound change is a consequence of factors involving speech perception and speech production on sound strings. It does not apply directly to roots or affixes within the mental lexicon. Examples are not difficult to find; the example given here in Table 1 is from Bethwyn Evans (pers. comm.) and illustrates cognate words in five Oceanic languages (see also Evans 2003a:240-266). The multiplicative prefix can be reconstructed to Proto-Oceanic as *paka-; the changes illustrated here are morphological in that they apply to an affix, but are no different from regular sound changes elsewhere in the lexicon.

Language	(be) two	do/happen twice	sound changes the language
Sinaugoro	<i>ruarua</i>	<i>vaa-ruarua</i>	*p > v, *k > ø
Nakanai	<i>i-lua</i>	<i>vaka-lua</i>	*p > v
Arosi	<i>rua</i>	<i>haʔa-rua</i>	*p > h, *k > ʔ
Bauan Fijian	<i>rua</i>	<i>vaka-rua</i>	*p > v
Samoaan	<i>lua</i>	<i>faʔa-lua</i>	*p > f, *k > ʔ
*paka-			

Table 1: Multiplicative prefix in selected Oceanic languages

Sound change can create allomorphy. This occurs whenever an environmentally conditioned sound change occurs on an affix which appears in multiple environments, not all of which are subject to the change. The sound change of the loss of intervocalic *s in Greek, for example, affected stems which ended in a vowel, but not those that ended in a consonant. This created two realizations of the future in Attic Greek—one with s, the other without. Compare the future of a consonant-final root such as *deik-s-ō* (δείξω) ‘point out’, which retains the s, with a vowel-final stem such as *phile-* ‘love’, which has future *philō* (φιλήω), contracted from *phile-ō* (φιλέω)

and earlier from *phile-s-ō.

A similar stem-conditioned creation of allomorphy through sound change is found in the Arandic (Pama-Nyungan) language Kaytetye, where the imperfective suffix has two allomorphs, *-rranytye* (IPA /-ɾaɲɟə/) and *-ranytye* (IPA /-ɾaɲɟə/). The form with the trill is the general (elsewhere) allomorph, while the allomorph with the glide is found after stems containing coronals (Koch 1996:225). Anderson (1988) provides extensive discussion of this type of change and its implications for phonological theory.

The previous examples all involved the creation of morphological alternations through sound change, and that is the primary way in which such alternations arise. However, alternations are occasionally created through semantic splits, rather than through phonology. In such cases, the allomorphs are associated with particular meanings, rather than phonological environments. In Proto-Karnic, for example, the ergative case had two allomorphs, *-lu and *-ŋku, which were most probably conditioned by the number of syllables in the stem. In the daughter language Pitta-Pitta (Blake 1979), however, the former allomorph has been reanalyzed as the past tense ergative marker, while *-ŋu*, the descendent of *-ŋku, marks future ergative and nominative subjects (Bower 2004b).

It has occasionally been claimed that morphology can condition sound change; that is, that some morphemes are immune from sound change, or that changes can be confined to certain word classes.⁴ This is, however, controversial, and many apparent morphologically conditioned sound changes appear to have other plausible explanations once they are further investigated. For example, several subgroups of Pama-Nyungan languages show a rule of homorganic cluster reduction which appears confined to affixes. Wider consideration, however, shows that the rule most likely applies to clusters in the third syllable (or later) in the word. The most common reconstructible clusters in this position come from case markers, however, since longer reconstructible roots are quite rare. See Alpher (2004) for further information. Further examples of such changes can be found in Garrett and Blevins (2009), who present an analysis of three cases where morphophonological rules arise from analogical extension rather than sound change.

Grammatical “trapping” can also lead to the appearance of morphology conditioning sound change. In such cases, a morpheme or clitic is preserved in some

phonological environments but not in others. This leads to the appearance of a grammatically conditioned sound change. Consider the case of l-loss in Northern Paamese (Crowley and Bower 2010:174). Crowley presents what is at first sight a fairly clear case of grammatical conditioning of a sound change. In this language, there is a sound change that deletes initial *l from words before non-high vowels, and medial *l between *e and a non-high vowel. The change word-initially does not, however, apply to verbs. Illustration is given in (2):

- (2) a. Nouns:
- i. *leiai > eiai ‘bush’
 - ii. *alete > aet ‘flat area’
 - iii. *gela > kea ‘he/she crawled’
- b. Verbs:
- i. *leheie > lehei ‘he/she pulled it’
 - ii. *loho > loh ‘he/she ran’

Blevins and Lynch (2009) show that the conditioning environment is explicable without an appeal to grammatically conditioned sound change. They argue that the third person singular irrealis prefix *mi- (and other high-vowel prefixes) inhibited the application of the sound change. However, those prefixes were subsequently lost.

Analogical changes provide another type of change in formal morpheme realization; some types of analogies result in the replacement of one morphological form with another. Such changes are well-known from the handbooks and need not be rehearsed here. Sound changes can be subject to secondary analogical changes which obscure their origin in regular sound change. For example, in the Greek example described above, several classes of vowel-final roots have had the s-allomorph of the future reintroduced by analogy to forms that would have regularly lost it.

2.1.2 Boundary placement changes

The second type of morphological change involves the placement of morpheme boundaries (or, in non-morphemic theories of word formation, on changes in word formation rules). Boundaries may be lost, created, or moved within a word. This

may occur through several different processes, including analogical changes which result in the reanalysis of the internal structure of a word, thus changing the placement of the morpheme boundary. This is found, for example, in a number of words borrowed into English which end in *s*, including *cerise* ‘cherries’ (most probably from Old Northern French *cherise*). In this case, the word *cheris(e)* was reanalyzed as plural and the final consonant (which was part of the root) was taken as the plural marker. Such cases of boundary reanalysis are no doubt aided by the fact that cherries tend to occur in clusters, thus making plural forms for this word rather more frequent than for items which tend to occur singly. It remains to be seen whether there is similar frequency skewing which biases boundary shifts in other cases.

Boundaries may be lost when productive morphology becomes unproductive. This is more frequently associated with derivational morphology than inflectional, but examples of inflectional morphology being absorbed into stems do exist. One common case involves the fossilisation of case marking in adverbial words; several examples are found in Bardi (Nyulnyulan), where the ‘source’ case *-joon* appears fossilized in adverbs, and in the occasional noun such as *loomijoon* ‘orphan’. The word *loomijoon* is no longer treated as derived from *loomi* and can receive additional case marking. Latin also shows boundary deletion in adverbs such as *quā* ‘where, in which place’, where the form, although historically a feminine ablative singular, no longer declines and no longer has the properties of an ablative-marked nominal.

A common cause of morpheme boundary movement involves a change where a sound change triggers a reanalysis. The following example is from Longgu, but equivalent cases are found in many other parts of the world. In some cases, stems ending in a consonant lose that consonant at a word boundary; when the stem is followed by a suffix, however, the consonant resurfaces; a sample paradigm is given in Table 2 (forms from Hill (1992)).⁵

In the case of Longgu, transitive verb forms are built from intransitive ones by the addition of a suffix; this suffix was historically **-i* (see Evans 2003a) and the first consonant of the synchronic transitive marker was part of the root. A sound change which led to the loss of final consonants in the language also led to the reanalysis of the form of the transitive morpheme as *-Ci*. Since the final root consonants were unpredictable in pre-Longgu, this change has led to arbitrary conjugation classes in the language. A similar change has led to unpredictable forms in Māori passive

INTRANS.	Gloss	TRANS.	Gloss	Suffix Allomorph
<i>bere</i>	look	<i>bere-ŋi-</i>	see sth	- <i>ŋi</i>
<i>aŋi</i>	cry	<i>aŋi-si-</i>	cry for sth	- <i>si</i>
<i>eno</i>	lie down	<i>eno-vi-</i>	lie on sth	- <i>vi</i>
<i>maʔu</i>	be frightened	<i>maʔu-ni-</i>	be frightened of sth	- <i>ni</i>
<i>moa</i>	vomit	<i>moa-li</i>	vomit on sth	- <i>li</i>
<i>lilimo</i>	drown	<i>limo-zi-</i>	drown s.o.	- <i>zi</i>

Table 2: Longgu stem alternations

formation (Biggs 1961, Hale 1974, Kenstowicz and Kisseberth 1979).⁶

In other cases, there is no such sound change to trigger the reanalysis. Haspelmath (1994:9) describes a case of boundary shift which he calls “root secretion”. In this change, a non-affixal part of a root is reanalyzed as part of a suffix, which is then generalized to other words. Haspelmath gives the example of Greek *mélan-* ‘black’ and its causative *melaín-(ō)* ‘make black’. The causative is reanalyzed as *-aín-* and extended to other words, such as *leuk-aín-(ō)* ‘make white’ (root *leuk-*). Most of Haspelmath’s examples come from derivational morphology, but such changes are also sporadically found in inflectional material. Vondrák (1906:11) gives the example of Slavonic, where the final vowel of *u-* and *i-* stems was reanalysed as a case ending. The ending subsequently spread to other declension classes. As Haspelmath points out (and before him, Plank 1981:75), changes of this type provide evidence that the model of word formation which most parsimoniously accounts for diachrony in morphology is one which does not appeal to strict segmentation.

A further example of boundary shifts is known as Watkins’ Law. This name was given by Koch (1994) to the process by which third person singular marked forms are reanalysed as containing no affixal material; they then serve as the base for other inflections. This is illustrated by the changes in the Old French paradigm given in Table 3.

While such changes are well described in the literature, the triggers for such boundary reanalyses are not, as yet, well understood. Some general principles can be noted, and some specific rationales for why some changes occur more frequently than others can be proposed. Some such changes are presumably driven primarily by acquisition. Others, such as Watkins’ Law, are perhaps more puzzling, or are

	earlier	later
Sg1	canté-i	cantét-e
Sg2	canté-st	cantét-es
Sg3	canté-t	cantét-ø
Pl1	canté-m	cantét-em
Pl2	canté-tz	cantét-etz
Pl3	canté-ren	cantét-on

Table 3: Old French reanalysis of the third person singular as unmarked

shaped by more subtle processes. For example, while linguists note a cross-linguistic tendency for third person forms [for](#) to be bare roots or stems, speakers do not, of course, know this, and in the Old French case, there are no morphological cues within the language that would lead speakers to an analysis of third person subject verbs as null marked. Some such changes are discussed under the rubric of “natural morphology” (Dressler 2003).

2.1.3 Creation, Loss and Change of Morphological Categories

The changes discussed thus far have been system-preserving in that no new morphological categories have been created or lost. Many morphological changes are indeed of this type, for categories may be reinforced with new morphological material (see, for example Heath 1997, 1998) if eroded. This apparent stability has been the rationale for the use of morphological categories—without necessary correspondences in form—in language classification (see further Section 4 below). Hymes (1956), for example, used morphological categories and their relative orders to argue for a relationship between Athabascan languages, Haida and Tlingit, even in the absence of cognate morphemes. Others invoke a concept of morphological stability in more general terms. Haspelmath (1993:306), for example, argues that “certain types of change are motivated by speakers’ attempts not to deviate too much from older patterns.”

Not all morphological features are equally stable, however (see further [Corbett and Cysouw’s](#) contributions to the current volume). Moreover, there is substantial disagreement regarding which features are likely to be typologically persistent, and therefore diachronically stable. Proposals are given in Nichols (1992) and Wichmann

and Holman (2011), amongst others. On current data, however, it is very difficult to systematically distinguish temporally stable features from those which are easily diffusible. In the former case, the feature is old and persistent; in the latter, it is widespread, but may or may not be stable once acquired.⁷ Heine and Kuteva (2005) and Heine (2011) have argued for the recognition of a concept of “grammaticalization area”; that is, a set of contact-induced changes amongst language in contact in a particular geographical area where languages grammaticalise the same features. Heine (2011) provides examples of parallel grammaticalisation under language contact. The presence of such areas is not unexpected if there is a heavy social component to language change; however, more explicit discussion is [needed](#) about the assumptions that identification of “grammaticalization areas” entail.

New categories in a language can be the result of extensive language contact. Ross (2001) gives numerous examples of syntactic and morphological features which have diffused between Takia and Waskia. Adelaar (2006:300–301) gives the examples of the distributive category marked by a suffix *-kama*, which has been borrowed from Quechua into Amuesha. Bardi (Nyulnyulan, Australian) has an adjectival suffix *-wan*, which comes ultimately from English “one”, via North Australian Kriol.

Although much of this section has focused on the role of language contact in the creation of new morphological categories, this is not the only way in which we find new categories arising. One way is through the routinisation and grammaticalisation of material that exist in collocations in earlier stages of the language. Evans (2003b:23–29) provides discussion of the grammaticalization of kinship marking in pronouns or verbal marking in several unrelated languages in Australia, and Chafe (1999) invokes a similar principle to explain the creation of new pronoun forms in Iroquian languages. Grammaticalization processes are very well studied, of course; see Heine and Kuteva (2005) and Hopper and Traugott (1993) for overviews, amongst many other references. However, grammaticalization does not only create new morphological categories. Such processes may also add members to existing paradigms. In the history of Latin, for example, the imperfect endings *-bam*, *-bas*, *-bat*, etc, were grammaticalised from periphrastic auxiliary constructions comprising the main verb and a conjugated form of the verb ‘to be’ (see further Sihler 2008:554–55).

Finally, morphological categories may change through the amalgamation or split of paradigms. Newman (1980), for example, describes a number of such changes in

Salish languages. In this type of change, paradigms are amalgamated, syncretised, or otherwise blended to form new paradigms.

2.1.4 Changes in the order of morphemes

Morphological reordering as a raw change is not common, although changes which result in permutations of the underlying (linear) order of affixes are found in language. This often, though not always, proceeds from change from less iconic to more iconic ordering; for example, derivational inflection closer to the root, or case affixes outside of number affixes. In other cases, an apparent shift in morpheme order is the result of ~~more~~ a more complex set of changes. Gur languages, for example, have noun class affixes, just as most Bantu languages do. However, the Gur affixes are suffixes, while languages elsewhere in Niger-Congo (including Bantu) have prefixes. The material marking the noun classes is cognate, it simply occurs in a different position in the word (Dimmendaal 2001:377–79). Prefixation can be reconstructed to Proto-Niger-Congo (Williamson 1989:31–40), and the sequences of change which led to suffixation in Gur were as follows. Bantu languages have widespread noun class concord within the Noun Phrase; this concord is marked on demonstratives, for example. Williamson argues that demonstratives were post-nominal (as they are in contemporary Bantu languages). The demonstratives were semantically bleached, phonologically reduced, and subsequently grammaticalized as suffixes to the noun. The earlier noun prefix markers were then lost through sound change, leaving formally similar (and cognate) material as suffixes. In this case, the morpheme reordering is an incidental outcome of a chain of changes affecting word structure, phonology and morphology.

Morphological categories may be reinforced with additional marking, leading to change. This was seen in the Gur example in the previous paragraph, though the reinforcement was subsequently lost. A clear example of reinforcement in morphology comes from Donohue's (2003) analysis of the origin of complex subject agreement in the Skou language of Northern New Guinea. In this language, agreement for subject is marked in several different ways—by a proclitic, which can appear on both the subject NP and the verb; the verb itself may take both proclitic subject markers and prefixes which indicate person and number. Finally, the verb itself shows alternations in vowels for features of the subject, such as whether it is plural,

or feminine (see Donohue 2003:481–87). An example is given in (3) below:

- (3) a. *Nì nì=lúe.*
1SG 1SG=1SG-know
“I know.”
b. *Mè mè=p-úe.*
2SG 2SG=2SG-know
“You (sg) know.”
c. *Te te=r-í.*
3PL 3PL=3PL-know.PL
“They know.” (All examples from Donohue 2003:485, ex. (22))

The word *lúe* ‘hear, know’ is part of a paradigm which shows both initial consonant variation for subject person and number, while the vowel of the verb also covaries with features of the subject (*rí* for third person plural, for example). Donohue shows from comparative evidence that a probable trigger for this marking reinforcement was a sound change that led to the reduction of consonant clusters. He argues that as sound change has eroded the morphological marking of the agreement categories, new markers have been added to reinforce the distinctions. However, we have no way of telling when such categories will be reinforced (as in Skou), or when they simply disappear from the language.

2.1.5 Changes in Meaning

The final area of change here is semantic change. While we saw in Section 2.1.1 that morphology does not interact with sound change independently from the stem to which it attaches, in the domain of semantic change, we do have some evidence for the autonomy of morphology. That is, morphological categories can change meaning independently of the stems to which those morphemes attach. In other cases, fully inflected words can change their meaning, leading to morpheme boundary shifts and creation of sub-paradigms. Chafe (2008, 1999) illustrates this process using examples from Seneca. Finally, some changes which appear to be confined to morphology alone are the reflexes of changes within larger structures.

Many instances of semantic change in morphology involve the same processes of change that we see in other domains of semantics. For example, meaning can be

broadened or narrowed, and there can be changes in meaning driven by metaphor or metonymy. Some of these changes appear to be unidirectional. Semantic change in progressive verbal tense markers, for example, shows an overwhelming tendency towards bleaching rather than narrowing (Deo 2006).

Some semantic change in morphology can lead to very large changes in meaning. As mentioned above, in the Australian language Pitta-Pitta (Karnic, Pama-Nyungan), for example, certain case markers have been reanalyzed as tense markers (see Bower 2004a for details). The ergative allomorphs *-ŋu* and *-lu* have split, with the former marking the subjects (both transitive and intransitive) of future verbs; the latter is the ergative marker in non-future clauses. The trigger for the change in the morphology was most likely not, however, within the case marking system directly, but a more general reanalysis of a construction marking unrealized actions, involving both case marking and verbal morphology. There are other instances of change, however, where change in morphological function does not appear to be tied to a larger construction, but is confined to the morpheme directly. We find, for example, shifts in the marking of spatial cases. In the history of Latin, for example, the ablative case absorbed the functions previously associated with the locative, which fell out of use except for a few fossilized forms.

How such processes occur in grammar remains controversial. For those who model such changes at the level of individual grammars, the problem can be avoided somewhat by treating the object of analysis as two synchronic grammars, each inferred by each speaker from the surrounding data and therefore only indirectly comparable (Hale 2007). For those who take a population view of language change, however, the preconditions of change and their mechanics require more detailed investigation (see further Urban (2011) for discussion of these points). For example, it is unclear whether such changes occur to ‘constructions’ or to specific lexemes (or lexical collocations). Analogies may be drawn with sound change here, where it is debated whether changes operate on individual lexical items and subsequently spread through analogy, or whether they operate on sounds and sound classes. Labov (2007) and other work provides evidence that both types of changes may occur under different conditions. The same may well be true of morphological change. Chafe’s work on change and the rise and reinforcement of morphological complexity (e.g. Chafe 1998, 1999) emphasises processes which are both analogical

and which originate in particular lexical items rather than particular lexical categories. For example, he includes examples of sporadic paradigmatic gaps, ad hoc grammaticalization and paradigm split based on single lexical items. However, he also has examples of changes based on stem shape (p. 109), which would be an example of categorial change.

A final type of semantic change within morphology is known as exaptation (Lass 1990) or refunctionalization (Smith 2008). This is the process whereby one morphologically marked opposition is recruited to mark a different type of opposition. That is, it is not a change in formal marking *per se*, since the marking remains; rather, the same morphological markers come to mark a different pair of oppositions. Smith (2008) describes the case of Young People's Tiwi (Lee 1987), where a distinction between first person inclusive and exclusive has been remapped as a past/non-past tense distinction. Lass (1990) provides examples from Germanic and Smith (2006) from Romance. Smith (2008) has argued that in such cases, the remapping of oppositions is not arbitrary, but rather follows a more general principle of "core-to-core" mapping, whereby oppositions retain their markedness relations to one another, even if the domain of marking changes (e.g. from person to tense, as in the Tiwi example).

2.2 Morphology as a shaper of change

The idea that there is autonomy in morphological structure has taken several forms. Synchronically, there is Aronoff's work (e.g. Aronoff 1994), based around the concept of a "morpheme" or abstract layer which mediates form and function (analogous to the phoneme in phonology).⁸ Maiden (1992, 2005, 2009) provides a diachronic view of morphological autonomy in which certain structural features in language are self-perpetuating; that is, that there are certain structures which lead to either the repetition of a particular change over many generations (Kastovsky 2006), or (conversely) ~~that that there~~ certain structures (paradigmatic shapes, for example), which both constrain and drive change (Maiden 2009). In the former case, we see a predisposition in the structures of a language for speakers to (re)analyze parts of the morphology in certain ways. In the latter case, there is the idea that paradigmatic shapes may be maintained, independent of the particular forms within the paradigm and independent of other changes; this is a diachronic interpretation of

Aronoff's synchronic view. An alternative (and broader) statement of this view is Haspelmath's (1993), who comments that some oppositions in morphology may be stable irrespective of the forms that mark them.

Such ideas are not widely accepted in historical morphology. Anderson (2011), for example, provides a detailed critique of Maiden's analysis of Rumantsch data and argues that the patterns which argue for autonomous morphology can also be described by straightforward phonological conditioning. A further curious paradox is that discussions of morphological autonomy have tended to stress its stability; even while much work on morphological instability has appeared (particularly under the study of analogical changes).

3 Sources of morphological inflection and morphological clines

New morphology arises within a language from either the grammaticalization of independent lexical items, or changes within the morphological system (as described in the previous section). That is, new morphological forms can be created from either within the existing system, or by the introduction of new material from elsewhere in the lexicon.

3.1 Grammaticalization and the pathways of change

For many types of inflection, pathways of morphological sources are clearly identifiable. Tense markers, for example, often have their sources in independent verbs, serial verb constructions, or auxiliary verbs. The Latin imperfect, for example, is a compound tense built around the univertation of the verb stem and the verb "be". An alternative path for tense marking comes from the interaction between tense marking and nominalization. Epps (2008) provides an example from Hup (Nada-Hup, Amazonia) where the word *tég* 'wood' has been grammaticalized as a generic marker, which in turn can be applied to verbs as a purposive and in future constructions.⁹

The Hup example illustrates a grammaticalization cline – a chain of changes operating on forms which may carry them grammatically and semantically far from their origins. Parts of a cline have very circumscribed origins, while others may be more diffuse. For example, person agreement marking appears to have only two origins. By far the most common is pronominal affixation. That is, in the vast majority of cases where the etymology of the agreement markers is known, argument agree-

ment arises through the univerbation of personal pronouns with the verb. In rare cases, individual agreement forms also arise from shifts in morphological boundaries or templates. For example, the Warrwa third person plural subject marker η -originates in Nyulnyulan as a past tense marker, but the loss of the third person prefix $*i$ - in this language leads to a reanalysis of the past marker as the desinence of third person in plural forms. Thus sources of agreement are highly constrained. The etymological sources of free pronouns, however, are rather broader. They include words for “body”, demonstratives, and both honorific and pejorative phrases.

3.2 Morphological cycles

Morphological cycles were an important part of early work on morphology. The idea that languages may move from isolating type to agglutinating through univerbation, and to inflectional through sound change, originates with Humboldt (1836), though both the typology of morphological type and the relations between types has been the subject of extensive debate (from Sapir 1921 to Haspelmath 2009). Much recent work (particularly in grammaticalization theory) has de-emphasized the role of such cycles in favor of work which derives the cycles from other processes.¹⁰ Grammaticalization theory predicts the accretion of grammatical material; sound change leads to obscurity in morphological boundaries; other processes lead to the creation of irregularity in paradigms (and thus to inflectional and fusional languages). Conversely, sound change may also lead to extensive erosion in morphology. However, there are two areas of morphological cycles where recent work has challenged a purely cyclic view. The first is the way in which extensive morphology is lost; the second is in the creation of polysynthesis.

Earlier views of lack of morphology either treated the cycle as a single process (that is, all languages started without morphology and came to acquire it), or that sound change was the only mechanism which led to the loss of morphological categories. However, as we have seen, and as work by Keller (1989), Donohue (2003) and others have shown, there are processes which frequently lead to a continual reinforcement of morphology when categories are eroded through sound change. A major other cause of morphological loss is language contact, particularly the situation where large numbers of second language speakers adopt the new language, but without the morphology. Another case, also well documented in the litera-

ture, is during the last few generations of language death. In such cases, speakers may acquire the lexical items of the language, but do not acquire the morphological complexity.¹¹ Thus morphology can be lost, both as ~~language~~ lose speakers, and as they acquire them.

A second area of problems in a cyclic view of morphology is in the treatment of polysynthetic morphology. Since the work of Hale (1983), Jelinek (1984), Austin and Bresnan (1996), Baker (1988) and others, it is increasingly the case that polysynthetic morphology is treated not just as a property of the morphology, but as a correlate of a set of syntactic features which interact with morphology. (Of course, we have not discussed morphology-syntax interactions in other parts of morphology, and to leave them out in the other cases but to discuss them here is to paint a skewed picture of language, but nonetheless, the syntactic variation amongst the languages described as polysynthetic is much less than amongst those of other morphological types. See Julien (2002) for an overview.) Thus there does not seem to be much evidence for a direct change from inflectional to polysynthetic morphology, within morphology, but from syntactic changes and syntactic properties which shape the morphology. van Gelderen and Willie's (2011) work on Athabascan polysynthesis in historical perspective illustrates this view.

4 Inflectional morphology in language classification

Inflectional morphology has played an important role in language classification, both because of its relative stability (compared to sound changes) and relative lack of borrowability (compared to lexical items). Such evidence is weighted differently by specialists in different families, however. In some families, linguists working on the internal subgrouping of languages have tended to privilege the evidence of morphological correspondences over that from shared lexicon or sound change. Such has been the case in Australia, for example, where perceived high rates of borrowing, combined with relatively small amounts of sound change (and few highly distinctive changes which would provide valuable evidence in subgrouping), have led linguists to base much of their classificatory work on correspondences in morphological form (for further comments see Koch 2004, Bovern and Koch 2004).

Another argument for the use of inflectional morphology is based on morphological stability. Because morphology tends to be less subject to replacement than

lexical items, it allows access to potential genetic relationships between languages where the ancestor is more temporally remote than that which can be reconstructed using the comparative method. This has been the case with several non-Pama-Nyungan language families in Northern Australia; see, for example, Green (2003) for the demonstration of an ‘Arnhem’ group in Central Northern Australia. Such families raise questions, however. It is not at all clear what processes give rise to languages which may have very similar phoneme inventories, similar morphological inventories, but very low rates of shared lexicon. One possibility is contact-induced transfer (see Ross 2007); another is very high rates of lexical replacement caused through any number of factors, such as strong necronym taboos.

The most famous use of this argument comes from Hymes’s (1956) and his work on the relationships between Athabaskan, Tlingit, and Haida. Hymes (1956:631) compares the order and semantics of morphology in these languages to both argue for a relationship between the three and to reconstruct the positional order for Proto-Na-Déné. Hymes’ work has remained controversial, however, because he compared only category positions, and not forms. Because there are universal tendencies in morphological ordering (see Julien 2002 and Comrie 1989 for a summary). Furthermore, it is difficult to reconcile the claims of Hymes with those from Donohue (2003) and other work on morphological accretion, which shows that morphological categories may be renewed, but in different places in the word. Finally, we have examples where the morphological template can change, even when the forms themselves are stable (see Bower 2012 for discussion and examples). Unfortunately, at this time we lack the detailed quantitative work that would allow us to assess morphological stability across a range of families. We are unable to assess whether such similarities are most likely due to chance, or to universal tendencies. The comparison of position, forms, and lexical items along with sound change reconstruction obviates this problem. The insistence on formal correspondences along with functional and positional ones when establishing language relationships is not controversial (Campbell and Poser 2008), though as mentioned above, there is still plenty of recent work in this area which relaxes this constraint.

5 Conclusions

In summary, I have provided an overview of changes in morphology, life-cycles of change, and identified areas in which morphological change is triggered from elsewhere in the language. On close examination, many of the case studies which explain change through morphological autonomy are also explicable through other processes; there appears to be very little evidence for change which operates on morphology alone. Morphological forms interact with semantics, syntax, and phonology, often leading to changes whose origins lie outside of purely morphological processes such as analogy. Even changes which operate purely on morphological class, such as paradigm reorganization, may have a semantic or syntactic origin.

Basic facts of the diachrony of inflectional morphology have not altered very much in the last twenty years. For example, though we now have a much greater knowledge of the variety of morphological changes which occur in natural language, the types of change that have been observed have not changed a great deal.¹² Where debate has focused, however, is in the nature of explanations of change in morphology, the relationship between language contact and morphological change, and causes of change which have their origins outside the linguistic system.

Debate continues on stability in morphology; while on the one hand we can see a large body of work which catalogs the changes which take place in both morphemes and morphological systems, on the other hand, there is still a widespread view that stability of inflectional systems make them a good data source for identifying remote genetic relationships.

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Notes

¹Changes of this type are described by Haspelmath (1994:4) under the term ‘telescoping’.

²See Hopper and Traugott (1993) along with much subsequent work, including Traugott and Heine (1991) and Fischer (2004)

³See also Hock 2003 for discussion of the term, and Anttila 2003 for different ways in which the term can be interpreted.

⁴This view is implicitly entailed by long-distance reconstruction work that compares morphemes of similar shape in the absence of regular sound correspondences in lexical roots.

⁵Another common pattern of this type is when vowels are lost in word-final position, but resurface when further material follows.

⁶In cases like these, it can be difficult to tell whether the rule is best treated as a historical sound change or as a synchronic phonological rule which had its origins in sound change. Evidence that the historical final consonant has been reanalysed as a conjugation marker comes from sources such as unetymological final consonants (that is, from roots which show alternation but where the final consonant is not predicted from sound change) and from the treatment of roots newly introduced to the language.

⁷As an example of the problem of distinguishing the two, consider the presence of contrastive tone in a language. Authors such as Dediu (2011) have considered tone to be a very stable feature. However, we know from studies of contact phenomena in South East Asia (e.g. Enfield 2006, 2005) that tone systems are highly diffusible, and so their presence in a large number of languages from different families in a region does not make the feature reconstructible.

⁸See Round (2009) for a development of this idea and its consequences for Kayardild (Tangkic, Australia).

⁹Heine and Kuteva (2005) is a compendium of pathways.

¹⁰For an exception to this view, see Dixon’s (2002) description of morphological change in Australian languages, which treats such cycles as a property of these languages, in the manner of an ‘invisible hand’ process as described in Keller (1989). Such a view is not widely accepted amongst Australianists, however.

¹¹For examples in Australia, see Lee (1987) for Tiwi and Scheffler (1978) for Dyirbal, amongst others. It should be noted that extreme morphological loss is not the only outcome of this type of language contact, as O'Shannessy (2005) and McConvell and Meakins (2005) in particular, have shown.

¹²One exception is the description of endocclisis; see Harris (2000).

Biography

Claire Bowern is Associate Professor of Linguistics at Yale University. Her 2004 PhD is from Harvard University and examined the historical morphology of complex verb constructions in a family of non-Pama-Nyungan (Australian) languages. Her research focuses on the Indigenous languages of Australia, and is concerned with documentation/description and prehistory. She is the author (with Terry Crowley) of *An Introduction to Historical Linguistics* (Oxford UP, 4th ed.), and editor of *Australian Languages: Classification and the Comparative Method* (with Harold Koch) and *Morphology and Language History* (with Bethwyn Evans and Luisa Miceli). She serves on the editorial boards of *Diachronica* and *Journal of Historical Linguistics* and is co-editor (with Ashwini Deo) of the historical section of *Language and Linguistics Compass*.

Abstract 100-150 words

I survey the history of work in historical morphology and recent advances in the study of morphological change. Morphological has played an important role in historical linguistics, from arguments concerning constraints on the regularity of sound change, to language classification. I describe how inflectional morphology interacts with other linguistic systems in language change (particularly phonology and syntax), and discuss arguments regard the autonomy of morphology change. Morphology has been considered quite stable in language, which would appear to make it a valuable source of evidence for the reconstruction of remote genetic relationships; however, while several families have been proposed where the argument relies on morphological categories alone, such evidence does not constitute a reliable argument for relationship in the absence of cognate material.

Keywords

analogy, naturalness, diachrony, morphological boundaries, morphological autonomy, grammaticalization

Index Terms