Morphological reconstruction

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1 Introduction and overview

Morphological reconstruction cannot be described in terms of an exact set of procedures comparable to the Comparative Method for phonological reconstruction; this follows from the fact that morphological change is not 'regular' in the sense that phonological change is. This does not mean, however, that morphological reconstruction is not possible. To practise such reconstruction successfully, however, requires not only (as is to be expected) a knowledge of the phonological changes that have applied in the given languages but also a general understanding of the kinds of morphological changes that typically occur. That is why the following discussion will be in terms of the types of change that are involved (cf. Koch 1996, 2011 for typologies of morphological change).

Morphological reconstruction can be viewed as an analytical process that 'undoes' the processes of change and posits earlier morphological structures. Changes that affect the morphological structure of words include not only the much discussed cases of 'analogical' change within and between inflectional paradigms (discussed in section 8 and section 9), but also alterations to the order of bound morphemes (section 5) and to their functions (section 6). Functional change of morphemes can be viewed as a kind of semantic change. The morphological complexity of words can be eliminated, requiring reconstruction for its recovery from simple word forms (section 3); this kind of investigation is somewhat akin to the etymological study of vocabulary (cf. Mailhammer, this volume). On the other hand morphological elements may be created from lexical and/or grammatical elements by processes of grammaticalisation and/or morphologisation;¹ here reconstruction from morphology yields aspects of earlier syntax (section 4). Similarly, where morphological material results from phonological changes, reconstruction yields aspects of earlier phonology (section 7). Bound morphology can result from language contact, so methods used in analysing borrowing are required for reconstructing borrowed morphology as well (section 10). Finally, where complex words are transmitted without change to their morphological analysis, morphological reconstruction requires simply synchronic morphological analysis applied to sets of words in a proto-language (section 2).

Morphological reconstruction is here understood to include any reconstruction that posits morphologically complex words in earlier states of language or historical processes that modify the internal morphological structure of words. Reconstructions discussed here are based on the comparison of forms between related languages (as in the Comparative Method), within the same language (as in internal reconstruction), or between languages that are not necessarily related (in reconstructing borrowing). Morphological reconstruction, like

reconstruction in general, involves both hypotheses about earlier situations and hypotheses about changes that have taken place during the course of history; hence every reconstruction needs to be justified in terms of both the evidence for earlier states and the plausibility of the changes that are implied. If a procedure for morphological reconstruction needs to be formulated, it will be quite general and could read like what is presented in (1).

- (1) Match forms that are potentially both complex morphologically (i.e. consist of more than one morpheme) and cognate according to the established sound correspondences of the language(s) supplemented by principles of morphological and semantic change. Posit earlier (complex) forms and show how the attested forms have developed from these earlier forms by plausible historical processes.

Case studies presented here are taken primarily from Australian languages, especially those of the Pama-Nyungan family (Miceli, this volume), and in particular from the Arandic subgroup (Koch 2004). This serves two purposes: it provides fresh alternatives to the usual textbook examples, and it emphasises the universal applicability of the methods. Morphological reconstruction as presented here is not tied to any particular formal theory of morphology, but uses the traditional concepts of morpheme, allomorph, and paradigm. For most kinds of change discussed here a caution is included about what not to expect.

2 Applying morphological analysis to reconstructed words

The first technique to be considered consists of simply applying synchronic morphological analysis to the results of comparative phonological reconstruction which yields sets of proto-words that share a common element. This is the sense in which Anttila (1989: 351) claims that "comparative morphology is simply applied phonology." Such a morphological analysis "yields morpheme boundaries and the sequences of morpheme slots" (p. 352). As an example, consider the Proto-Pama-Nyungan (pPN) paradigms reconstructable by comparative phonological methods, shown in Table 12.1.²

Morphological analysis applied to these forms yields the stems (*nga-, *nyun, *nhan, and *nhu) plus the following case suffixes: ergative *-tu after *n*, *-lu after a vowel in 3SgM but *-thu in 1Sg; nominative *-y in 1Sg otherwise -Ø; accusative *-nha after a vowel and *-a after a consonant; dative *-tyu in 1Sg, *-ngu after the other vowel-final stem, and *-u after a consonant. These reconstructed case suffixes differ somewhat from those reconstructable for lexical nouns: ergative *-ngku (after disyllabic vowel-final stems), *-lu (after other vowel-final stems), *-Tu (with homorganic stop, after nasal-final stems), nominative *-Ø, accusative *-Ø (but *-nha after personal stems), dative *-ku. These differences show the importance of inferring the proto-suffixes from actual inflected words rather than comparing disembodied suffixes. (Further synchronic analysis of pPN could posit a single underlying form for the allomorphs of each case, e.g. *-lu for ergative, *-nha for accusative, *-ngu for dative, plus morphophonemic rules to produce the correct surface forms. Comparative morphological reconstruction, however, is completed when allomorphs and their distribution are established; however, internal reconstruction could later be applied to the proto-forms to generate hypotheses about how their allomorphy came about as the result of phonological changes from a pre-proto-language stage.)

Morphological analysis can be performed on proto-forms regardless of whether their reflexes have continued to be analysable in descendant languages. If there has been no change to the morphological analysis in descendant languages, this is an example of reconstruction

Table 12.1 Reconstructed Pama-Nyungan singular pronouns

	1Sg	2Sg ³	3SgF	3SgM
Ergative	*ngathu	*nyuntu	*nhantu	*nhulu
Nominative	*ngay	*nyun	*nhan	*nhu
Accusative	*nganha	*nyuna	*nhana	*nhunha
Dative	*ngatyu	*nyumu	*nhanu	*nhungu

that has not involved morphological change. One cannot assume, however, that it is typical for morphologically complex words to descend unchanged except by phonological change processes, since they are liable to be affected by a number of processes of morphological change.

3 Reconstructing lost morphological complexity

Loss of morphological complexity is actually a common phenomenon of language change; which must therefore be considered in reconstructing earlier stages of language. Reconstruction may posit morphological complexity which is not attested in the attested languages, if they have altered their morphological analysis by processes such as the loss of a boundary and absorption of a formative into the stem. The complex structures to be reconstructed may be compounds, reduplicated words, words consisting of a lexical stem plus a derivational formative, or inflected words. Each of these will be illustrated in the following sections.

This kind of reconstruction may be carried out purely as an exercise in discovering evidence about earlier morphological patterns. Or it may be conducted as part of the etymological study of vocabulary, and valued for the information it provides on the prehistory of (parts of) lexemes. In either case, a practical issue is where to find the forms to compare, especially since they are likely to have diverged semantically during the course of linguistic evolution (think, for example, of how the senses of English *quick*, *quicken*, *quicksand*, and *quicksilver* have diverged from their shared earlier sense 'alive'). What one looks for is forms whose parts have enough formal resemblance to qualify as (partial) cognates according to the established phonological changes as well as bearing some semantic relation that allows them to be related through plausible semantic and lexical changes. Where earlier complex structure is posited, it needs to be justified by evidence for the separate status of the erstwhile components, as well as by the plausibility of the changes undergone by the word.

3.1 Reconstructing compounds

One kind of morphologically complex word is a compound. Arrernte *alkngenthe* 'flame' can be compared to *alknge* 'eye', to which it bears a partial formal (but not semantic) resemblance. If these words are historically related, the remainder of the first word, *nthe*, needs to be accounted for. The plausibility of the second element *-nthe* being an originally separate morpheme comes from comparative evidence: 'flame' in the related language Kaytetye, *rhwenhe*, contains the same element following a non-cognate term for 'eye', *erhwe*; this can hardly be accidental. Internal evidence within Arrernte for a morpheme *nthe* comes from the verb *nthile* 'light a fire, make flames', where *-ile* is a factitive suffix, which must here combine with an erstwhile noun *nthe* 'flame'.⁴ (This example is discussed in more detail in Koch 2003a: 274–275.)

A more subtle example of such reconstruction involves a noun+verb compound in Arrernte (discussed in Koch and Hercus 2013). Language-internal comparison of *atnarnpe* 'step down' with *ampe* 'put foot down' and of *rake* 'grab away from someone' with *ake* 'pick (fruit from a plant)' suggests that *atn-* and *r-* may have originally been separate elements. A further comparison of *atniwe* 'put someone on their feet' with *iwe* 'throw' suggests that *atn-* may be associated with feet. Forms like *atnalthe* 'a lot of tracks in an area', where *-althe* is an intensive suffix, suggests that *atn-* here means 'footprints', which in Australian languages is usually an extension of 'foot'. The normal Arrernte term for 'foot', however, is *ingke*. All this suggests that *atn-* in the verbs is a former morpheme meaning 'foot', which survived only in complex forms. Sound changes established for the history of the Arandic languages (Koch 2004) allow it to be a reflex of a widespread Pama-Nyungan **thana*.⁵ This presupposes a pattern of noun+verb compounds, which is supported by the existence of more obvious compounds involving bodyparts such as *ingke-ntewe* 'stamp one's foot', using the contemporary word for 'foot', and *arr-angke* 'cry, bawl', consisting of 'mouth' plus 'talk'. Returning to *rake*, this can now be analysed as etymologically 'hand-grab'; the first element *r-* can be the reflex of Proto-Pama-Nyungan **mara* 'hand', which has otherwise been replaced in Arrernte by *ilye* (originally 'fingernail').

3.2 Reconstructing reduplicated words

Consider the Kurna (Thura-Yura language of South Australia) reduplicated kin term *kawawa* 'mother's brother' (MB). An apparent cognate *kawa* occurs in many related languages. So what is the origin of the final *wa*? A similar pattern is found in a number of other 'senior' kin terms, when compared to simpler forms of typically reciprocal meanings. (In Australian languages it is common for some kin terms, e.g. grand-kin terms, to be reciprocal, the senior member [e.g. mother's mother] being addressed by the same term as the junior member [female's daughter's child]; it is also relatively common for kin terms to be reduplicated.) The forms shown in the second column of Table 12.2 suggest a strange pattern of reduplication of the type $C_1 V_1 C_2 V_2 \rightarrow C_1 V_1 C_2 V_1 C_2 V_2$, where C_2 can be a consonant cluster. The suggested pattern would take *thamu*, make a copy of its V_1 (*a*) and C_2 (*m*), and insert the sequence *am* after C_2 , producing *tham-am-u*; likewise *kam-am-i* from a presumed earlier (and well attested) **kami*. The historical evidence for their prehistory, however, points to a different origin. Other compounds in Kurna and closely related languages show that when two disyllabic stems come together the last vowel of the first stem and the first consonant of the second stem can be dropped: compare Kurna *ngatyu-yarli* and Narungga *ngaty-arli* 'father' (lit. 'my male'). If this process applied to reduplicated disyllabic stems such as **kami-kami* (treated as compounds) the form would have been reduced via an optional **kam(ik)ami* to *kamami*.⁶ We can therefore reconstruct the whole series of senior kin terms shown in the second column of Table 12.2 as former reduplicated stems. Meanwhile the simple forms have typically been augmented by a suffix, especially *-tya*.

A more complex example of reconstructing reduplicated forms comes from the Arandic languages. Koch (2013b) shows that a number of Arrernte kin terms must descend from earlier reduplicated structures. The evidence is largely language-internal. For example, *kake* 'elder brother' has inflected forms with a shorter stem *k(e)*: *k-atye* 'my elder brother (eB)', *k-angkwe* 'your eB', *k-ikwe* 'his/her eB', *ke-nhenge* 'pair consisting of an eB and younger sibling'. One could posit an earlier free form **ake*, from which this *ke-* is truncated. The form *ake* is attested in Lower Arrernte as the second member of compounds *akely-ake* and *werr-ake*, both 'brother', the first elements occurring also on their own as words for 'brother' and

Table 12.2 Internal reconstruction of Kaurua reduplicated kin-terms

senior gloss ⁷	senior form	junior form	junior gloss	earlier form
MB	<i>kawawa</i>			* <i>kawa-kawa</i>
MM	<i>kamami</i>	<i>kamitya</i>	fDCh	* <i>kami-kami</i>
MF	<i>thamamu</i>	<i>thamu(tha)</i>	mDS	* <i>thamu-thamu</i>
FM	<i>ngapapi</i>	<i>ngapitya</i>	fSCh	* <i>ngapi-ngapi</i>
FF	<i>matlala</i>	<i>matlanta</i>	mSCh	* <i>matla-mala</i> ⁸
F-in-law	<i>ngarrparpu</i>	<i>ngarrputya</i>	S-in-law	* <i>ngarrpu-ngarrpu</i>

'boy' respectively. The free form *ake* (as well as *ke*) is actually attested in the earliest dictionary of Western Arrernte (Strehlow n.d.). So *kake* can easily be interpreted as continuing a reduplicated stem *ak(e)-ake – it is normal for initial vowels to drop in this dialect. Other Arandic kin terms of similar form can therefore also be interpreted as former reduplicated stems: *yaye* (< *ay(e)-aye 'elder sister', Kaytetye *tyatye* 'mother's father', beside which there are derivatives of a shorter stem *aty-* (Arrernte *atyemeye*, Kaytetye *atyewaleye*), and *myanye* 'mother's mother'. This reconstructed pattern is made more plausible by the fact that reduplication of kin terms is synchronically used for affectionate purposes and constitutes one of several means by which the Arandic languages have replaced short lexical stems with longer ones.

3.3 Reconstructing derived words

It is common for some derived words to lose their synchronic morphological complexity, as they become separated from related words through the effects of sound change, semantic change, and loss of vocabulary. For example, the English words *health* and *sloth* are no longer perceived as derivatives from *hale* and *slow* respectively, as *wide* is derived from *width*. In Kaytetye (and some other Arandic varieties) *kwerrralye* 'star' bears a partial phonological resemblance to *kverre* 'girl'; is there a historical derivational relation? In Western Arrernte *kwerrralye* more specifically designates the Pleiades and this constellation is interpreted in mythology as a group of girls (Wilkins 1997). Although a certain etymology cannot be provided for the suffix *-alye*, its recurrence in *ngkerralye* 'ribs' (in several Arandic varieties) makes an earlier collective function plausible. This example illustrates how morphological reconstruction overlaps with etymology (cf. Koch 2003a; Mailhammer, this volume), and the holistic study of the lexicon of a language in its cultural as well as linguistic setting.

3.4 Reconstructing inflected words from stems

Part of a lexeme may be revealed by morphological reconstruction to have been an earlier inflectional formative. An earlier word would have undergone a reanalysis whereby the inflectional affix was interpreted as part of the stem. To be successful, reconstruction should demonstrate from cognates the prior existence of such an inflectional formative and present plausible grounds for a reanalysis that absorbs this into the stem.

3.4.1 Absolutive case

In Arrernte and the closely related Alyawarr language interrogative and demonstrative stems contain a final syllable *nhe* (cf. Koch 1995: 39). The absolutive (= nominative/accusative) case lacks an inflection. Table 12.3 shows a partial case paradigm for Arrernte *iwenehe* 'what' and Alyawarr *nhenhe* 'this'. It also shows rarer variants based on a shorter stem *iwe-* and *nhe-*; in the short paradigms *-nhe* is to be analysed as the absolutive inflectional suffix. The absolutive form, e.g. *iwenehe*, is identical in the two paradigms; the only difference is that an internal morpheme boundary occurs in the short paradigm. The historical relation between the two paradigms can be explained as follows: the short paradigm is older; its absolutive form *iwe-nhe* has been reanalysed as *iwenehe-Ø*, and a new paradigm has been built on the longer stem *iwenehe-* that results from this reanalysis. This scenario is justified by the following facts. First, cognates of the suffix *-nhe* (*-nha* and *-nya* in neighbouring languages) mark the absolutive case of definite nouns and pronouns. Second, most Australian languages have a pattern whereby many nominal paradigms lack an overt case marker for the absolutive. This general pattern allows a reanalysis in which the absolutive forms *iwe-nhe* and *nhe-nhe* are interpreted as unsuffixed forms, which entails the treatment of *nhe* as part of the stem and allows for the creation of new forms of the paradigm by adding suffixes to this extended stem. Third, this diachronic process of reanalysing overtly marked forms in basic inflectional slots such as absolutive case is a widespread kind of morphological change (see Koch 1995).

3.4.2 Third person singular

In the Nyulnyulan language family Bardi (Bower 2012a) and Nyulnyul (McGregor 2011) have possessive prefixes which mark the person and number of possessors of certain bodypart nouns. In the related languages Nyikina and Yawuru possession is rather expressed by an independent pronoun. The form of bodypart nouns, however, includes an initial syllable which is missing in the Bardi and Nyulnyul cognates but which resembles the 3Sg possessor prefix of Bardi – see Table 12.4.⁹ It must be concluded that Bardi represents the earlier system, that 3Sg forms have been reanalysed as if they lacked a prefix and the erstwhile

Table 12.3 Long and short paradigms of Arrernte 'what' and Alyawarr 'this'

	'what' (long)	'what' (short)	'this' (long)	'this' (short)
Absolutive	<i>iwenehe</i>	<i>iwe-nhe</i>	<i>nhenhe</i>	<i>nhe-nhe</i>
Ergative	<i>iwenehe-le</i>	<i>iwe-le</i>	<i>nhenhe-le</i>	<i>nhe-le</i>
Dative	<i>iwenehe-ke</i>	<i>iwe-ke</i>	<i>nhenhe-ke</i>	<i>nhe-ke</i>

Table 12.4 Nyulnyulan possessed noun: 'lower leg'

	Bardi	Yawuru	Nyikina
1Sg	<i>nga-midi</i>	<i>nimirdi dyanu</i>	<i>nimidi-yanu</i>
2Sg	<i>nyi-midi</i>	<i>nimirdi dyiya</i>	<i>nimidi-dyiya</i>
3Sg	<i>ni-midi</i>	<i>nimirdi dyina</i>	<i>nimidi-yina</i>
3Pl	<i>irr-midi</i>		<i>nimidi-yirra</i>

prefix has been treated as part of the lexical stem of the bodypart noun, and this new extended stem is modified by appropriate pronouns to specify the possessor. The 3Sg, like the absolutive (or nominative) case, is considered the basic member of its inflectional paradigm, and such forms are most liable to be interpreted as zero-marked and to have a large influence in reformulating the paradigm – as explained in Koch (1995). Table 12.4 shows that possession in Yawuru is expressed by a free pronoun accompanying what was formerly the 3Sg form of the noun; in Nyikina the possessive pronouns have further evolved to enclitics, with some reduction of the initial consonant.

3.4.3 First person singular in kin terms

Although it is the 3Sg which is the basic or unmarked member of a person paradigm in a general sense, in kin terms we often find it is a 1Sg marker that gets absorbed into the lexical stem. Many kin terms in Arrernte include an element *ye* that seems to have no function but disappears before some inflections: *me*ye ‘mother’ has inflected forms first person *m-atye*, *m-angkwe* second person, *m-ikwe* third person, *me-nhenge* dyadic (‘mother and her child’). Its status as a morpheme is dubious: there is synchronic evidence for its separability (since it disappears before inflectional suffixes) but none for its meaning. Comparison with Kaytetye suggests an explanation: there *-ye* is the marker of a 1Sg possessor. We can thus reconstruct for an earlier stage of Arrernte a situation where *-ye* was an inflection marking 1Sg, posit that such inflected forms were interpreted as bare stems (‘my mother’ becoming just ‘mother’), and explicit possessors were signalled by attaching a pronoun, including *atye* ‘my’, to (re-)mark 1Sg. (In section 4.1 it is shown how these enclitic dative pronouns were eventually reanalysed as suffixes.) This reconstruction explains why Kaytetye lacks a 1Sg affix cognate with *-atye* (see Table 12.6): it has preserved the original marker *-ye*. A plausible reason for treating a 1Sg inflected form as the stem in kin terms is that it is 1Sg forms which are used in address, and address forms of kin terms are often used as the basic form.¹⁰

3.4.4 Locative case

Other members of inflectional paradigms may also be reanalysed as stems. Locative forms of place names and demonstratives and ‘where’ words often undergo this change. This is demonstrated in Koch (1995: 47–51): for example in Dyirbal a whole paradigm of the article-like ‘noun marker’ *bala* was formed from the locative case form *ba-la* of a demonstrative stem **ba-*. A more complex set of developments from the cognate **pa-* is reconstructed for some western Pama-Nyungan languages in Dench (2007). Table 12.5 illustrates from the Yankunytjatjara dialect of Western Desert the paradigms of stems that appear in various languages as mid-distal demonstratives, ‘definite nominals’, or third person pronouns. All the paradigms involve a stem that consists of *pa-* plus another syllable: *lu*, *nya*, or *la*. In many other languages cognates of these syllables are each case suffixes: *-lu* ergative, *-nya* (< **nha*) nominative/accusative, and *-la* locative. Reconstruction in the light of cognates in other languages thus suggests that these three stems continue separate case-forms of an original single paradigm of **pa-*. Dench (2007) gives reasons – in terms of their discourse functions – why it is plausible that each of these case-forms should have been reanalysed as the stem of a separate paradigm, with the result that the original paradigm has split into three paradigms.¹¹

Table 12.5 Yankunytjatjara three paradigms for **pa-*

	DefN	Dem	Dem	Reconstructed
Ergative	<i>paluru</i>	<i>panya-ngku</i>	<i>pala-ngku</i>	<i>*palu</i>
Nominative	<i>paluru</i>	<i>panya</i>	<i>pala</i>	<i>*panha</i>
Accusative	<i>palunya</i>	<i>panya</i>	<i>pala</i>	<i>*panha</i>
Dative	<i>palumpa</i>	<i>panya-ku</i>	<i>pala-ku</i>	<i>*pamu</i>
Locative	<i>palula</i>	<i>panya-ngka</i>	<i>pala-ngka</i>	<i>*pala</i>

3.4.5 Tense markers

In languages of the Aranda branch of the Arandic subgroup (i.e. all except Kaytetye) about 30 verb stems end with a synchronically meaningless syllable *rne*, e.g. *angerne-* ‘dig/scoop’. This cannot be identified as a current inflection or a former derivational suffix, nor as an original part of the verbal root, since: (a) it is absent from nominal derivatives (e.g. *agentye* ‘soakage’ [place where one can scoop up water], where *-nty* is in origin a nominalising suffix); and (b) it is missing from the sister-language Kaytetye, where the cognate verb has the shorter form *ange-*. Verbs with this *rne* are all transitive, and some contrast with an intransitive stem that lacks it; e.g. *amperne-* ‘burn’ (tr) vs. *ampe-* ‘burn’ (itr); for such verbs *rne* can be considered synchronically a transitivising morpheme. Related languages to the west of Arandic have inflectional classes for verbs, and one class has suffixes whose characteristic consonant is either *l* or *rn* (a retroflex nasal). In Warlpiri *-rni* marks present and *-rnu* past. If pre-Proto-Arandic had such a system the vowel of both would have become *e* (shwa) as the result of regular sound changes and ambiguity would have arisen. It is proposed that this did happen and that a form like **amperne* (< **kamparni*) was reanalysed as having a zero present tense marker, *rne* was treated as part of the stem, and an overt suffix was added to indicate past. The coexisting intransitive stems, as in other languages, would have belonged to a different inflectional class and taken a different set of suffixes, which did not include *rne* – as is the case for *kampa-* ‘burn’ in the Western Desert language. In other languages the *l/rn* class included predominantly transitive verb stems, and some of the Arrernte verbs are cognate with these. It thus appears that the origin of *rne* in Arrernte verbs was with a number of transitive verbs of an earlier *rn/l* class. Further support for such a class in the ancestor of the Arandic languages comes from the fact that Kaytetye uses *l* as the combining form of transitive verbs in some complex formations, in contrast to *rr* for intransitive verbs; e.g. *are-l-alpe-* ‘see and go back’ vs. *angke-rr-ayte-* ‘speak and go back’ (cf. section 4.5). This example shows not only that a part of a lexical stem can be the reflex of an inflection but that the earlier existence of inflectional classes can be reconstructed from facts in a language which synchronically lacks such classes.

4 Reconstructing morphologisation from syntax

The situations described in section 3 could be described as involving demorphologisation: reconstruction posits morphological complexity where there is none in later stages of a language. The following section describes the opposite situation, morphologisation. Here

reconstruction begins from morphologically complex words and yields earlier constructions which are syntactic rather than morphological; the morphological structures are the result of components having lost their status as separate words. The boundaries that have been lost in these cases are word boundaries. Plentiful examples of such change can be found in the copious literature on grammaticalisation, beginning with Givón (1971), who coined the well-known aphorism that “today’s morphology is yesterday’s syntax” (cf. Joseph 2003; Frajzyngier, this volume). The focus of the examples presented here is not so much on reconstructing earlier syntactic constructions as on discovering the etymology of bound morphemes which originated outside of morphology. These examples show that one cannot expect that all morphological elements of a language continue elements of the same status in earlier stages of the language.

4.1 Person affixes from pronouns

The Arandic languages use affixes to indicate the person of the possessor¹² of a kin relation. Cross-language comparison between Arrernte and Kaytetye suggests that the person affixes (except for the 1Sg) are cognate. A problem for morphological reconstruction involves the order of the cognate affixes: they are suffixes in Arrernte but prefixes in Kaytetye. It is implausible that historically suffixes re-ordered to become prefixes or vice versa. Language-internal comparison reveals that these person-markers resemble the dative forms of independent pronouns in both languages, except that they lack the final syllable (*nge* in 1/2Sg, *re* in 3Sg) of the free pronouns. The free pronouns in the two languages are cognate as are the affixes: their pre-Arandic forms (reconstructed on the basis of cognates in other Pama-Nyungan languages) are given in Table 12.6. It is possible to reconstruct a long and a short version of each set of forms: the long forms are reflected as free pronouns and the short forms as person affixes. This presupposes that the short forms were separate words, probably clitics, that could occur either before or after the kin noun that they qualified, and that they became fixed in opposite sides of the noun in the separate languages before being reanalysed as affixes. The prior existence of two sets of pronouns is supported by the general tendencies both to reinforce pronouns (by adding a particle) to mark pragmatic prominence and to reduce pronouns (by de-stressing and omitting segments) to mark continuity of reference (Mushin and Simpson 2006).

4.2 Case suffix from postposition

A comitative case suffix marks accompaniment in Arandic languages. It has two forms, *-larlenge* and *-ngarlenge*. In Kaytetye these allomorphs are conditioned by the length of the stem; in Arrernte *-ngarlenge* is a rare alternative to the normal *-larlenge*. In Kaytetye the locative case suffix has allomorphs *-le* and *-nge*, which are conditioned by the same factors as the comitative variants, and this allomorphy is reconstructable to Proto-Arandic (on the evidence of cognate suffixes in related Pama-Nyungan languages that have a similar conditioning). Hence the comitative forms can easily be analysed as the locative case followed by an element **arlenge* (the first vowel normally elides in such a combination). A plausible explanation is that **arlenge* was a postposition that occurred after a noun inflected in the locative, and that this form has been reanalysed as part of the word, combining with the erstwhile locative suffix into a longer suffix marking a new case value.¹³

Table 12.6 Arandic person markers and free pronouns

	Arrernte affix	Kaytetye affix	Arrernte pronoun	Kaytetye pronoun	Pre-Arandic pronoun
1Sg	<i>-atye</i>	<i>-ye</i>	<i>atyenge</i>	<i>atyenge</i>	*ngatyu(ngV)
2Sg	<i>-ngkwe</i> ¹⁴	<i>ngke-</i>	<i>ngkwenge</i>	<i>ngkenge</i>	*nyungku(ngV)
3Sg	<i>-ikwe</i>	<i>kwe-</i>	<i>ikwere</i>	<i>kwere</i>	*nguku(rV)

4.3 Inclusive pronoun from inclusory noun phrase

Many Australian languages make an inclusive vs. exclusive distinction for first person dual and plural pronouns. Comparative study shows recurrent diachronic processes of loss and later reintroduction of a morphological contrast between inclusive and exclusive forms (see Dench 1994 for languages of the Pilbara, and section 6.1 below for an example of the loss of the contrast). Where there is no morphological contrast, the distinction may be indicated by syntactic means, including the inclusory construction, whereby the inclusive for example is expressed as ‘we you’, and the exclusive by ‘we he/she’, i.e. by mentioning the whole set and a member of the set. The Karnic language Pitta-Pitta is one language that uses the syntactic strategy. Some other Karnic languages do have a morphological contrast, but the inclusive forms can be reconstructed as reflexes of a syntactic ‘we you’ construction. In the Arabana-Wangkangurru language the first dual exclusive is *ari* (which on the basis of cognates clearly descends from earlier **ngali*, *r* here denoting a tap). The inclusive category, however, is expressed (differently in the several dialects) by a pronominal stem which appears to combine *ari* with a form of the 2Sg pronoun: Wangkatyaka *aruntu* (cf. ergative *untu*), Arabana *arimpa* (cf. nominative *inpa* in Pitta-Pitta), Wangkangurru *aruna* (cf. accusative *una(nha)*). The historical explanation for the inclusive stems is that they originated as inclusory phrases, which were reanalysed as a single word meaning 1DuIncl, which was then inflected with the case suffixes appropriate to a non-singular pronoun.¹⁵

4.4 Case suffix from case-inflected pronoun

In Diyari (one of the Karnic languages) there is a special set of case suffixes used for female personal names. Table 12.7 shows how these differ from the suffixes for common nouns and for male personal names. Several of the feminine suffixes – the ergative, nominative, and accusative – resemble the forms of the third singular feminine pronoun, minus the first consonant and vowel of the latter: these are in bold type in Table 12.7. This formal resemblance, as well as the typological oddity of female case suffixes, can be explained if we hypothesise that these suffixes originated as enclitic pronouns that marked the noun as definite and feminine, and that the pronouns occurred at the end of the noun phrase. This is a typical syntactic structure for Australian languages. It is also common for enclitic forms to be reduced phonologically by the loss of a syllable. The reanalysis here would have involved not only a change of status from enclitic word to suffix but also a bleaching out of the third person meaning.¹⁶

Table 12.7 Diyari case paradigms

	Common nouns	Male personal names	Female personal names	3SgFem
Ergative	-(ya)li	-li	-ndu	<i>nhandu</i>
Nominative	-Ø	-nha	-ni	<i>nhani</i>
Accusative	-Ø	-nha	-nha	<i>nhanha</i>
Dative	-rni	-rni	-nhangka	<i>nhangkarni</i>
Locative	-nhi	-ngu	-nhangu	<i>nhangkangu</i>
Ablative	-ndu	-ngundu	-ngundu	<i>nhangkangundu</i>

4.5 Verb inflection from auxiliary phrase

In Arrernte a number of complex verb forms transparently include another verb stem preceded by a linking consonant: see Table 12.8. Here a full stop is used to separate off this ligative, which could possibly be given a meaning if it were treated as a morpheme, although it is really the whole construction that provides the meaning.

Table 12.8 Arrernte complex verb stems and their free sources

Gloss of complex	Complex verb	Simple verb	Gloss of simple verb
do continuously	-rl.ane-	ane-	sit
do and then go	-rl.alhe-	alhe-	go
do and then go back	-rl.alpe-	alpe-	go back
go back and then do	-ty.alpe-	alpe-	go back
do quickly	-rl.iwe-	iwe-	throw

Similar complexes in Kaytetye are less transparent: see Table 12.9. It is doubtful whether the *-yane* and *-rrane* which mark the imperfective aspect (here glossed 'be doing') after intransitive verb stems (e.g. *entwe-yane* and *angke-rrane* 'lie' and 'talk') can be synchronically analysed in terms of the verb 'sit'. The imperfective allomorph *-rranytye*, which occurs after transitive stems, cannot be identified with any independent verb; the same applies to *-yene*, which etymologically presumably reflects a participial *-ye* (< *tye) followed by a verb. In all these examples the likely source of the complex morphology is a participial suffix followed by an auxiliary verb. In other words, the earlier constructions were syntactic constructions which expressed an aspectual or associated motion function.

Table 12.9 Kaytetye complex verb stems and their free sources

Gloss of complex	Complex verb	Simple verb	Gloss of simple verb
do and then go back	-l/rr.alpe- ¹⁷	<i>alpe-</i>	go back
go back and then do	-y.alpe-	<i>alpe-</i>	go back
do while going	-rr.ape-	<i>ape-</i>	go
be doing	-yane-	<i>ane-</i>	sit
be doing	-rrane	<i>ane-</i>	sit
be doing	-rranytye		
go and then do	-yene-		

5 Reconstructing morpheme re-ordering

Although the order of morphemes within a word is generally more stable than that of words within a clause, there are instances of change in the order of affixes. Hence one cannot always assume that the same order prevailed in earlier stages of a language. In Arrernte the order of person-marking and case suffixes in kin terms is variable: thus when 'mother' *me-* is inflected for both first person (marked by *-atye*) and dative (marked with *-ke*) the result is either *me-k-atye* or *m-atye-ke*. What is the original order and what accounts for the change? Since the person marker originated as an enclitic pronoun outside of the word (cf. section 4.1), it must have followed the case suffix, e.g. **me-ke=atye*. When it was reanalysed as a suffix, a situation arose where the order of morphemes within the word is not syntagmatically iconic, i.e. does not reflect the meaning relations.¹⁸ In the expression 'for my mother', 'for' (marked by dative) has scope over the whole complex 'my mother'. These semantic relations would be better reflected if the order were 'dative-first person-mother' or its mirror image 'mother-first person-dative' (in a suffixing language like Arrernte). A switch in order is made possible by the ambiguity of the absolutive case form *m-atye*, with zero marking of the case; the earlier analysis *m-Ø-atye* could easily be reinterpreted as *m-atye-Ø*, and this analysis extended to create a new dative *m-atye-ke* ('mother-my-to') to replace the counter-iconic *me-k-atye* ('mother-to-my').

6 Reconstructing functional change of morphemes

All of the morphological reconstructions in section 4 involve a change in the status of grammatical elements, from syntactic to morphological elements. Just as one cannot expect the status of grammatical elements to remain constant, so it cannot be expected that the earlier grammatical function of morphemes was the same as in the language from which one is reconstructing, since functions can be altered over time. Grammatical morphemes, especially those that belong to the inflectional system of a language, have specific functions as exponents of morphosyntactic properties within grammatical categories. These functions are subject to changes both within and across inflectional categories. This section will discuss some examples of reconstructed changes in the grammatical meaning or function of morphological elements.¹⁹

6.1 Change in number

In Western Arrernte, unlike other dialects of Arrernte and related languages, the 1Sg dative pronoun is not *atyenge* (cf. section 4.1) but a completely unrelated form *nweke*. Its place in the paradigm requires an explanation. The 1Pl stem is *nwerne*, with suffixes *-nhe* for accusative and *-ke* for dative – see Table 12.10. Some other related varieties, such as Northeastern Arrernte, Anmatyerr and Alyawarr, make a distinction in the plural between inclusive and exclusive. The cognate form *anwerne*, which is an undifferentiated 1Pl in Central and Eastern Arrernte, like *nwerne* in Western Arrernte, is in these other varieties the exclusive form, and the inclusive is just *anwe*;²⁰ here *-rne* has to be treated as the marker of exclusive. We reconstruct for Proto-Arrernte the system with contrasting inclusive and exclusive forms, and posit that Western, Central and Eastern Arrernte have lost the distinction and generalised the former exclusive form, making the former inclusive forms redundant. It can be inferred that Western Arrernte has re-used the redundant former 1PlIncl form *nweke* as its 1Sg form, changing its function in the process.

Table 12.10 Arrernte first person pronouns

	WArernte		NE, Anm, Aly	
	Singular	Plural	Plural Exclusive	Plural Inclusive
Nominative	<i>yenge</i>	<i>nwerne</i>	<i>anwerne</i>	<i>anwe-</i>
Accusative	<i>yengenhe</i>	<i>nwernenhe</i>	<i>anwernenhe</i>	<i>anwenhe-</i>
Dative	<i>nweke</i>	<i>nwerneke</i>	<i>anwerneke</i>	<i>anweke-</i>

6.2 Change in tense

A purposive suffix **-ku* can be reconstructed for Proto-Pama-Nyungan on the basis of its widespread distribution and common function as a marker of subordinate clauses. In many languages its reflexes mark the future tense, which is explicable on the basis that purpose clauses are often used as independent clauses with a modal sense that is not very different from a predictive future tense sense. Dench (2003) describes how in three languages of the Pilbara region, Panyjima, Ngarluma and Yinjibarndi/Kurrama, the reflexives of a suffix reconstructable as **(l)ku* (*-lku* is the form taken after a particular inflectional stem class) mark present tense rather than future tense or purposive mood. The direction of change from purposive/future to present rather than the reverse is claimed on the basis of the wider distribution and solid reconstruction of the purposive/future sense and the fact that the change to a present tense sense can be supported. Dench justifies a plausible pathway from independent uses of the purposive via a prospective aspect to an imperfective present, with each of the different stages represented in at least one of the Pilbara languages.

6.3 Change in case

In most of the Karnic languages the dative case suffix has the form *-nga*, but in Arabana-Wangkangurru this form rather marks locative case. This form can easily be seen to be a reflex of the **-ngka* allomorph of locative that occurs in many other Pama-Nyungan languages. Hence it is concluded that the locative sense of Arabana-Wangkangurru *-nga* is

inherited but that the other Karnic languages have innovated by shifting the function from locative to dative.

Another instance of a reconstructable shift of case function involves the causal suffix *-la* of Pitta-Pitta and its cognate *-ra* in Arabana-Wangkangurru (*r* is a tap that regularly developed from *l*). This case indicates a concomitant cause or event to be avoided; the latter function, called ‘aversive’ in Australian linguistics, has separate case marking in some Australian languages but in others is a secondary function of another case, which may be locative (Dixon 2002: 171). The causal suffix of Pitta-Pitta and Arabana-Wangkangurru is plausibly derived from the securely reconstructed Proto-Pama-Nyungan **-la*, an allomorph of the **-ngka* mentioned in the previous paragraph. This requires the plausible positing of a slight functional shift of **-la*.²¹

6.4 More complex refunctionalisations

Bowern (2012b) reconstructs some complex changes in Nyikina verb inflection. Table 12.11 shows the realis forms of Nyikina, in which non-future (nFut) indicates a tense that does not distinguish past from present. Comparison with other Nyulnyulan languages shows that the Intr(ansitive) forms of ‘laugh’ reflect an earlier past tense, while the Tr(ansitive) forms continue a present tense: the Proto-Nyulnyulan (pNN) forms are shown in column three and their meanings in column four. A functional merger of tenses has to be reconstructed. The contrast between *ngangkama* and *ngankama* yields a synchronic morphemic analysis in which *-ng-* marks intransitive and *-n-* signals transitive. This analysis is confirmed by the (new) future forms. An analysis of the contrasting Proto-Nyulnyulan (pNN) forms **ngakama* and **ngangkama*, however, identifies *-ng-* rather as a marker of past tense. Hence, although the morpheme boundaries have not changed the function of *-ng-* has been radically altered as a consequence of the forms in which it occurs entering into a different set of contrastive relations.

Table 12.11 Partial paradigm of Nyikina ‘laugh’ (intr) and ‘mock’ (tr)

Nyikina functions	Nyikina forms	pNN forms	pNN functions
		<i>*ngakama</i>	Present Intr
nFut Intr Realis	<i>ngangkama</i>	<i>*ngangkama</i>	Past Intr
Fut Intr Realis	<i>nganakama</i>		
nFut Tr Realis	<i>ngankama</i>	<i>*ngankama</i>	Present Tr
Fut Tr Realis	<i>nganakama</i>	<i>*nganangkama</i>	Past Tr

7 Undoing the morphological effects of phonological change

It is well known that phonological change can alter the formal relationship between morphologically related words. This may involve adjustment to the borders of morphemes (boundary shift) or insertion of morpheme boundaries where there were none before. Another consequence of phonological change is that phonological differences may be morphologised, i.e. acquire morphological functions. Reconstruction from morphology

must therefore reckon with the possibility that not all current bound morphemes continue earlier forms with the same boundaries and that phonological differences that currently signal morphological functions may descend from earlier forms that lacked a morphological function.

7.1 Reconstructing boundary shift

In most Pama-Nyungan languages the majority of nouns end in a vowel and case suffixes begin with consonants, e.g. ergative *-ngku or *-lu, locative *-ngka or *-la, dative *-ku, and ablative *-mu. But in some languages of Cape York Peninsula most nouns end in a consonant and case suffixes may begin with a vowel, e.g. Wik-Mungkan -ang ergative/locative, -ak dative, -am ablative. It is easily seen that these are the result a sound change that dropped final vowels (and simplified the *ngk* cluster), and that as a consequence the position of the morpheme boundary has been reanalysed and the final vowel of the stem has been treated as part of the suffix. A similar situation can be seen in Yir-Yoront: compare in Table 12.12 the current partial paradigm of 'person' with the one that is reconstructable on the basis of cognates. Now consider the paradigm of 'some'. Here the suffixes begin with a different vowel; the choice of vowel in the allomorph of the ergative suffix reflects merely a difference in the final vowel of the stem at an earlier stage. The reanalysis has involved the creation of allomorphs of the case suffix: where previously stems ended in *a*, *u*, or *i*, and the ergative had only a single form -*lu*, after the loss of final vowels and reanalysis of the position of the morpheme boundary stems ended in a consonant but the ergative suffix had allomorphs -*al*, -*ul*, and -*il*.

7.2 Reconstructing the morphologisation of phonemes

The Yir-Yoront paradigm of 'some' also shows allomorphy in the vowel of the stem (*u* vs. *a*). This can be posited to be the reflex of an earlier phonetic difference conditioned by the vowel of the following syllable – at a stage (after the loss of final vowels) when the paradigm was *wap, *wapul, *wapun – which involved the stem vowel assimilating to the roundness of the following vowel. Here the difference of vowel has become a co-signal of case distinctions. Likewise the paradigm of 'egg' shows an alternation of the first vowel, which can be reconstructed to reflect a similar harmony of *a* with the vowel of the second syllable in the dative form. Here another, more radical reanalysis can be seen. The vowel of the second syllable appears synchronically to be an infix that signals the dative case. A consequence of phonological change – the regular loss of the vowel in the citation form (the absolutive) while it was preserved in the dative – has involved the creation of a morpheme boundary where there was none before.

Table 12.12 Yir-Yoront partial case paradigms and their prehistory (based on Alpher n.d.)

	'person'		'some'		'egg'	
Absolutive	<i>pam</i>	*pama	<i>wap</i>	*wapu	<i>nhapn</i>	*nhapin
Ergative	<i>pam-al</i>	*pama-lu	<i>wup-ul</i>	*wapulu		
Dative	<i>pam-a</i>	*pama-ku	<i>wup-un</i>	*wapun ^{V22}	<i>nhip-i-n</i>	*nhapin ^V

The morphologisation of phonemes is hard to illustrate from Australian languages. Plentiful examples are available, however, from Germanic and other Indo-European languages. It is well-known that the vowel difference which in English signals plural (*feet* vs. *foot*) or the difference in voicing of fricatives which marks verb derivation (e.g. *to halve* vs. *half*) is the result of the reinterpretation of former phonetic differences which after phonological changes took place happened to be left as the best signals of a morphological difference. Such morphophonemic alternations provide most of the input for the internal reconstruction of earlier phonology, and the literature on internal reconstruction provides many examples (e.g. Fox 1995: chapter 7). This reconstruction method is not really *morphological* reconstruction, however, except insofar as its input is morphophonemic alternations.²³

8 Reconstructing intra-paradigmatic change

Members of inflectional paradigms exert an influence over one another. The resulting changes have often been described as being due to 'analogy' (e.g. Anttila 1989: chapter 5; Campbell 2004: chapter 4; Hock 2003). Changes may affect the (allomorphic) forms of the stem or the form of the affixes. The form of one member of the paradigm may be extended to other members. If one allomorphic variant has been extended to the whole paradigm, the forms are said to have been levelled. There are no fool-proof explanations for the direction of extensions, but the influence of basic ('unmarked') members of the paradigm has often been noticed. Because of the prevalence of analogical paradigmatic change one cannot expect that each form in an inflectional paradigm has descended into the language from earlier stages by sound change alone. In reconstructing earlier forms of paradigms one should put particular reliance on cognate forms that are least likely to result from analogical changes, while positing instances of reanalysis, extension, etc. that are likely to have produced the innovating forms.

An example of reconstructing the extension in paradigms can be seen in the distal demonstratives of languages of the Pilbara in Western Australia (see Table 12.13, taken from Dench 2007). By comparing Payungu with Jiwari and Panyjima we can see that Payungu has built a new accusative by adding an explicit suffix to the nominative form. The Payungu and Panyjima pattern is more likely to represent the original situation because it is attested in more languages and conforms to a very widespread (in Pama-Nyungan languages) of having identical forms for the nominative and accusative case of nominals (except personal pronouns). In Panyjima the stem of the nominative/accusative has been extended to the whole paradigm, and new case suffixes have been added to form the ergative, dative and locative. In Nyangumarta the whole paradigm is built on a stem *ngurnungu*, which appears to consist of the original dative form *ngurnu (preserved in Jiwari and Payungu) extended with an increment -*ngu* (of indeterminate origin). All these innovated paradigms can be analysed in terms of extensions from particular cells of an original paradigm which was identical to that of Jiwari. The result has been complete levelling of the stems in Panyjima and Nyangumarta.

Table 12.13 Demonstrative paradigm in Pilbara languages

	Jiwarli	Payungu	Panyjima	Nyangumarta	
Ergative	<i>ngu-lu</i>	<i>ngulu</i>	<i>ngunha-ngku</i>	<i>ngurnungu-lu</i>	* <i>ngulu</i>
Nominative	<i>ngu-nha</i>	<i>ngunha</i>	<i>ngunha</i>	<i>ngurnungu</i>	* <i>ngunha</i>
Accusative	<i>ngu-nha</i>	<i>ngunha-nha</i>	<i>ngunha</i>	<i>ngurnungu</i>	* <i>ngunha</i>
Dative	<i>ngu-rnu</i>	<i>ngurnu</i>	<i>ngunha-yu</i>	<i>ngurnungu-ku</i>	* <i>ngurnu</i>
Locative	<i>ngu-la</i>	<i>ngula</i>	<i>ngunha-ngka</i>	<i>ngurnungu-la</i>	* <i>ngula</i>

A somewhat similar phenomenon can also be reconstructed from more distantly related Pama-Nyungan languages. Many languages have an inflectional class of verbs – some of which have monosyllabic roots and are synchronically anomalous – which includes inflections containing both *n* and *rr*. This pattern is widespread enough to be reconstructed to Proto-Pama-Nyungan for a number of verb roots, including *ya-* ‘go’ and *ma(a)-* ‘get’ (Alpher 1990). In Table 12.14 this pattern can be seen in Guugu Yimidhirr and Nyangumarta. In some languages the root is disyllabic but includes either *rr* or *n* in its second syllable. For example, Gumbaynggirr has two disyllabic stems (beside a monosyllabic stem seen in *maa-nku* purposive): *maani-*, which supplies a past *maani-ng*, purposive *maani-ku*, and a zero-marked imperative *maani*, and *maana-*, which supplies a purposive *maana-yku* and a zero-marked imperative *maana*. It appears that these new imperative formations have replaced an inherited **maarra*. But the closely related Yaygirr has *maani*, *maana*, *maarra* as inflected forms. An opposite development to that of Gumbaynggirr is seen in Ritharrngu (and other languages of the Yolngu subgroup): here a stem including *rra* has been extended to the whole paradigm, except that the past retains an *n*-suffix.²⁴

Table 12.14 Paradigms of **maa-* ‘get’

Guugu Yimidhirr	Nyangumarta	Gumbaynggirr	Ritharrngu
<i>maa-rraa</i> Imperative	<i>ma-rra</i> Imperative		<i>maarra-</i> stem
<i>maa-naa</i> nPast	<i>ma-na</i> nFuture	<i>maana-</i> stem	<i>maana</i> Past
<i>maa-ni</i> Past	<i>ma-ninya</i> Present	<i>maani-</i> stem	
	<i>ma-nku</i> Potential	<i>maa-nku</i> Purposive	

Both of these examples illustrate morphological changes consisting of the extension of allomorphs within a paradigm and the reanalysis of inflected forms as stems. They also provide examples of reconstruction that proceeds by comparing anomalous forms across languages – i.e. forms that could not result from analogical changes within their own paradigms – and positing a prehistoric pattern that includes these irregular forms within a single paradigm (cf. Meillet 1967: chapter 3).

9 Reconstructing cross-paradigmatic change

Where languages have inflectional classes one can expect these classes to influence one another. The direction of influence is more often from the dominant classes to others. The membership of the classes may be affected: it is common for lexemes to be attracted into the dominant classes (e.g. English past *help* has been replaced by the regular *helped*) and for newly created lexemes to be assigned to these classes. Hence one should not expect every member of an inflectional class to have always been a member of the same class. Reconstruction may include positing a change in class membership.

In Nyangumarta *ma-* ‘get’ belongs to a very small *n*-class, whereas most transitive verbs belong to a large *rn*-class – classes being named after a consonant characteristic of some of their inflectional suffixes. Causative verbs that are derived by means of a suffix *-ma*, which is apparently the stem of the verb ‘get’, however, inflect according to the *rn*-class (*rn* denotes a retroflex nasal), as is appropriate for transitive verbs. Table 12.15 illustrates the paradigms of *ma-* ‘get’, a derivative ‘to name’ which involves the *-ma* suffix added to the noun *yini* ‘name’, and a transitive verb ‘break’ of the *rn*-class. In reconstructing the causative suffix it can be identified etymologically with the verb *ma-*, provided we assume that derivatives have changed their inflectional class from the original *n*-class of *ma-* to the *rn*-class, motivated by the fact that this is the dominant inflection for transitive verbs. This case provides a general caution: if in a language most transitive verbs are in a particular class, say the *rn*-class, the chances are great that any given transitive verb will be there regardless of its class membership in an earlier stage of the language.

Table 12.15 Nyangumarta verb paradigms

	get	name	break
Imperative	<i>ma-rra</i>	<i>yini-ma-la</i>	<i>ngarta-la</i>
nFuture	<i>ma-na</i>	<i>yini-ma-rna</i>	<i>ngarta-rna</i>
Present	<i>ma-ninyi</i>	<i>yini-ma-rninyi</i>	<i>ngarta-rninyi</i>
Potential	<i>ma-nku</i>	<i>yini-ma-lku</i>	<i>ngarta-lku</i>

10 Identifying borrowed morphology

Some morphological material in a language is the result of borrowing from another language (cf. Lucas, this volume). (We are not concerned here with tracing simplex words which happen to have a complex structure in the language from which they were borrowed – e.g. the fact that the Russian source for *sputnik* includes an agent suffix *nik* – since this doesn’t involve morphological change in the borrowing language.) Reconstruction of this borrowing requires identifying a source external to the language, justifying the plausibility of borrowing (because of contact between the speakers of both languages, for example), and showing why the material is unlikely to have been inherited within the language. The two examples discussed here involve suffixes that have been borrowed from Arandic languages by their western neighbours. The interaction of speakers of the Arandic languages with those of Warlpiri and the Western Desert language over a long period of time is well established. The western languages also came into contact with English later than the Arandic languages did, and borrowing from English came through the intermediary of Arandic, which helps to explain the second example.

Warlpiri has an 'associated motion' verb formation (discussed by Simpson 2001: 182) that consists of suffixing an element *-yalpi-* to a verb stem already extended by the participial suffix *-nja*, which adds the meaning 'go back and VERB'; e.g. *nguna-nja-yalpi* 'lie-PPL-GO.BACK&'. The inflectional category of associated motion is much more highly elaborated in the Arandic languages than in Warlpiri, and exactly this suffix occurs in Kaytetye (and a cognate form *-tyalpe* in other Arandic varieties) with the same meaning; the synonymous form in Kaytetye is *enwe-yalpe-*. The form is moreover analysable within Arandic in terms of a linking consonant *y* or *ty* (probably originally a participial suffix **-tye*) and a verb root *alpe-* 'return'. The Warlpiri verb 'return', on the other hand, is not a good match: it has the form *kulpa-*; if Warlpiri had used its internal resources the form would be **VERB-nja-kulpa-*.

The eastern dialects of the Western Desert dialect, e.g. Yankunytjatjara and Pintupi-Luritja, have a derivational suffix *-mila-* that is used only for inflecting transitive verbs borrowed from English. This form bears no resemblance to other formatives used to derive other transitive verbs, e.g. *kintil-ma-* 'make level'. But in their eastern neighbour Arrernte a similar form is used, e.g. *help-em-ile-*. Here *em* derives from the form that English transitive verbs took in earlier Pidgin English, e.g. *help'em*, and *-ile-* is the factitive suffix which derives transitive verbs from nominals, e.g. *mwerr-ile-* 'make better' from *mwerre* 'good'. It appears that Western Desert has borrowed from Western Arrernte its strategy for adapting English verbs and in the process has reanalysed the *em+ile-* complex as a single form. This and the previous example show that not all synchronic morphology is inherited from earlier stages of the same language; for complete reconstruction historical linguists need to know about the contact history of their target languages as well as details of the languages with which they were in contact.

11 Conclusion

There are no precise procedures that can be prescribed for reconstructing morphology (and textbooks are not very helpful in this respect): only some general principles can be offered. Morphological reconstruction involves comparing words that are potentially related historically and positing earlier structures which may be different from the starting point. Reconstructions need to be justified by showing evidence for the posited earlier structures and demonstrating how it is possible to get from these earlier forms by plausible changes. This in turn presupposes knowledge of the historical phonology of the relevant languages as well as an understanding of the general processes of morphological change. (For this reason this survey has been organised around the kind of changes that are known to affect morphological structure.) The best way to learn how to do morphological reconstruction is: (a) to learn as much as possible about the typology of morphological change; and (b) to study accounts of reconstruction in various languages of the world.

Different kinds of morphological changes can be expected in different languages. For example, languages that have undergone little phonological change are unlikely to provide instances of the morphologisation of phonology (section 7.2). Languages without inflectional classes will not display cross-paradigmatic influences (section 9). Languages without much morphophonemic alternation will manifest fewer intra-paradigmatic extensions and levellings (section 8). The richer the morphological system, the more scope there is for all kinds of morphological change.

Notes

- 1 See Joseph (2003) on the relationship between morphologisation and grammaticalisation.
- 2 These reconstructions are justified, on the basis of their distribution across PN languages, in Koch (2003b).
- 3 For a large block of eastern PN languages the 2Sg stem is reconstructable as **ngin*, whose relationship to the more widely attested **nyun* remains unclear. The reconstructable inflected forms are **ngintu*, **ngin*, **ngina*, **nginu*.
- 4 A synchronic rule of Arandic phonology has a morpheme-final vowel (which is always *e*) deleted before an immediately following vowel; thus *nthe-ile-* automatically simplifies to *nthile-*.
- 5 All initial consonants disappear and all final vowels become *e* in Arandic historical phonology (Koch 2004).
- 6 Similarly Pintupi/Luritja *yami-yami* 'grandmother' is a transparent reduplication of a base *yami*. But there is an alternative pronunciation *yamami*, whose relation to the base *yami* is opaque.
- 7 Abbreviations: B brother, Ch child, D daughter, f female's, F father, m male's, M mother, S son.
- 8 The *l* is typically not prestopped to *ɬ* in the second instance of a root.
- 9 The Nyulnyul forms of *-mird* 'leg, knee, shin, calf' are not given; note that the noun means 'knee' in Bardi.
- 10 For an explanation in terms of 'local markedness' see Koch (1995: 46–57).
- 11 Further discussion on reconstructing the paradigm of pPN **pa-* is in Koch (2009).
- 12 In kinship studies the technical term 'propositus' is often used for the person from whose point of view the relationship is calculated.
- 13 Koch (2003a: 284–287) provides further evidence for the original separate status of **arlinge* and its plausible prehistory as a noun marked with the locative suffix *-nge*.
- 14 This form is quoted from Alyawarr.
- 15 This reconstruction follows Bower (1998: 137).
- 16 This interpretation of the etymology of case suffixes follows Bower (1998: 56).
- 17 */rr* indicates that *l* occurs after transitive stems and *rr* after intransitives.
- 18 For iconicity in morphology see Matthews (1991: chapter 12).
- 19 Cf. Frajzyngier (this volume) for functional changes in syntax.
- 20 In Anmatyerr and Alyawarr there is an initial vowel *a*; there is usually a further suffix that indicates kin relations; this is irrelevant to the argument, however.
- 21 These interpretations follow Bower (1998). Note, by the way, that these reconstructions imply a diachronic split in the functions expressed by the two former allomorphs that marked locative case.
- 22 Here *V* indicates that the specific final vowel cannot be reconstructed with certainty.
- 23 Cf. Garrett (this volume) on the difference between sound change and morphological change.
- 24 For a more detailed discussion of these paradigms and methodological issues see Koch (2014).

Further reading

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- Campbell, Lyle. 2004. *Historical linguistics: an introduction*. 2nd Edition. Edinburgh: Edinburgh University Press. [Chapter 10.5 discusses syntactic reconstruction, including using evidence from morphology]
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