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Morphological change

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When we talk about phonological change, it is reasonably clear what we mean, but the scope of morphological change is less obvious, and depends heavily on the scope of what we take to be 'morphology'.[1] This is because characteristics and effects of the structure of words are somewhat more 'metastasised' in grammatical structure, inter-related with sound structure, syntax and meaning.

For concreteness' sake, I adopt here a view of the type characterised as Inferential and Realisational in the useful typology of theories introduced by Stump (2001), although this is not essential. On this view, the morphology of a language involves several components, including those in (1).

(1) *Lexicon:* an inventory of stems (or lexemes), each consisting of an association among phonological shapes, meanings, and syntactic properties;
Derivational: relations among lexemes, specifying aspects of the sound, syntax and meaning of potential stems on the basis of their connection to the properties of other lexemes; and
Inflectional: principles that specify aspects of word form that reflect aspects of the morphosyntactic environment in which a lexeme appears.

The broad class of derivational relations should be understood to include principles for the formation of compounds. In addition, we need to take account of principles of syntax that govern the distribution of inflectionally relevant features (such as those of case, agreement, tense, etc.) within syntactic representations. On a view such as that of Lexical Phonology (Kiparsky (1982) and subsequent literature), some version of which I assume here, the articulation of the morphology with the phonology is not simple, and so particular derivational and inflectional relations must be associated with appropriate (e.g. 'Level 1' *vs.* 'Level 2', etc.) phonological adjustment.

1. WHAT COUNTS AS 'MORPHOLOGICAL CHANGE'?

It will be obvious that a great many kinds of historical change can be seen as impinging on the morphology on this interpretation. Even instances of borrowing or other changes in the lexical stock of a language, since they affect the content of the lexicon, are in some sense 'morphological' changes. While I will in general ignore such changes in lexical inventory, attending to them is not altogether fanciful, for they can easily have effects that are more obviously morphological.

Indeed, a great deal of the derivational morphology of contemporary English has arisen as a consequence of lexical borrowing: not of the derivational regularities themselves, but rather of the vocabulary items that motivate them. A glance at sources such as Marchand (1969) makes this quite clear. For example, Middle English borrowed a large number of deverbal nouns ending in *-ment* (and the related verbs) from continental Old French and Anglo-French, such as *achieve/achievement, commence/commencement, judge/judgement* and many others. The presence of these pairs of related words in the language motivated the recognition of a derivational rule producing such nouns on the basis of existing verbs, and that rule provided the basis for the formation of similar forms built on verbs from the native vocabulary: *wonderment, amazement, betterment, acknowledgement, settlement,* etc., all of whose bases were part of the original Germanic lexicon. Note that it is not necessary (or coherent) to imagine that the rule for deverbal nouns in *-ment* was itself borrowed — only that it arose on the basis of systematic relations among borrowed vocabulary items.

Apart from mere additions and subtractions affecting the lexical stock, change can affect the content of lexemes. One aspect of this content is the fact that certain lexemes are exceptional with respect to one or another regularity of the language, exceptionality which may be correlated with their being subject to some less general alternative principle. English nouns regularly form their plural by suffixing [z] (with associated word-level phonology), but some must be specifically marked to form the plural in other ways, such as the set of words ending in [f, s] or [θ] that replace this with [v, z, ð] in the plural (e.g. *wife/wives, house/houses, mouth/mouths*), or latinate plurals such as *alumnus/alumni, radius/radii* and other such patterns, etc. The logical extreme here is represented by nouns whose plural is completely idiosyncratic and must simply be listed as a part of the lexeme: *ox/oxen, woman/women* and a few others.

Such lexical exceptionality can be lost, and this is a significant sort of morphological change (as we will see below in section 4): for instance, the Old English noun that is reflected as modern *book* belonged to a class that ought to yield modern **beech* as its (exceptional) plural, but this feature has been lost, so that the word now forms its plural regularly as *books*. Rather less frequently, exceptional behaviour can be acquired historically rather than lost, as when originally regular verbs including *dive, plead, sneak* came to be treated in some modern dialects as forming their past tense irregularly (*dove, pled, snuck*), sometimes after the patterns of other verbs as (*drive/drove, lead/led*) and sometimes, as in *sneak/snuck*, with no obvious precedent (Anderwald 2013).

More central to the topic of morphological change is the fact that systematic regularities can arise historically in a variety of ways. We have already noted that the introduction through borrowing of a number of items that instantiate a regularity can result in the incorporation of that regularity into the grammar. The presence of collocations originally formed in the syntax but forming a stereotyped (and thus lexicalised) pattern can also result in new morphological rules. A standard example of this is the reanalysis of Latin phrases such as *clara mente* '(with a) clear mind' to yield the highly productive class of adverbs ending in *-ment(e)* in the modern Romance languages (Spanish *claramente,* French *clairement*, etc.). These preserve a trace of their origin in the fact that the adjectives from which they are derived appear in their feminine form in the adverbs: e.g. French *franchement* 'frankly' from *franc/franche* 'frank'.

Compounding patterns often have their origins in other originally syntactic structures. Dutch examples provided by Booij (2002) include *herenhuis* 'mansion' from earlier *heren huis* 'of the lord, house' and *koninkskrone* 'royal crown' from *koninks*

krone 'of the king, crown'. As in German *Schwannengesang* 'swan song' the medial linking element (*-en-, -s-*) is not synchronically a genitive marker in the language — Dutch has essentially lost its earlier case system, and in German the genitive of *Schwann* is *Schwanns,* not *Schwannen*. In the modern languages, these are part of the morphology of compounds, although their origin is in syntactic links marked by case.

Not only compounds, but also derivational and inflectional formations can have their origins in earlier syntactic combinations. Again from Dutch, *bloed-* 'blood' has become a prefix in formations like *bloed-heet, bloed-mooi, bloed-link* 'very hot, beautiful, dangerous', and in German a stem originally meaning 'carry' has become a rather productive suffix in forms like *Fruchtbar* 'fruitful'. In the domain of inflection, a standard example is the creation of the widespread Romance future in forms like French *chanterons* '(we) will sing' from the combination of the infinitive and an originally independent auxiliary.

Why does morphological change occur? A central locus, as with other sorts of historical change, is in the process of transmission of linguistic structure from one generation to the next. Even if a new generation had exactly the same experience to go on as the preceding one, change would still be possible so long as there were some aspects of grammar that were under-determined by the data. In that case, a new generation might make a different choice somewhere, and if this had consequences they (or a subsequent generation) might infer a grammar that differed in some respect from that of their models.

For instance, English *helicopter* is etymologically *helico-pter* 'spiral-wing', but that structure is no longer apparent to learners, and the word has been reanalysed as *heli-copter*, as evidenced by the formation of other words like *gyro-copter* 'kind of helicopter, specifically a small, light single-seat one'. In this case the original morphology was opaque, opening the possibility of a reanalysis. On similar lines, when a word's original structure is no longer apparent, adventitious resemblances can be treated as systematic. Cases of this sort are often termed 'folk etymology': e.g., French *dormeuse* > English *doormouse*.

These isolated examples lead us to the primary source of change in morphology (operative in other domains as well): the phenomenon of *opacity.* The structural regularities underlying linguistic forms for a generation of speakers may not be unambiguously recoverable from the surface forms in their speech. Since those surface forms are of course the evidence on the basis of which a subsequent generation constructs their grammar, the result may be a different grammar. The difference may not be immediately evident, since most of the surface forms may be essentially the same, but the difference can reveal itself when the grammar is put to a full range of novel uses. Such events are characterised as *abductive change* by Andersen (1973), and include some of the core types of morphological change.

Two especially important sub-classes of abductive change will be considered in the sections immediately following. First, the variation produced by phonological rules that become sufficiently opaque can be reanalysed as aligned with morphological category, rather than phonological form, leading to new morphological formations. Examples of such morphology originating in earlier phonology will be discussed in section 2. Secondly, the marking of a derived syntactic structure can be reanalysed as morphology if the syntactic derivation becomes sufficiently opaque. Instances of such morphology originating in earlier syntactic complexity will be presented in section 3.

Subsequent sections will be concerned with types of morphological change that are more directly internal to the morphology itself. First, in section 4, I will discuss the type

of change classically referred to as 'analogy'. In section 5 I will discuss the significance of the notion of 'grammaticalisation', which has become an important topic in the literature of historical linguistics, and which has been claimed to represent an independent force driving change. In the case both of analogy and of grammaticalisation, I will conclude that there is not in fact a special mechanism to be invoked, but that the changes in question are better understood in terms of more basic notions. Finally, in section 6 I will present some general conclusions.

2. MORPHOLOGY FROM PHONOLOGY

Originally phonological alternations can become part of the morphology when they become opaque, or unnatural. When this occurs, the alternation itself may be preserved, but its conditioning factors are re-interpreted. To the extent that the terms of an originally phonological alternation can be aligned with a difference in morphological composition, the choice is thus subject to reanalysis as conditioned by these morphological factors rather than the original phonological distinction.

The central cases of this sort arise when phonological conditioning factors are obscured by subsequent phonological change, so that the basis of the alternation in observable properties of sound structure becomes difficult or impossible for learners to detect. Even where a distinction based on phonological properties is possible, if the regularity involved is sufficiently unnatural[2] it may be that a morphological dimension is more accessible and thus liable to be seen as conditioning the choice of alternants instead. This is common in instances of 'telescoping' (where originally plausible rules relating A to B, and B to C, are replaced by a single direct relation between A and C) or 'rule inversion' (where a plausible replacement of A by B under certain conditions is replaced by a regularity replacing B by A in the complement of those conditions), at least to the extent that morphological factors are available as an alternative way to see the conditioning at work.

The most common example of such a shift from phonology into the morphology of a language is provided by the history of Umlaut alternations in the Germanic languages. Without going into this often-rehearsed development in any detail, it is possible to note its origins in a phonetically transparent assimilation of the backness of certain vowels to that of a high front vowel or glide in the following syllable. Since the conditioning vowels occurred in a number of morphologically distinctive suffixes, alternations arose between basic back vowels in stems and their fronted counterparts when the stem was followed by a suffix containing a high front vowel (or glide). Over time, the (generally unstressed) vowels of the relevant suffixes were reduced to schwas, and their conditioning effect as high and front became opaque. The original alternations in stem vowel quality were preserved, however, and interpreted as conditioned by the categories defining the morphological identity of the suffixes rather than by phonological characteristics of those suffixes. Alternations such as *Grund/Gründe* 'basis/bases', *Bach/Bächlein* 'stream/DIMINUTIVE' and many others in German, or *man/men, mouse/mice* etc. in English are thus determined directly by morphological categories such as singular *vs.* plural, base *vs.* diminutive, etc. rather than by the sound structure of any affixes that may be their characteristic markers.

In cases where an originally phonological regularity comes to be replaced by a morphological one, it may be the case that the alternation involved comes to be the only marker of the category involved, rather than simply an attendant property associated with an overt affix. Thus, while German *Grund/Gründe* displays Umlaut in the plural in

association with an overt suffix ([–ə]), the Umlaut alternation itself is the only marker of plurality in other forms, such as *Vater/Väter* 'father(s)'. As a result, the morphologisation of originally phonological regularities is a major source of so-called 'non-concatenative' morphology.

An instance of this is provided by historical developments leading to a morphologically conditioned process of metathesis in some languages of the Straits Salish group, first discussed by L. C. Thompson and Thompson (1969) with respect to Klallam. In these language, an aspectual category known in the literature as the ACTUAL (a kind of progressive or imperfective) is formed in various ways depending largely on the shape of the basic verbal stem. In one set of stems, the 'actual' is formed by metathesising the stressed vowel and a following consonant, with no other marker of the category. Kallam examples include those in (2), drawn from Thompson and Thompson (1969: 216).

(2) a. *čk^{w}út* 'shoot'; *čúk^{w}t* 'shooting'
b. *x̣čʼít* 'scratch'; *x̣íčʼt* 'scratching'

The origins of this unusual marker can be inferred from the formation of the 'actual' in other related languages. Most straightforward is the case of Lummi, as described by Demers (1974). In this language, only stems with the vowel /ə́/ show metathesis in the formation of the 'actual', and the apparent metathesis in the relevant forms follows from the productive phonology of the language. In Demers' analysis, the stems involved actually have an underlying shape /C$_1$ə́C$_2$ə́/. A regular process of stress shift moves the stress from the first to the second vowel across a single obstruent, when this vowel is followed by two consonants. An unstressed schwa is then deleted. This accounts for 'non-actual' forms like [tʼə́stsən] 'I smashed it': the underlying shape is /tʼə́sə+tsən/, which undergoes stress shift and schwa loss to give the surface form. The related 'actual' [tʼə́st] 'he's breaking it' is built by infixing /-ʔ-/ (the regular marker of the 'actual' in other stem types), yielding the phonological form /tʼə́ʔsə+t/. Since the stressed schwa is no longer separated from the following vowel by only a single obstruent, stress shift does not apply; the unstressed (second) schwa is deleted, as are glottal stops between a schwa and an obstruent, yielding the surface form. The morphology here does not involve metathesis, but only the infixation of /-ʔ-/ together with regular phonology.

In the related languages Klallam and Saanich, however, the relevant phonology has become opaque, and neither language has preserved rules corresponding to Lummi stress shift or glottal stop deletion (cf. Montler 1986, 1989). Saanich pairs such as those in (3) therefore cannot be derived in the phonology on the basis of a segmental infix /-ʔ-/ (although this is the marker of the 'actual' in other classes of verb), but must involve metathesis triggered directly by the morphological category [ACTUAL].

(3) a. *tk^{w}ə́t* 'break it (a stick)'; *tə́k^{w}tə́s* 'he's breaking it'
b. *ƛ̓ʼk^{w}ʼə́t* 'extinguish it'; *ƛ̓ʼə́k^{w}ʼt* 'extinguishing it'
c. *ƛ̓ʼpə́x̣* 'scatter'; *ƛ̓ʼə́px̣* 'scattering'

In Saanich,

> [t]he ACTUAL is formed by metathesis of the second root consonant and a following vowel in two situations: 1) when the root is CC, i.e. underlyingly vowelless, and it is

> followed by a suffix beginning with a vowel […] and 2) when the root has three consonants and the shape CCVC. In both cases CCVC becomes CVCC.
>
> (Montler 1989: 96)

Montler's Saanich examples of metathesis all involve /ə́/, as we might expect if the Lummi situation (where the phonological rules involved are specific to forms containing that vowel) represents the origin of the phenomenon — although they are no longer produced by the phonology, which has become opaque and morphologised. As Montler (1989: 96) points out, the Klallam situation illustrated by forms like those in (2) affects many more stems with non-schwa vowels, and thus would appear to reflect a generalisation of the metathesis process for forming the 'actual' to a wider class of verbs.

Another example of non-concatenative morphology resulting from the morphologisation of earlier phonology is suggested by the history of a process in several Muskogean languages by which the rhyme of the final syllable of a verbal stem is deleted to mark plural agreement (Martin 1988, Broadwell 1993). Some examples from Koasati are given in (4):[3]

(4) a. *latáf-ka-n* 'to kick something'; PL. *lát-ka-n*
b. *yiłáp-li-n* 'to tear something down'; PL. *yíł-łi-n*
c. *koyóf-fi-n* 'to cut something'; PL. *kóy-li-n*
d. *akocofót-li-n* 'to jump down'; PL. *akocóf-fi-n*

Broadwell (1993) suggests that the origin of this process is to be sought in the apparent fact that the final consonants of a great many Muskogean verbs originate as separate suffixes, an analysis that goes back to suggestions of Haas (1969). At that point, a stem like Koasati *koyof-li* would have had an analysis as /koyo+f+li/. It is also possible to reconstruct for proto-Muskogean an affix /ho/, originally DUAL but more generally NON-SINGULAR, with the shape /oh/ when infixed in Western Muskogean. Assuming that this element was infixed between the stem and a following suffix, this would give a plural form like /koyo+oh+f+li/. This form contains an impermissible medial cluster *-hfl-* which it is natural to assume was simplified by the deletion of the medial element. Simplification of the vowel sequence and loss of pre-consonantal *h* would then lead to a form like [koyo-li], in which the plural appears to be marked by the deletion of the coda of the last syllable of the stem (fossilised from an earlier independent suffix). As Broadwell notes, coda deletion is itself a way of marking plurality in other verbs, often with vowel lengthening: cf. Koasati *lobos-li-n* 'extinguish', PL. *loboo-li-n*.

If we assume coda deletion was subsequently generalised to delete the entire rhyme in other verbs, we arrive at the observed patterns of subtractive morphology conditioned by the category [PLURAL]. The subtractive processes of coda and rhyme deletion thus result from originally phonological processes (cluster simplification, *h*-loss, vowel sequence reduction) which collectively made it appear that plurals were related to singulars by the omission of some phonological material in the stem. As the morphological status of the originally affixed stem-final consonants became opaque, the phonological basis of this formation was lost, and the entire sequence telescoped into a subtractive relation motivated by the morphological property [PLURAL].

3. MORPHOLOGY FROM SYNTAX

Much morphological structure emerges when phonologically derived forms become opaque as to their origin, and observed patterns of alternation are re-interpreted as signals of morphological categories. Another important source of morphology lies in the reinterpretation of structures originally formed syntactically. This observation was the source of Givón's (1971) aphorism that "today's morphology is yesterday's syntax": while this is a considerable overstatement as a generalisation about *all* morphology, there are certainly many instances in which it is applicable.

There are two broad categories of such change: on the one hand, originally syntactic constructions may be restructured as matters of word formation, and on the other, originally syntactic derivations may become opaque, with the result that their attendant morphology is reinterpreted in new ways. I address each of these possibilities in turn.

3.1 Complex Words from Phrases

The origin of many single word structures can be traced to originally more complex constructions built in the syntax. Even as apparently straightforward a word as English *not,* for example, originates in Old English as *nā wiht* 'no thing', becoming Middle English *nought* 'nothing' and subsequently reduced to the adverb *not.* The element *nā, nō* in Old English was a component of multi-part negation structures, and later merges with a second component (*wiht* 'thing, man') as a single word. We will see below in section 5 the path by which *not* itself later develops into inflectional material in association with auxiliary and modal verbs.

The formation of *not* is not *per se* an instance of the emergence of morphology from syntax, but it illustrates a general path that can have that result when one of the original forms that combine marks morphological properties. The standard example of such a change, already noted above, is the development from the spoken Latin construction *habeo cantare* 'I have to sing' to *cantare habeo* 'I will sing' to the expression of the future in modern Romance languages like French. Here *chanterai* is a single word with the reflex of the inflected form of *habere* added to the base of the infinitive to form the inflected future tense of the verb.

Similar developments are attested in a number of other languages: Andersen (1987), for instances, documents the development from an Old Polish structure with auxiliary BE plus participle to express the preterite, through a stage in which the auxiliary became a clitic to its merger with the participle as a single word representing an inflected past tense in some forms of modern Polish.

A particularly elaborate case of this sort is represented by the modern Muskogean languages. As discussed by Haas (1946, 1977), at an early stage in the language ancestral to these, verbs had three distinct finite constructions. Some verbs had markers for person and number attached directly to the verb stem, with some of these markers prefixed and at least one other (the agentive first person singular *-li*) suffixed. Other verbs, however, made use of a periphrastic structure in which the bare verb was associated with one of two auxiliaries (*li with transitives, and *ka with intransitives), with the agreement markers added to the auxiliary rather than to the verb stem. Subsequently, these inflected auxiliaries merged with the associated stem as unitary inflected verbs, with the entire complex of original auxiliary and agreement marker interpreted as verbal inflection.

This state is best preserved in modern Koasati (Kimball 1991) and the closely related language Alabama. Here three broad classes of verbal conjugation (each of which has several sub-classes) correspond to directly inflected verbs, transitive verbs with original auxiliary *li and intransitives with original *ka*. In the latter two cases, subject markers that were originally prefixes appear as suffixes or (where the material corresponding to the auxiliary stem is preserved) as infixes. Since the division of the structure into stem plus auxiliary plus agreement marker is now opaque, the system has undergone extensive restructuring, with the original auxiliary stem disappearing in some forms, among other changes. In the other languages of the family the system has been reduced in various ways: in Choctaw (Broadwell 2006) and Chickasaw, only the inflectional pattern based on direct addition of the agreement marker to the stem is preserved, while in Hitchiti-Mikasuki a set of markers preserving the original forms with auxiliary *ka is preserved.

From the synchronic point of view, a conjugational system such as that of Koasati is somewhat bewildering in the apparent arbitrariness of its complexity. When the roots of this complexity in the history of the language are explored, however, it becomes rather more explicable. The same is often true for other cases where morphological material has its origins in originally separate parts of a syntactic construction.

3.2 The Consequences of Syntactic Opacity

Examples such as the development of inflectional markers from earlier independent auxiliary verbs illustrate ways in which the concrete content of "today's morphology" may have emerged from material that previously bore a syntactic relation to a base, a relation which has become less obvious on the surface (typically as a result of phonological coalescence associated with cliticisation). There are other ways, however, in which the morphology of a language may develop from syntactic structure that has become opaque. In particular, this can happen when the derived status of a construction is no longer apparent, and it is reanalysed as a basic form — but without altering the morphology associated with the original structure.

An example of this kind of development is provided by a number of verbs in Chickasaw, including several that are used to express possession. In this language these (and many other) verbs are associated with an unusual pattern of morphological marking, as illustrated in (5).

(5) a. *Chipot-aat* *ofi'-at* *ĩ-wáyya'a.*
child-NOM dog-NOM 3:DAT-be.there/have.SG
'The child has a dog,'

b. *(Anaakoot)* *ofi'-at* *ã-wáyya'a.*
1sg.NOM dog-NOM 1SG:DAT-be.there/have.SG
'(I) have a dog.'

There are some odd features of this construction, notably: (a) Why do both DPs have the Nominative marker *-at* following? (b) Why does the verb use the marker *im/ĩ-* '3' *am/ã-* '1SG', generally associated with indirect objects, to agree with the notional subject (*chipot,* 'child' or an optional emphatic first person singular pronoun) instead of one or the other of the two marker series more commonly associated with subjects?

These facts appear to have their explanation in the source of this predicate. A common way of expressing possession is the construction *mihi est aliquid* 'to me is

something; I have something' or 'the dog is there (at me)'. Compare Russian *u menja kniga* 'at me is a book; I have a book'. The Chickasaw sentence in (5) appears to illustrate a structure in which the possessed phrase has the properties of a subject and the possessor that of a locative expression, which would explain the facts that (a) *ofi'* 'dog' is followed by a subject marker, and (b) the possessor is agreed with by means of an oblique marker. But if *ofi'* 'dog' is the subject, why is it not initial (since Chickasaw is generally SOV)? And why does *chipot* 'child' have a following Nominative marker *-at*?

These facts are studied from a more general perspective by Munro (1999), who relates the Chickasaw 'have' construction to a broad class of constructions in which either the possessor of the subject of an intransitive verb or an oblique expression within an otherwise intransitive clause is apparently 'raised' to become a subject. When this happens, the original subject continues to be marked with the Nominative, but the new subject acquires this marker as well. The verb comes to agree with the new, 'raised' subject (and not with the original subject), but it does so by means of oblique markers.

Despite these idiosyncrasies, however, Munro shows that the grammar of the language consistently treats the 'raised' subject (and not the original subject) in these constructions as the syntactic subject. What appears to have happened is that the syntactic source of the *mihi est aliquid* construction by which possession is expressed is not apparent, if possession is interpreted as a transitive relation between a possessor and the possessed.

It seems that at some point, Chickasaw speakers interpreted the relation in that way, lexicalising a number of originally intransitive verbs as transitive with various senses involving 'HAVE', rendering the original structure unmotivated. In consequence, *ĩwáyya'a* (and its suppletive forms used with dual and plural possessed object) came to be interpreted as a transitive verb whose subject, of course, should be marked (like other subjects) with *-at*. But the rest of the (no longer motivated) marking was not simply dropped: preserving the surface form of the construction while reanalysing it, this was interpreted as a matter of the idiosyncrasies of this specific verb in this (lexicalised) sense.

This development can plausibly be seen as an instance of the tendency noted by Cole *et al* (1980: 719) that "behavioral subject properties are acquired historically prior to subject coding properties". That is, when the analysis of a construction changes historically so that a given phrase comes to be treated as a syntactic subject (displaying 'behavioral' subject properties), it may not immediately acquire all of the morphological ('coding') properties of subjects. The morphology appropriate to its earlier syntactic status may persist,[4] despite the fact that it is no longer motivated.

A somewhat more dramatic example of this principle is found in the development of ergativity in Polynesian. We know (Chung 1978; but see Kikusawa 2003, this volume) that Proto-Polynesian had a rather standard nominative/accusative system with a passive:

(6) a. Subjects of all verbs were unmarked;
b. Direct objects were marked with an accusative particle *'i*; and
c. Passivisation promoted the direct object to subject, marking the underlying subject with the agentive particle *'e* and adding a suffix (*-*ia*) to the verb.

Modern Tongan (Churchward 1953), in contrast, has an ergative/absolutive system:

(7) a. Intransitive subjects and transitive objects are marked (in conservative speech) with the (innovative) particle *'a*;
b. Transitive subjects are marked with the particle *'e*; and
c. There is no active/passive opposition, although many transitive verbs end in *-(C)ia* (where C typically represents a consonant that was originally final in the verb in question but which has since been lost in that position).

Despite the shift in morphology from that of a nominative/accusative language to an ergative/absolutive pattern, Tongan syntax is largely unchanged: the notional subjects of all verbs (regardless of transitivity) have syntactic subject properties (Anderson 1976). That is, the syntax has not been re-organised in the way the morphology would suggest. This contrast between the structure suggested by the morphology and that required by the syntax is actually quite typical of 'ergative' languages: the structural position that displays the properties of a subject is generally the one that corresponds to the English subject, even though the morphological markers associated with this DP differ depending on the transitivity of the verb.

How did this come about? A clue is provided by the fact that in Maori (and some other Polynesian languages) that retain an active/passive opposition, the use of the passive is essentially obligatory in a great many contexts. If we assume that this came to be true in at least some sub-groups of earlier Polynesian, we can imagine that from the learner's point of view, the derivation of these syntactically passive structures from something else was opaque, because the passive construction was effectively all they saw. As a result, new generations of learners interpreted what they saw as syntactically simple, and re-assigned the observed pattern of argument marking to the morphology, resulting in a morphologically ergative language. In Tongan the morphology of the earlier Passive has thus been re-interpreted as that of simple active clauses. The syntactic structure, whose derived nature is no longer apparent in the absence of a contrast with an underived alternative, has been re-interpreted without altering the surface morphological form of sentences.

Instances of morphological changes resulting from restructuring in the face of the loss of a contrast between active and passive structures, but displaying somewhat more complex structure than in the Polynesian case, are compared in Anderson (1980). Comparing such situations across a number of American Indian languages appears to lead to a principle governing their occurrence.

We can consider first the conjugation pattern characteristic of most of the languages of the Algonquian family, illustrated for example by Potawatomi (cf. Anderson 1992). Here we typically find two patterns, depending on whether the relation between the subject and the object is consistent with or violates a hierarchy: speech act participants (first and second person forms) dominate third person 'proximate' forms, which in turn dominate third person 'obviative' forms. Where the subject is higher on this hierarchy than the object, we have one conjugational pattern, the 'direct' forms; whereas if the subject is lower on the hierarchy than the object, we have a different pattern, that of 'inverse' forms.[5] The differences between the two paradigmatic patterns are as follows:

(8) a. 'Direct' forms have theme sign /a/, 'Inverse' forms substitute /əkŏ/ for this.
b. Agreement with the subject is marked in the inverse forms in nearly the same way as with the *object* in direct forms, and *vice versa.*

c. There is also a distinct passive form (with agent omitted) whose morphology involves /əkŏ/ among other things.

When we look for the origins of these paradigms, we note that Proto Algonquian (Goddard 1967) had agentive passives involving the ancestor of Potawatomi /əkŏ/. This suggests the following scenario: initially, passive came to be obligatory when the person hierarchy was violated, and not when it was maintained. But that means that in sentences of the first sort, learners only heard the passive forms. Consequently, they re-interpreted those not as syntactically derived, but simply as morphologically complex, incorporating the morphology of the passive into the verbal paradigm.

From this example it appears that where a relation-changing syntactic operation like Passive comes to be used regularly under specifiable conditions, the resulting surface structures can be re-interpreted as syntactically simple, with the complexity incorporated into the morphology.

This effect is an abductive change, which means it depends on the existence of an ambiguity of interpretation. We can see that this is crucial by noting that in some other languages where passive is effectively obligatory under certain circumstances, the reanalysis does or does not take place depending on whether there is an alternative morphological analysis available.

Navajo invokes a hierarchy different form that of Algonquian in sentence construction, sometimes referred to as the 'Great Chain of Being' (Frishberg 1972). On this hierarchy adult humans outrank babies and large animals, who outrank sheep, goats, and chickens, who outrank small animals, who outrank insects, who outrank natural forces, which outrank plants and inanimate objects, which in turn outrank abstractions (old age, etc.). A relation-changing rule similar to passive (with replacement of *yi-* prefix by *bi-*) applies if and only if the object outranks the subject on this hierarchy.

The nature of the rule involved has been subject to considerable discussion. Hale (1973) saw it as an instance of passive, while Willie (2000) argues that it relates what she calls 'direct voice' to 'inverse voice', essentially swapping the subject and object arguments within a transitive structure. The difference is not directly material: on either interpretation, the rule is still a relation-changing operation, and passivised (or inverted) objects acquire subject properties.

If this syntactic manipulation is obligatory here, why are its effects not simply reanalysed as morphology, as in the Algonquian case? The answer is apparently that the Great Chain of Being is not otherwise reflected in the morphology, and therefore there is no morphological category available to which to relegate the morphology of the obligatory relation-changing rule. As a result, there is no ambiguity between a syntactic and a morphological analysis, and abductive change cannot take place. This contrasts with the Polynesian (Tongan) case, where passive applies everywhere, and with the Algonquian case, where obligatory passve aligns with independently marked categories of the person marking system.

A similar example is furnished by some Wakashan languages of the Nootka-Nitinaht group. In Ditidaht (Klokeid 1978), for example, there is a 'chain of being' hierarchy similar to, but less articulated than that of Navajo. Here speech act participants (first and second persons) outrank other humans, who outrank other animate beings, who in turn outrank inanimates. When the object outranks the subject on this hierarchy, passive is obligatory; when the subject outranks the object, it is disallowed. Similar facts obtain in the related language Nuu-chah-nulth (Kim 2004) (although not, apparently, in a third language of the group, Kyuquot, where passive is

not obligatory according to Rose and Carlson 1984). Although obligatory under these circumstances, passive in these languages is a relation-changing rule. The fact that it has not been reanalysed as simply part of the morphology can be attributed to the fact that animacy is not a morphological category in Ditidaht or Nuu-chah-nulth, and so (as in Navajo) there is no alternative morphological analysis available and which might underlie abductive change.

To summarise the differences among these cases, in Tongan, passive (apparently) became effectively obligatory in all transitive clauses. The original marking was re-interpreted as simply the morphology of transitive clauses, and not as an indication of altered grammatical relations. In Algonquian, the conditions under which passive became obligatory align with independently necessary morphological categories of the language. The morphology of (originally) passivised surface structures is thus susceptible to abductive re-interpretation as that of person marking in active structures. In contrast, in Navajo, Ditidaht, and Nuu-chah-nulth, although passivisation is obligatory under certain circumstances, those conditions do not align with motivated morphological categories. Since there is no ambiguity, abductive reanalysis is not available.

The source of morphology in syntax, like that of morphology from phonology, thus depends on the existence of an ambiguity of analysis. Where such ambiguities exist, it is apparently common to resolve them in a way that keeps the phonology natural and phonological, or that keeps the syntax simple and transparent, with either reanalysis coming at the expense of complications in the morphology.

4. MORPHOLOGICALLY MOTIVATED CHANGE: 'ANALOGY'

The preceding sections have described change consisting in the introduction of new morphological regularities through the abductive reanalysis of other aspects of linguistic structure. Change also takes place within the morphology itself. Much discussion of this relates to the traditional topic of *Analogy*.

For 19th century (and earlier) linguists, analogy was the basis of the creative aspect of language use. A basic assumption was that speakers have in their heads a collection of linguistic examples they have learned, and that new forms are created 'by analogy' with these. Analogy is thus a surface phenomenon, relating existing surface forms to potential new ones. Such relations were assumed to be the basis of paradigm membership, derivational productivity, and syntactic formation. Bloomfield (1933) continues this usage: he refers to the linguistic 'habits' of speakers, by which he intends the collection of analogical relations they recognise and use in speaking. This is, however, as close as he comes to recognising the presence of a grammar with rules that constitutes the knowledge of speakers.

Scientific discussion of analogy begins with the Neogrammarians, who were interested in the range of exceptions to regular sound change. When such exceptions were uncovered, the best result of course, was to find a more specific sound change (e.g., Verner's Law which covers a set of systematic exceptions to Grimm's Law). Where no such other changes appear to have occurred, another possibility is that the exceptions are due to borrowing, possibly from another dialect of the same language.

If most dialects of a given language have undergone a given sound change, but some others have not, and speakers of the majority dialect(s) borrow a form from one of these conservative dialects, they will then have a word that looks as if it ought to have undergone the change in question but did not. For instance, Germanic *sk is regularly

reflected in Old English as *sh* when adjacent to front vowels, as in *shirt, ship, shift*; cf. also *fish, dish*. Later borrowings from Scandinavian, however, contain (unchanged) *sk* in this environment, as in words like *skirt, sky, skin*. Once these are identified as borrowed, they no longer compromise the regularity of the change.

More interesting from our point of view are instances of 'False analogy,' where the regular continuation of some form would be expected to undergo some re-shaping by sound change, but instead it is found to have been re-made to conform to some structural pattern. This is what we usually mean by 'Analogy.' A standard example is that of Greek aorists where intervocalic *-s-*, which would normally be lost, is restored in the suffix *-sa* as an apparent exception to the sound change, as illustrated in (9).

(9)

Present	Inherited aorist	New aorist
pempō	*epempsa*	
telō	*etelesa* (< *etelessa*)	
lyō	*elya	*elysa*
tīmō	*etīmeā	*etīmēsa*
poiō	*epoieā	*epoiēsa*

The foundation of this restoration is the existence of other aorists in *-sa*, where the original /s/ is preserved either because it reflects an original geminate or because it was post-consonantal. On that basis we can construct a formula that takes the form of a proportional analogy, and suggest that the innovative forms arise by 'solving' this expression for the missing value.

(10) telō : etelesa :: tīmō : X
X = etīmēsa

The fact that such formations arise somewhat unpredictably leads to what is sometimes called Paradox: Sound change is regular, and can create irregularities, while Analogical change is irregular, and restores regularity.

A number of distinct types of change in morphological systems tend to be grouped together under the rubric of 'analogy': the category sometimes seems to include any development that cannot be attributed either to regular sound change or to borrowing. In standard textbooks such as Campbell (2004), these include:

Levelling: the complete or partial elimination of morphophonemic alternations within a paradigm.

	OE	Mod. English	OHG	Mod. German
PRESENT	*cēozan*	*choose*	*kiusan*	*küren*
PAST SG.	*cēas*	*chose*	*kōs*	*kor*
PAST PL.	*curon*	*chose*	*kurun*	*koren*
PAST PPLE	*(ge)goren*	*chosen*	*(gi)koran*	*gekoren*

Morphophonemic extension: extension of an alternation to new forms and categories
OHG *gast, gesti* 'guest(s)'; *boum, bouma* 'tree(s)' > NHG *Gast, Gäste*; *Baum, Bäume*

Blending: combination of pieces from different words to create a new one
breakfast X *lunch* → *brunch*; *chuckle* X *snort* → *chortle*

Contamination: reshaping of a word to make it more closely resemble another with which it frequently occurs or to which it is similar in meaning.
PRom. *gravis 'heavy', *levis 'light' > *grevis, levis
PIE *septm̥ '7', *ok'tō '8' > Gk. dial. *hepta, hoktō*
OFrench *male,* *femelle > ME *male, female*

Re-cutting:
OE *dæges ēage* 'day's eye' > ME *dais ei(e)* >NE *daisy*
ME *an ēkename* > NE *a nickname*; ME *a nap(e)ron* > *an apron*
PPolynesian *hopuk*/*hopuk-ia* 'catch (ACT/PASS)', *maur*/*maur-ia* 'carry (ACT/PASS)', etc. > *hopu*/*hopu-kia*, *mau*/*mau-ria* etc.

Folk etymology: remaking of part of a form so as to make its parts recognisable
OE *sām-blind* 'half blind' > *sand-blind*; *bryd-guma* 'bride man' > *bridegroom*
Fr. *carriole* 'covered carriage' > English *carry-all*; Algonquian *otček* > English *woodchuck*

Back formation: creation of a new base from which an apparently derived form can be produced.
ME *pease* (mass noun) > *pea(s)* (count noun); *edit* < *editor*; *orientate* < *orientation*

Such item-by-item changes are traditionally conceived of as grounded in direct relations between surface forms, which is natural given that this was the only sort of representation recognised by earlier generations of linguist. Within the broad category of analogy as so conceived, however, special attention was reserved for instances that could be expressed as four part proportions along the lines of (9). A substantial literature is devoted to this notion of analogy, and proportional analogy is widely assumed to constitute a basic mechanism of linguistic change in its own right.

A central place in that literature is occupied by the work of Kuryłowicz (1949), who proposed a number of putative 'laws' of analogy. These make up a somewhat heterogeneous collection of observations and generalisations, but they include a number of valuable points to consider.

Kuryłowicz (1949) begins from an analysis of the nature of analogical relations. He presumes that not just any three terms make up a valid proportional analogy. The relation on the left has to go from base to derived form, and as a result, a large number of formulas that look on the surface as if they might form the basis of proportional analogy are in fact illegitimate.

book: shoe::Fred: X is invalid because the terms have nothing to do with one another;
book:look:: bomb:X involves no systematic relation of content correlated with the relation of form;
book:cover::house: X involves no relation of form;
ear:hear::eye:X is invalid because the relation between *ear* and *hear* is isolated in the language and not systematic; and
redo:do::relate:X is invalid because the relation on the left goes the wrong way, from derived form to base.

The point of this is in effect that the terms on the left side of the proportion must be related by an existing morphological rule of the language, and 'analogy' is only to be invoked as the extension of such a rule to new inputs. Although Kuryłowicz himself does not present grammatical knowledge as a system of rules, the instances he sees as valid analogies are best viewed not in terms of the direct relation between surface forms, but rather as the extension of existing rules to new forms. As such, 'analogy' does not call for a separate and independent mechanism, since it consists simply in allowing existing rules to cover cases from which they were excluded in the grammars of earlier generations.

When OE *bēċ*, the plural of *bōc* 'book', which should yield *beech* in modern English, was replaced by *books* "on the analogy of stone: stones", what has happened is that the *s*-plural rule has been extended to a new case. We can represent this as the failure of a new generation to build a complex lexical item with a stipulated plural form, given that *book/beech* would be isolated in the language. Once the principles of Umlaut and palatalisation of /k/ to [č] after high front vowels ceased to be regular parts of the phonology, language learners would have to learn the plural *beech* as an idiosyncratic property of the lexical item *book*, since no rule produces it. When new learners simply fail to do that, the result is that the general rule for plurals fills the gap.

Such an extension of regularities produces new forms which were, in a sense, implicit in the grammar prior to their introduction, but over-ridden by the use of other, less regular forms. This is the sense in which de Saussure (1916 [1974]) considered (in a way paradoxical for the time) that analogical change was in fact no change at all: its operation has no effect on the system of *langue,* but only on the relative frequency of certain forms of *parole*.

This is also the primary sense of Anderson's (1973) notion of 'deductive change'. Deductive innovations are innovations that arise as a result of realising possibilities latent in the grammar whose rules have been inferred from the primary linguistic data. Where those possibilities have not previously been instantiated, the innovation consists in extending the rule(s) to a broader set of forms, and this is just what happens in valid cases of proportional analogy.

With this in mind, and against the background of a view of grammar (including morphology) as an articulated system of rules, let us consider the interpretation of some observations about cases of analogy. We can look first at some of Kuryłowicz's (1949) proposed "laws of analogy." The first of these is the principle that "[a] bipartite marker tends to replace an isofunctional marker consisting of only one of the two elements, i.e., the complex marker replaces the simple marker" (1966: 162; my translation — SRA). For example, earlier German *Baum/Baume* 'tree(s)' in which the plural was marked only by the final *-e* was replaced by *Baum*/*Bäume*, where it is marked both by this suffix and by Umlaut of the stem vowel, in the same way as in other words like *Grund/Gründe* 'basis/bases'.

We might be tempted to call this simply a tendency, since in other cases, such as the replacement of OE *lang/lengra* (where the comparative is marked both by a suffix and by Umlaut) by modern English *long/longer* without Umlaut, the replacement goes in the opposite direction. It is possible to make sense of both developments, however.

The examples where Kuryłowicz's principle is correct show us that 'complex markers' can be part of the same rule: that is, that there is a single rule in German that adds the schwa and fronts the vowel. This is interesting, because it shows us that Umlaut in German has actually split up historically into a number of individual cases, something that is confirmed by the fact that some idiosyncrasies exist in the way Umlaut affects particular categories (Janda 1982). It is this single complex rule whose extension to *Baum* results in the observed change. In the case of *long/longer,* in contrast, what is at stake is the fact that Umlaut has disappeared as a rule-governed phenomenon in English, apart from some lexicalised plurals. In the absence of any such rule, the marker of the comparative is reduced to suffixation of *-er*, and it is this rule (as opposed to the earlier one, including vowel fronting) that now applies to *long* and other adjectives.

Another of Kuryłowicz's proposed laws is the fourth: "When as a consequence of a morphological change, a form undergoes differentiation, the new form takes over its primary ('basic') function, the old form remains only in secondary ('derived') function" (1966: 169; my translation — SRA). For instance, a number of verbs with participial forms that would be irregular in modern English regularise the participle but preserve the older form in its use as a specialised adjective: *stretched/straight, worked/wrought*. Similarly, *elder* has been replaced by *older* as the comparative of *old,* but the original form survives in a specialised sense. In these cases, a form within a paradigm has been lexicalised in a special ('secondary, derived') sense, while the rules governing the basic paradigm in which it originated have changed. Past participles are now formed regularly in *-ed*, but when this change in the system occurred, it did not affect *straight, wrought* as adjectives (with special, lexicalised meanings), because these forms were in fact no longer participles.

Kiparsky (1974) criticises this principle, observing that in forms like *saber-tooths, still-lifes, Toronto Maple Leafs,* it is precisely the new form that engages the regular pattern, while the old (and now irregular) form is preserved in the 'primary, basic' function. There is a difference between these examples and the ones where Kuryłowicz's fourth law provides the correct description, though. These are examples in which a single form from within an idiosyncratic paradigm (not the whole paradigm) has been taken as the basis of a new formation, and accordingly the lexical idiosyncrasies of the original paradigm are not transferred. Thus, since a 'saber tooth' is not a tooth, a 'still-life' is not a life, and a 'Toronto Maple Leaf' is not a leaf, the lexically listed, idiosyncratic plurals *teeth, lives, leaves* are not automatically associated with the new formations.

Most of the changes noted above that are commonly grouped with (proportional analogy) can be seen as instances of imperfect learning, in the presence of a rule. Levelling, for example, is typically a matter of losing a lexical idiosyncrasy: that is, a new generation fails to incorporate the complications, and the grammar is simplified as a result. Simplification of the grammar is not in itself the motivation for this, as sometimes suggested: rather, simplification results from the fact that in the absence of evidence, a complication isn't incorporated into the new grammar.

From this, it would seem that the direction of levelling should always be the same for a given initial state. But consider the levelling of the Werner's law alternation between *s* and *r* in the past forms of 'choose' in English *vs.* German cited above. Since

the result of the elimination of this (no longer motivated) alternation goes in one direction in one language, and the other direction in the other, it appears that this form of analogy is not in fact unidirectional. Further investigation would be required to see if different forms can be regarded as the 'elsewhere' cases in the two languages. But in fact, we can find such disparate resolutions of the same alternation even within a single language, as where the same Ablaut class is leveled differently in English *bite/bit* (OE *bītan/bāt/biten*) as opposed to *ride/rode* (OE *rīdan/rād/riden*).

Rule generalisation, the core type of deductive change, provides no account of the really sporadic cases (such as blending, contamination), but then analogy in the traditional (proportional) sense has nothing to say about these either. Re-cutting, on the other hand, would appear to represent abductive change: a spoken form like *a napron* is subject to interpretation by the learner either in that way or as *an apron*, and this ambiguity leads to the possibility of reanalysis. In other instances, phonetic reduction and/or semantic specialisation may combine to remove the motivation for a linguistic form's original internal analysis.

Back formation and folk etymology represent instances in which the learner attempts to construct a base from which the observed forms can be derived by regular processes. Much the same happens when regular paradigms are learned on the basis of a few forms: as base is inferred from the forms that have been encountered, and the remainder of the paradigm is produced deductively from that, possibly leading to replacement of earlier forms that do not fit the same pattern, but were not available in the data from which the lexical item and its paradigm were acquired.

In all of these cases, we see the working of a relatively small set of mechanisms, primarily those of deductive and abductive change in much the same way parallel effects arise in other domains of grammar. In particular, there appears no need to invoke a special, distinctly morphological force associated with 'analogy' as opposed to more general principles deriving from the process of grammar transmission across generations.

5. 'GRAMMATICALISATION'

Another class of changes with particular importance for morphology that many writers have sought to identify as a domain requiring distinctive mechanisms and a specific theory is that of 'Grammaticalisation.' This is particularly invoked in the case of morphological structure that can be traced back to something that used to be formed in the syntax, and examples of the sort discussed above in section 3.1, among others, fall into this category. This concept has taken on a life of its own in the grammatical literature, especially among 'functionalist' linguists, and the number of books and articles on the topic testify to the extent to which some regard grammaticalisation as a domain of inquiry in its own right.

The notion (and the name, in translation) of 'grammaticalisation' emerges first in the work of Antoine Meillet:

> [in addition to analogy,] another process consists in the transition of an independent word to the role of a grammatical element. […] These two processes, analogical innovation and the attribution of grammatical character to a formerly independent word, are the only ones by which new grammatical forms are constituted.
>
> (Meillet 1958 [1912]: 131; my translation — SRA)
>
> […] While analogy can renew the details of forms, but usually leaves intact the overall plan of the existing system, the 'grammaticalisation' of certain words creates

> new forms, introduces categories which did not previously have linguistic expression, and transforms the overall system.
>
> (Meillet 1958 [1912]: 133; my translation — sra)

Within the pre-generative tradition in historical linguistics, the notion is taken up and extended, especially by Kuryłowicz, who provides what is often taken as the classical definition:

> Grammaticalisation consists in the increase of the range of a morpheme advancing from a lexical to a grammatical or from a less grammatical to a more grammatical status, e.g. from a derivative formant to an inflectional one.
>
> (Kuryłowicz 1965: 69)

The subsequent evolution of the notion within more recent theories is traced by Campbell and Janda (2001). There is no question that the phenomena subsumed under this heading are quite real: many historical changes can be pointed to as instances of shifts from lexical status to that of grammatical markers, of clitics to affixes, of more 'contentful' grammatical categories to ones that are less so, and of the decay of segmentable grammatical material to phonological alternation. To cite one example of a set of changes consistent with this scenario, consider the history of negative markers in English (following Anderson 2005: §2.6).

As noted in section 3.1, in the transition from Old to Middle English a lexical phrase (*nā wiht* 'no thing' becomes an adverb *not* whose content is that of logical negation, a more grammatical notion than was present in the original phrase. This element, in turn, was subject to phonetic reduction in many instances, becoming the (simple) clitic *-n't*, attaching to whatever word occurred to its left. Given the positional restrictions on sentential negation, however, and the rise of empty *do* in negative sentences, the word to which clitic *-n't* attached was nearly always a modal or auxiliary verb in INFL, and it is plausible to suggest that it was reanalysed as a special clitic introduced at the right edge of this constituent as the realisation of a feature of sentential negation. Finally, as shown in detail by Zwicky and Pullum (1983), *-n't* has been reanalysed in modern English as an inflectional feature of modal and auxiliary verbs. Each step in this development is consistent with the overall pattern of changes posited by the theory of grammaticalisation.

The existence of changes of the type indicated by Meillet, Kuryłowicz, and subsequent writers on grammaticalisation is thus uncontroversial. What is less apparent is the necessity for invoking an overall theory of this class of changes. As Newmeyer (2001) has stressed, we need theories of the ways the semantic content of lexical items can be 'bleached' semantically and reduced phonetically over time, ways in which such reduced elements can be reanalysed as (phonological and/or morphosyntactic) clitics, ways in which phonologically unitary combinations of host and clitic can be reanalysed as morphologically complex single words, and ways in which originally syntactic complexity can be reanalysed as morphological, as indicated in section [sec:synt-opacity] above. Each of these is an appropriate object of study in its own right, but it is far from clear that 'grammaticalisation' as an overall pattern has properties of its own above and beyond those of the individual types of change just mentioned.

One observation that has been taken to support such a theory is the claim that these various types of change form a unitary 'cline', with the property that overall, linguistic elements can move in only one direction along this cline taken as a whole over time. The claim of unidirectionality, however, has been shown to have numerous counter-examples at every step. Several such instances of 'de-grammaticalisation' are studied in some detail by Norde (2009); a catalog of other cases of various sorts is offered by

Janda (2001), and it has to be concluded that the overall pattern of grammaticalisation is only a tendency (to be accounted for as the cumulative effect of asymmetries in all of the component types of change) and not a distinct fact in its own right, demanding a unitary explanation.

In the face of this evidence, grammaticalisation theories continue to assert the unity of the phenomenon. As a recent reviewer put it, even Norde, in providing clear evidence against the claim of unidirectionality nonetheless

> sides with those who consider grammaticalisation to be a separate type or process of linguistic change. However, she quickly adds some qualifications. For one, the types of reanalyses that together constitute grammaticalisation are ordinary changes that affect all kinds of other linguistic entities. For another, grammaticalisation is not deterministic, i.e. a word that goes one step down the grammaticalisation cline is not fated necessarily to continue ineluctably farther down the cline. And she does not insist that there are any universal pathways of grammaticalisation. She concludes, "Since both grammaticalisation and degrammaticalisation are composite changes, the directionality of each of their primitive changes must be examined in its own right. … It turned out that all primitive changes have an unmarked direction, though directional tendencies are stronger in some changes than in others. … Taken together, the preferred directions of the primitive changes involved may account for the observation that grammaticalisation is far more common than degrammaticalisation" (p. 104). It is doubtful whether all these qualifications really allow the characterisation of grammaticalisation as a "separate process of linguistic change" to have much substance.
>
> (Fortson 2012:266)

And it is notable that defenders of the notion of grammaticalisation have not demonstrated any unique properties associated with it, properties not derivable from those of the component types of more local change that need to be recognised in any event.

The remarks above are not intended to minimise the importance of the study of 'Grammaticalisation' for an understanding of morphological change: only to deny that there is any such thing, in the sense of a distinct process with properties of its own distinct from those of a number of particular types of change that are to be studied in their own right. We may well believe that all of these forms of change are natural and common, and that the opposite changes, while possible, are less likely, confined to particular circumstances, and rare. As a result, the long term trend will be in accord with what grammaticalisation theory predicts, and complex diachronic correspondences recapitulating all of these stages in reverse will be vanishingly rare. But that result follows without the need to invoke a distinct theory of grammaticalisation: only theories of the individual, strictly local components of change.

6. CONCLUSION: WHAT ARE THE MOTIVATIONS AND MECHANISMS OF CHANGE IN MORPHOLOGY?

In this survey, we have seen that the principles operative in morphological change are of a piece with those to be found in other domains. We have seen that morphological regularities can emerge in a language as a consequence of the introduction of a sufficient number of forms instantiating them; this sort of induction is entirely comparable to the way regularities are extracted by the learner in all areas of linguistic structure. Morphology can also arise through the abductive reanalysis of patterns originally attributable to the phonology or to the syntax, again in ways that have

obvious precedents in those other domains. Finally, the ways in which systems of morphological regularities can themselves change over time, the sorts of thing commonly attributed to the working of 'analogy,' are also best understood as instances of the same processes of deductive change that extend generalisations in any component of the grammar.

Specifically, the core cases of analogical change do not involve a distinctive mechanism of change displaying properties of its own: rather, they involve the extension of motivated morphological regularities to new cases. In general, 'analogy' is what happens when (a) some regularity in the grammar of a previous generation becomes isolated as a consequence of other changes, and the forms involved are brought under some other regular pattern; or else (b) the exceptional treatment of some form (e.g. an irregular past or plural formation) is not acquired by a subsequent generation, and as a result the form in question comes to be treated as subject to general processes.

Similarly, 'Grammaticalisation' is not an independent force in language change. In fact, it is incoherent to see it as a form of linguistic change at all. As such, it does not call for a distinct "theory of grammaticalisation." We *do* need (a) theories of the specific types of change (semantic, formal, phonological) that constitute the components of the changes called grammaticalisation; and (b) an explanation for why individual changes are more likely to proceed in one direction than the other. But the coherence of these individual changes is only obscured by lumping long-term diachronic correspondences together under the cover term of grammaticalisation.

In short, morphological change is only special in the sense that it is change affecting the morphology of a language. It consists simply of the playing out of the general mechanisms of linguistic change within this particular component of the grammar, not in the working of distinctive processes specific to this domain.

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NOTES

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[2]I do not mean to imply the existence of a generally accepted account of what is and is not 'natural' in the domain of phonological rules and relations. This question has a long and contentious history, and no easy answers are available. Some discussion is found in the chapters by Kiparsky and Garrett (this volume). Nonetheless, it is widely accepted that some sorts of relation — e.g., straightforward assimilations along phonetically coherent dimensions — are much more plausibly attributed (by language learners as well as linguists) to the phonological systems of natural languages than others. It is also clear, however, that historical change can effectively replace a system with a high degree of naturalness in this intuitive sense with relations that are much less generally plausible. For an early discussion of this, see Bach and Harms (1972).

[3]The elements *-li* and *-ka* in these examples, and their phonological variants, represent older auxiliaries as will be discussed below in section 3.

[4]In fact, Munro (1999) notes that there is a tendency among less conservative speakers to eliminate the Nominative marker associated with the original subject in these and other double subject constructions, and even in some cases to replace it with an Accusative marker, thus rationalising the morphology in relation to the syntax.

[5]Where both subject and object are speech act participants, we have yet another set of 'you and me' forms, not considered here.