Syntactic reconstruction by phonology:

Edge aligned reconstruction and its application to Tangkic truncation

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1. Introduction

This chapter introduces a method for deriving historical syntactic hypotheses from certain types of phonological reconstructions. The method, **EDGE ALIGNED RECONSTRUCTION**, capitalises on the robust typological generalisation that the edges of high level phonological domains, such as the utterance and intonation phrase, align almost always with the edges of major syntactic domains such as the sentence and the clause (Selkirk 1984, Nespor and Vogel 1986). Essentially, because the highest levels of phonological and syntactic domains are aligned with one another, if a phonological change is reconstructed as having occurred solely at the left edge, right edge, or in the interior of a high level phonological domain, then we predict that the change will have impacted differently on words in initial, final or in medial position within the corresponding syntactic domain. That is, if words can be identified which must have

* For helpful comments and discussion I would like to thank Nick Evans, Harold Koch, Mary Laughren, Pat McConvell, David Nash and Jane Simpson as well as two anonymous referees, and Stanley Insler at Yale University. Of course the views expressed here will not always accord with theirs, and all responsibility is my own. Much of this research was spurred by my fieldwork on Kayardild, encouraged by Nick Evans and Janet Fletcher and generously supported by the Hans Rausing Endangered Language Documentation Programme through grants FTG0025 and IGS0039, and particularly, by the Kaiadilt community itself.
occupied certain **phonological** positions when the change occurred, then hypotheses can also be formulated regarding their **syntax**. Furthermore, because historical phonological facts are generally reconstructable back much further in time than is often the case with historical syntactic facts, this method should provide access to syntax at a time depth which is not usually accessible.

To illustrate the use of this method, examples are discussed from the Tangkic language family of Queensland, Australia.

The chapter is organised as follows. Section 2 outlines the reasoning behind edge aligned reconstruction and flags some of the more intricate aspects of reconstructing phonological changes at domain edges. Sections 3 and 4 offer an overview of the modern Tangkic languages and some of the phonological history of Tangkic respectively. Sections 5–7 provide three examples of edge aligned reconstruction at various time depths. Conclusions follow in §8.

### 2. Edge aligned reconstruction

#### 2.1 Changes at the edges and interior of phonological domains

Phonological changes can occur as the result of regular, phonetically conditioned sound changes, as the result of systematic reanalyses of rules or rules systems, or as the result of more idiosyncratic changes such as analogy within inflectional paradigms.

Sometimes, the effects of a phonological change are distributed so that otherwise identical material on the left edge, right edge, and interior of a phonological domain are affected differently. For example, a sound change might occur only at the left edge of a domain and not elsewhere, shown as A in Figure 3, or only at the right edge, shown as B, or a change might occur at the boundaries between constituent sub-
domains, shown as C in Figure 3, in which case the change affects only the interior of the larger domain.

Figure 3. Changes at the edges and interior of phonological domains

Let us now consider what will happen in the case that the prosodic domain in question is an intonation phrase or utterance,¹ which aligns with clauses or sentences.

Because of the alignment between phonological and syntactic domains, the phonological change will affect words systematically, and differently, depending on their syntax. Three classes will be distinguishable: (i) words which due to their syntax never occur in a position affected by the phonological change; (ii) words which due to their syntax occur only in positions affected by the phonological change; and (iii) words which due to their syntax appear in both positions.

Initially, after this phonological change occurs, words in class (i) should have forms which uniformly fail to reflect the change; words in class (ii) should have forms which uniformly do reflect it; and words in class (iii) should have positionally conditioned alternant forms, one of which reflects the change, and one which doesn’t. If the alternation in class (iii) words becomes incorporated into the language as a productive rule of the phonology, that alternation might survive a long time; if not it

¹ I take the ‘utterance’ to be a stretch of speech bounded by planned pauses (cf. Hayes 1989).
may just as well be quickly eliminated, usually in favour of the alternant form which most often surfaces in discourse.

In the case that an alternation does survive as a phonological rule, two additional complications can arise.

One such complication will apply to class (ii) words — words whose surface form uniformly reflects the effects of the change. Suppose the change was \( X > Y \), and suppose that that change now becomes incorporated into the daughter language as a productive phonological rule \( /X/ \rightarrow [Y] \), in certain positions. Now, a word in class (ii) which began as *baX has changed to [baY]. It occurs only as [baY], and only in the appropriate position to be acted on the new rule \( /X/ \rightarrow [Y] \). Is the new form represented underlyingly as /baX/ or as /baY/?\(^2\) It seems that languages may adopt either option.

A different complication can occur when a new productive rule is later reshaped by reanalysis or similar processes. Suppose for example that a synchronic rule arose as \( /XY/ \rightarrow [Z] \), applying in certain environments, and in a subsequent development was altered to \( /Y/ \rightarrow [Z] \). In such cases it can happen that particularly frequent surface forms — for example surface [baZ] corresponding to underlying \( /baXY/ \) — defy the rule change, and thus in the environment where the new surface form corresponding to underlying \( /baXY/ \) should be [baXZ], one continues to find [baZ]. However, since the new state of the phonology no longer derives [baZ] from

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\(^2\) The choice does not have any detectable effect until the daughter language changes again (for example, by losing the rule \( /X/ \rightarrow [Y] \), or by allowing the word [baY] surface in new positions). At that point, it will matter.
/baXY/, a new underlying form is innovated, /baY/, which does yield [baZ] when operated on by the rule /Y/ → [Z].

2.2 Using this information: edge aligned reconstruction

Once a phonological change has been reconstructed which, within a high level phonological domain, had a distribution like A, B or C in Figure 3, the next step is to search for words which on phonological grounds appear to have fallen into classes (i), (ii) or (iii), as defined in §2.1. The stronger the phonological evidence for placing a word into class (i), (ii) and (iii), and the stronger the evidence for the phonological change itself, the stronger is the evidence for the syntactic hypotheses that follow.

Particularly good candidates will be words which have descended as doublets — that is, two independent words in the daughter language which clearly descend from just one word at an earlier stage. Ideally, the two doublet forms should have different meanings or functions, even if the difference is slight. If such cases can be found where the evidence places one of the doublet words in one word class, and the other in another word class, then we can reconstruct that the original word, with just one form but two meanings or functions, occupied different syntactic positions depending on which meaning/function it took. Under the right conditions, this allows

3 At least initially, this new underlying form /baY/ will only appear in environments where the new rule /Y/ → [Z] causes it to surface as [baZ]. However, subsequent change could place /baY/ in other positions, where other rules will act on it, causing it to surface as something other than [baZ].

4 The evidence for this will come from the words’ own phonological form in comparison to others’, taken with respect to what is understood about the phonological rules which operated in the language around the time of the change.
us to formulate further, more general hypotheses connecting particular functions or
meanings (which might be common to whole word classes) to word order.

In sections 5–7, this mode of reasoning will be applied to several doublets in
the Tangkic languages.

3 The Tangkic language family

The Tangkic languages of Australia (non-Pama-Nyungan) were traditionally spoken
at the Southern end of the Gulf of Carpentaria. Genetic affiliations of the languages
are shown in (1). The three most extensively described languages in the family are
Lardil (Hale 1967, 1975; Klokeid 1976; Ngakulmungan Kangka Leman 1997),
Yukulta (Keen 1972, 1983), and Kayardild (Evans 1992, 1996). Yangkaal, a close
sister of Kayardild, is attested in around sixty pages of fieldnotes and text
transcription made by Hale (1960), a vocabulary of around 260 items by Tindale
(1960) and a 43-line text transcribed in Evans (1996). In the discussion below, the
synchronic characterisation of these languages is based on these sources, as well as
my own field notes on Kayardild.

(1) Genetic affiliations of the Tangkic languages

```
Tangkic
   /   \
  /     \
Southern Tangkic Northern Tangkic
   /     /         |
Mainland Tangkic Southern Wellesley Lardil
   /     /     /    |
Yukulta Nguburindi Kayardild Yangkaal
```
3.1 Morphosyntax

Morphologically, Tangkic languages are highly agglutinating, dependent marking languages and are overwhelmingly suffixing. Kayardild, Yangkaal and Lardil have a nominative–accusative alignment of core arguments, while Yukulta is predominantly ergative–absolutive; Proto Tangkic is reconstructed as having been ergative–absolutive in main clauses, though subordinate clauses were often effectively nominative–accusative (Klokeid 1978, McConvell 1981, Evans 1996:424ff). The languages exhibit a significant degree of word order flexibility and pervasive elision of referentially recoverable NPs. The one area of word order rigidity is in the noun phrase, whose surface order of determiner–modifier–head is violated only under specific circumstances which are infrequent in discourse. This fact will be of interest in section 7. In Lardil (Northern Tangkic) and in Kayardild and Yangkaal (Southern Wellesley within Southern Tangkic), direct object case inflections almost always concurrently signal tense and aspectual semantics. Subordination markers are found on both nouns and verbs across the clause.

3.2 Phonology

The phoneme inventory of Yukulta is given in Figure 1. Kayardild, Yangkaal and Lardil all differ in having collapsed the Proto Tangkic */l/ and */l/ phonemes; Lardil has one more phonemic vowel quality, which was probably inherited from Proto

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5 The single most prominent exception is the variable word order in Southern Tangkic modifier–head ~ head–modifier in cases where the head is a kin term and the modifier a possessive pronoun.
Tangkic (Round and Evans, in prep.) – that fourth vowel quality in Proto Tangkic would most likely have been phonetic \([æ]\).

**Figure 1.** Phoneme inventory of Yukulta (with notes on Lardil, Kayardild).

<table>
<thead>
<tr>
<th>Obstr.</th>
<th>Nasal</th>
<th>Trill</th>
<th>Lateral</th>
<th>Glide</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apical</strong></td>
<td><strong>Laminal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alveolar</td>
<td>Post-alveolar</td>
<td>Palato-alveolar</td>
<td>Palato-velar</td>
<td>Labial</td>
</tr>
<tr>
<td>t</td>
<td>t</td>
<td>c</td>
<td>k</td>
<td>p</td>
</tr>
<tr>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>m</td>
</tr>
<tr>
<td>r</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>l</td>
<td>l</td>
<td>j</td>
<td>w</td>
<td></td>
</tr>
</tbody>
</table>

- Lardil has /e/, /e:\]

- Kayardild, Yangkaal and Lardil have merged */l/ and */l/\

In each language, the consonantal places of articulation are organised into major classes, as indicated in Figure 2. Sound changes to be discussed in §4 were sensitive to these classes.
3.3 **Phonology at the right edge of the word**

There are three distinctive processes which can operate at the right edge of Tangkic words. Following the Tangkic literature, I will refer to these as **TRUNCATION**, **AUGMENTATION** and **DELAMINALISATION** and for simplicity, I will refer to them as applying to the ‘morphological word’ ($\omega_M$) to derive the ‘surface word’ ($\omega_S$) — though it should be noted that augmentation is sometimes analysed as involving a morpheme itself,\(^6\) and the surface word can be further altered in some languages. For the purposes of this chapter, it will suffice to be aware that words can be acted on by these processes; the exact conditions under which each applies in the individual languages for each language will be detailed in the following sections.

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\(^6\) Klokeid (1976) analyses augmentation in Lardil as phonological; Keen (1973, 1984) labels the corresponding material in Yukulta a ‘morpheme’ marking the absolutive case, but does argue the point; for Kayardild, Evans (1996:102,136) analyses the equivalent material as a nominative morpheme but notes that distributionally, it is more of a default word-final suffix than a marker of any one specific grammatical relation.
Tangkic languages will not be important here. Examples from Lardil are given in (2), (3) and (4). All examples in this chapter will be cited in phonemic, not orthographic, form.

(2) **Truncation**  
\[ \omega_M: \text{kantukantu} \quad \text{‘red’} \]  
\[ \omega_S: \text{kantukan} \]

(3) **Augmentation**  
\[ \omega_M: \text{kaŋ} \quad \text{‘speech’} \]  
\[ \omega_S: \text{kaŋka} \]
Delamination\(^7\) with default, stem-final laminal stop:

\[
\text{jaqut}-u = \text{animal-FUT.OBJ}^8 \\
\text{jaquc-in} = \text{animal-OBJ} \\
\text{jaqut-ar} = \text{animal-NONFUT.OBJ}
\]

With apical stop (due to delamination):

\[
\text{jaqut} = \text{animal.NOM}
\]

In the Southern Tangkic languages word final truncation operates only on certain, idiosyncratic word forms. In just the Southern Wellesley branch of Southern Tangkic, a surface word (\(\omega_S\)) which ends in /a/ undergoes a special round of truncation,

\(^7\) In fact, it is somewhat historicising to refer to this process as delamination in Lardil. Synchronic ‘delamination’ does reflect a historical change which originally delaminalised underlyingly laminal consonants, but as argued by Evans (1996:74fn9), Lardil actually possesses the reverse process synchronically, where underlying (non-laminal) /t/ is laminalised. In the other Tangkic languages though the cognate synchronic process remains one of delamination (cf. Evans 1996:75).

\(^8\) Abbreviations used in this chapter are: ACT actual tense, EXCESS excessive suffix, FUT.OBJ future objective, GEN genitive, MABL modal ablative, MLOC modal locative, NOM nominative, NONFUT.OBJ nonfuture objective, OBJ objective, PAST past tense, PRECOND precondition, PRIOR prior tense, PSTN past nominaliser, THM thematic consonant, UTIL utilitive.
deleting the final /a/ vowel, if the word appears utterance finally. Additionally, any cluster of apical consonants which is left at the end of the word after /a/-truncation has applied, undergoes optional truncation of the final consonant: the process is relatively rare in Kayardild but appears to have been more frequent in Yangkaal. An example is shown in (5).

(5) Augmentation and utterance final truncation (Kayardild, Yangkaal)

ωM: τuŋal 'thing.NOM’

ωS utterance non-finally: τuŋalta

ωS utterance finally: τuŋalt ~ τuŋal

Each of these processes in (2)–(5) is connected historically to phonological changes which occurred at the edges, or just in the interior, of high level phonological domains, specifically, utterances. The reconstruction of their history is presented in detail in Round (in prep). In this chapter, I will be interested in the results of that reconstruction as it pertains to the history of word final truncation in pre-proto Tangkic, and utterance final truncation in proto Southern Wellesley. The relevant results of Round (in prep.) are summarised now in §4.

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9 Evans’ (1996:63–4) refers to the ‘breath group’ as the unit at whose right edge final /a/-truncation occurs. It is identical to what I am referring to here as ‘the utterance’.
4 Some historical phonological changes in Tangkic

As far back as has been reconstructed, pre-proto Tangkic possessed processes of utterance final truncation which deleted utterance final /a/, as well as the non-initial consonants of utterance final consonant clusters, and all utterance final labial consonants. Truncation of /a/ applied before consonant truncation, and therefore fed it. Example of the kinds of effects this would have had on words are given in (6a–c).

(6) Utterance final truncation in pre-proto Tangkic

a. /a/ truncation
   \[\omega_S \text{ utterance non-finally: } *pəɾəpəɾə \quad \text{‘sun shade’}\]
   \[\omega_S \text{ utterance finally: } *pəɾəpəɾ]\n
b. consonant truncation
   \[\omega_S \text{ utterance non-finally: } *pʊkər\quad \text{‘root sp.’}\]
   \[\omega_S \text{ utterance finally: } *pʊkər\]

c. /a/ truncation, followed by consonant truncation
   \[\omega_S \text{ utterance non-finally: } *cɪɾkəɾpə \quad \text{‘shell sp.’}\]
   \[\omega_S \text{ utterance finally: } *cɪɾkər\]

This system of utterance final truncation has undergone change in all of the modern branches of Tangkic. In Lardil (Northern Tangkic), it was collapsed together with an originally distinct system of word final truncation, thus Lardil now possesses word final truncation which includes the deletion of final /a/ (as well as /i/ and /u/, another Lardil innovation) and the kinds of consonant truncation described above. In Yukulta
(Mainland Tangkic within Southern Tangkic), the rules of utterance final truncation were lost altogether, that is, utterance final words no longer have special truncated forms but instead look exactly like utterance internal words. In Kayardild and Yangkaal (Southern Wellesley within Southern Tangkic) the inherited system is largely preserved but consonant truncation has been scaled back, so it now applies only to clusters of apical consonants.\(^\text{10}\)

The scaling back of utterance final truncation in Southern Wellesley will be used in §5 to reconstruct the order of certain main and subordinate clauses, and in §6 a relative chronology is proposed which places this phonological development later than the shift in proto Southern Wellesley from an ergative–absolutive case system to a nominative–accusative one.

Stepping further back in time, during pre-proto Tangkic a system of external sandhi processes applied so as to sometimes alter the consonant clusters formed across the boundaries of words within an utterance, with an effective distribution as shown in Figure 4.

\textbf{Figure 4.} Distribution of effects of external sandhi in pre-proto Tangkic

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\(^{10}\) The precise nature of utterance final truncation in Yangkaal is unclear. From Hale’s notes and Tindale’s vocabulary, there appear to be cases where /a/-truncation fails to apply to disyllabic words (these are always truncated in Kayardild).
At this early stage, it was possible for words to end underlyingly in the laminal segments */NH/ and */TH/ — the symbols */NH/ and */TH/ represent a laminal nasal and plosive respectively, whose specific realisation as laminal-dental or laminal-palatal depended on the identity of adjacent segments. As the sandhi system evolved, a rule arose which deleted word final */NH/ and */TH/ in utterance-internal positions (but not in utterance-final position). One complicating factor is that this rule appears to have applied only to some, and not all, words ending in */NH/ and */TH/. The exact conditioning factors are not yet understood, but for our purposes it will suffice to know that it in general, words were affected if they terminated in a case or number marking suffix ending in */NH/ or */TH/. This information will be used in §7 to reconstruct the word order of nominal predicate sentences in pre-proto Tangkic as well as the modifier–head order in noun phrases.

5 The order of precondition clauses and main clauses in proto Southern Wellesley

In proto Southern Wellesley (within Southern Tangkic), the inherited rule of proto Tangkic utterance final consonant deletion was scaled back.

11 Underlying phonemic distinctions between laminal palatals and laminal dentals did exist in pre-proto Tangkic, but generally only (i) in the first segment of words, or (iii) directly after the first vowel of a word. Since all laminal final stems and words of interest in this chapter are polysyllabic, their final laminal segments meet neither of these conditions, and so are represented as the undifferentiated laminals */NH/ and */TH/.
The old rule, which operated after the truncation of utterance final /a/, truncated the non-initial segments from clusters which became word final after the deletion of /a/. It also truncated final labial consonants /m/ and /p/.

The younger rule was still ordered after /a/-truncation, but it applied only to clusters of apical consonants. The transition from the old to the younger rule may have occurred in one leap or may have been stepwise. Whichever was the case, when the rule changed, certain high frequency items defied the rule change and developed new underlying forms, following the scenario described in §2.1. The Yangkaal word for ‘boomerang’ was one of these. Its development is summarised in Table 1 and explained below.

Table 1. Development of Yangkaal /waŋalk/ ~ /waŋal/ ‘boomerang’

<table>
<thead>
<tr>
<th>Stage</th>
<th>$\omega_M$</th>
<th>$\omega_S$ (utterance internal)</th>
<th>$\omega_S$ (utterance final)</th>
<th>‘boomerang’</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>waŋalk</td>
<td>waŋalka</td>
<td>waŋal</td>
<td>‘boomerang’</td>
</tr>
<tr>
<td>II</td>
<td>waŋalk</td>
<td>waŋalka</td>
<td>i. waŋalk</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii. ! waŋal</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>i. waŋalk</td>
<td>waŋalka</td>
<td>waŋalk</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii. waŋal</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>i. waŋalk</td>
<td>waŋalka</td>
<td>waŋalk</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii. waŋal</td>
<td>waŋal ~ waŋalt</td>
</tr>
</tbody>
</table>

In Table 1, Stage I shows the inherited state of affairs in early proto Southern Wellesley, where $\omega_M$ is augmented to yield $\omega_S$, and then $\omega_S$ is truncated utterance
finally. In Stage II the new, scaled-back utterance final truncation rule comes into effect, but is defied by persistence of the original utterance final ωS form /waŋal/ (indicated by ‘!’) as an alternative to the newer, expected form /waŋalk/. Stage III shows the response to this in the innovation of a new underlying, utterance final allomorph for the lexeme. Stage IV, which represents modern Yangkaal, shows the new allomorph having spread from its original conditioning environment (utterance final position) into all environments, resulting in a lexeme with two alternative forms. A parallel development has occurred in the Kayardild and Yangkaal word for ‘big’, shown in Table 2.

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12 Both /cuŋara/ and /cuŋarpa/ are relatively frequent in Kayardild. In Yangkaal, /cuŋarpa/ is well attested but I have found /cuŋara/ just once, in a phrase recorded by Tindale (1960). Tindale’s ’tjugaramala ‘high tide’ is almost certainly /cuŋara malaa/ lit. ‘big.NOM sea.NOM’, which in Kayardild also means ‘high tide’.
Table 2. Development of Kayardild, Yangkaal /cuŋarpa/ ~ /cuŋara/ ‘big’

<table>
<thead>
<tr>
<th>Stage</th>
<th>ωM</th>
<th>ωS (utterance internal)</th>
<th>ωS (utterance final)</th>
<th>‘big’</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>cuŋarpa</td>
<td>cuŋarpa</td>
<td>cuŋar</td>
<td>‘big’</td>
</tr>
<tr>
<td>II</td>
<td>cuŋarpa</td>
<td>cuŋarpa</td>
<td>i. cuŋarp</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii. ! cuŋar</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>i. cuŋarpa</td>
<td>cuŋarpa</td>
<td>cuŋarp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. cuŋara</td>
<td></td>
<td>cuŋar</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>i. cuŋarpa</td>
<td>cuŋarpa</td>
<td>cuŋarp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. cuŋara</td>
<td>cuŋara</td>
<td>cuŋar</td>
<td></td>
</tr>
</tbody>
</table>

We turn now to edge aligned reconstruction.

In Kayardild, past tense clauses contain verbs inflected with the past tense suffix /-ara/ and direct objects inflected with the ‘modal’ ablative /-kina/ ~ /-cina/ ~ /-ina/ ~ /-na/. The order of subject, verb and object is free, as indicated in (7) (note that utterance final /a/ is usually truncated).

(7) a. ɲĩŋkaSUBJ kuri-c-araV [ʈaṭin-kina ʈulk-ina]OBJ

2sg.NOM see-THM-PAST that-MABL country-MABL

‘You’ve seen that country.’

b. [ʈaṭin-kina ʈulk-ina]OBJ kuri-c-araV ɲĩŋkSUBJ

c. [ʈaṭin-kina ʈulk-ina]OBJ ɲĩŋkaSUBJ kuri-c-araV
In Kayardild ‘precondition’ clauses, verbs are inflected with the precondition suffix 
/-arpa/ and direct objects with a different form of the modal ablative, /-kinapa/ ~ 
/-cinapa/ ~ /-inapa/ ~ /-napa/, as in (8).

(8) caṭaṭa ṭaŋkaa ṭakan-kinapa wuŋi-c-arp,

another.NOM man.NOM sandbank-MABL steal-THM-PRECOND

ṭuḷmara ṭaŋkaa culija parki-c.

country.UTIL man.NOM bone.MLOC chop-THM.ACT

‘If another man stole (one’s) sandbank, the boss of that country would chop 
some bones (in a spell of vengeance).’ (Evans 1996:262, ex7-27).

On the basis of extant examples, it seems that precondition clauses always or almost 
always precede the main clause in a Kayardild sentence. Hence in fluent speech
13  
precondition clauses would precede main clauses within the utterance, as shown in 
(9).

13 All of Evans’ (1996:262) examples of precondition clause are final in the utterance, 
however as Evans (1996:64) notes, utterance breaks were commonly inserted by his 
consultants while speaking slowly.
(9) Modern Kayardild

\[ S \]

\[ \text{PRECOND clause} \quad \text{main clause} \]

\[ \text{utterance} \]

On the grounds of comparative evidence and semantic relatedness, both the verbal and direct object inflections in past and precondition clauses in Kayardild are reconstructed without doubt as having descended from the same proto Tangkic endings, ‘prior’ /-arpa/ and ‘ablative’ /-kinapa/ ~ /-cinapa/ ~ /-inapa/ ~ /napa/ respectively. The question is, what can the divergent modern forms tell us about the syntax of their ancestors at the point when they diverged?

We know that proto Southern Wellesley underwent a change of its rules of utterance final truncation. We can reconstruct that these gave rise to new past tense and modal ablative inflections as shown in Tables 3 and 4 (the modal ablative is exemplified just for one allomorph /-kinapa/, but an equivalent process affected the others).¹⁴

¹⁴ Tables 3 and 4 include the utterance final forms */-arp/ and */-kinap/ up until Stage IV and then show them as being lost in Stage V. I include them because the past tense and ablative suffixes still surface utterance finally as /-arp/ and /-kinap/ in Kayardild song, even though those form–function pairings are now absent from the spoken language.
### Table 3. Development of Kayardild /-ara/ ‘past tense’

<table>
<thead>
<tr>
<th>Stage</th>
<th>$\omega_M$</th>
<th>$\omega_S$ (utterance internal)</th>
<th>$\omega_S$ (utterance final)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>STEM-arpa</td>
<td>STEM-arpa</td>
<td>STEM-ar</td>
</tr>
<tr>
<td>II</td>
<td>STEM-arpa</td>
<td>STEM-arpa</td>
<td>i. STEM-arp</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii. ! STEM-ar</td>
</tr>
<tr>
<td>III</td>
<td>i. STEM-arpa</td>
<td>STEM-arpa</td>
<td>STEM-arp</td>
</tr>
<tr>
<td></td>
<td>ii. STEM-ara</td>
<td>STEM-ara</td>
<td>STEM-ar</td>
</tr>
<tr>
<td>IV</td>
<td>i. STEM-arpa</td>
<td>STEM-arpa</td>
<td>STEM-arp</td>
</tr>
<tr>
<td></td>
<td>ii. STEM-ara</td>
<td>STEM-ara</td>
<td>STEM-ar</td>
</tr>
<tr>
<td>V</td>
<td>STEM-ara</td>
<td>STEM-ara</td>
<td>STEM-ar</td>
</tr>
</tbody>
</table>

### Table 4. Development of Kayardild /-kinapa/ ‘(modal) ablative’

<table>
<thead>
<tr>
<th>Stage</th>
<th>$\omega_M$</th>
<th>$\omega_S$ (utterance internal)</th>
<th>$\omega_S$ (utterance final)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>STEM-kinapa</td>
<td>STEM-kinapa</td>
<td>STEM-kina</td>
</tr>
<tr>
<td>II</td>
<td>STEM-kinapa</td>
<td>STEM-kinapa</td>
<td>i. STEM-kinap</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ii. ! STEM-kina</td>
</tr>
<tr>
<td>III</td>
<td>i. STEM-kinapa</td>
<td>STEM-kinapa</td>
<td>STEM-kinap</td>
</tr>
<tr>
<td></td>
<td>ii. STEM-kina&amp;</td>
<td>STEM-kina</td>
<td>STEM-kina</td>
</tr>
<tr>
<td>IV</td>
<td>i. STEM-kinapa</td>
<td>STEM-kinapa</td>
<td>STEM-kinap</td>
</tr>
<tr>
<td></td>
<td>ii. STEM-kina&amp;</td>
<td>STEM-kina</td>
<td>STEM-kina</td>
</tr>
<tr>
<td>V</td>
<td>STEM-kina&amp;</td>
<td>STEM-kina</td>
<td>STEM-kina</td>
</tr>
</tbody>
</table>

*The suffix /-kina/ is lexically specified in Kayardild as escaping utterance final /a/-truncation. This modern synchronic fact reflects the earlier, synchronic incongruity of the utterance final form /-kina/ in Stage II.*
The phonological forms whose development is shown in Tables 3 and 4 originated in utterance final position and are now found in Kayardild past tense clauses; they are not found in precondition clauses. In precondition clauses one encounters the unchanged reflexes of the original suffixes /-arpa/ and /-kinapa/ ~ /-cinapa/ ~ /-inapa/ ~ /-napa/.

Given this evidence, I reconstruct that just as in modern Kayardild, precondition clauses in proto Southern Wellesley preceded main clauses, and past tense clauses were sentence final at the period corresponding to Stage II in Tables 3 and 4. Because of this sentential syntax, inflections in precondition clauses were rarely if ever utterance final and hence avoided the developments shown in Tables 3 and 4, even as inflections in past tense clauses were undergoing them. This historical syntactic result is obtained via reference to historical phonology.

6 The relative chronology of phonological and morphosyntactic change

This section rehearses an argument that the sound changes described in §5 occurred only after the shift in proto Southern Wellesley from an ergative–absolutive alignment to nominative–accusative alignment of core cases. Two lines of reasoning are presented, the second of which involves edge aligned reconstruction.

Evans (1996:423ff) provides a detailed reconstruction of clause types and case marking in proto Tangkic, and discusses their development in various daughter languages. Proto Tangkic main clauses were ergative–absolutive, but many subordinate clauses effectively had a nominative–accusative alignment. Both Northern Tangkic (Lardil) and Southern Wellesley (Kayardil, Yangkaal) became accusative predominantly through the coopting of subordinate clause types as new
main clauses. One such subordinate clause was the ‘prior’ clause of proto Tangkic, which proto Southern Wellesley coopted as its new past tense main clause.

In §5 I reconstructed the variable development of the proto Tangkic prior suffix and ablative suffix in proto Southern Wellesley as being due to the existence of an association between the functions and distributions of precondition subordinate clauses and past tense main clauses, which, when phonological change occurred, became an association between function and form. That line of reasoning would be difficult to sustain if the two clause types had not yet diverged functionally. Accordingly, it seems most reasonable to suppose that the two clause types had already diverged before the phonological change occurred, which in turn suggests that proto Southern Wellesley had already undergone the changes to clause structure which resulted in it becoming accusative. That is, the changes in §5 occurred after the shift to a nominative–accusative case system.

In the remainder of this section I offer a second reason to reconstruct this relative chronology of changes. Once again, this involves relating phonological change (or in this case, the absence of it) to syntax.

Modern Kayardild possesses a ‘past nominaliser’ suffix, cognate with the Tangkic prior suffix (and the Kayardild past tense and precondition suffixes). The past nominaliser suffix attaches to verb stems to derive a nominal word which typically denotes (i) an agent in a past event important in the life of the referent of an

15 The alternative scenario would be as follows: proto Southern Wellesley allowed prior subordinate clauses to stand either before or after main clauses. The phonological changes in §5 occurred, and the different forms of suffixes became associated with prior clauses in pre- versus post-main clause position. Only later did those positional variants diverge functionally.
incorporated nominal as in (10), or (ii) the place at which an event occurred, which possibly involved an incorporated object, as in (11).

(10) a. ŋiciŋ-kįnilu-ʈ-arpa b. niwan-taŋa-j-arpa

\[ \text{1sg-deliver-THM-PSTN} \quad \text{3sg-circumcise-THM-PSTN} \]

‘the one who delivered me’ ‘the one who circumcised him’

(11) maali-pati-j-arpa

\[ \text{swamp.turtle-carry-THM-PSTN} \]

lit. ‘the place where the swamp turtles were carried away’

One place name in Yukulta, cited by Keen (1983:193) also appears to be such a ‘past nominal’.

(12) kuļtaŋa-ʈja-e-arpa ‘Flying fox waterhole (place name)’

\[ \text{flying.fox-eat-THM-PRIOR} \]

On the basis of this and other comparative morphosyntactic evidence, Evans (1996:469–70) proposes that past nominals like those in (10)–(12) arose in proto Southern Tangkic when the head noun was dropped from a noun phrase containing a modifying, ‘prior’ relative clause whose verb was inflected with the prior suffix, (13).
Let us consider this in light of the changes discussed in §5.

If past nominals existed in proto Southern Tangkic and they exist in Kayardild, then they also existed in proto Southern Wellesley. As full noun phrases they were free to appear sentence finally and thus utterance finally. Nevertheless, at the time when the proto Southern Wellesley past tense suffix (on verbs) and modal ablative suffix (on nouns) underwent changes due to their appearing in utterance final position (cf. §5), the past nominal suffix */-arpa/* (on nouns) did not change. (If it had changed, we would expect the change to have been the same as that in the past tense suffix, */-arpa*/ > */-ara/*). So, why did past nominal suffix not change? One possible answer lies in the relative chronology of the loss of ergativity in proto Southern Wellesley, for when proto Southern Wellesley underwent a shift from ergative to accusative alignment, there were concrete implications for the frequency with which a past nominal ending in */-arpa/* would have appeared in utterance final position, and hence have been exposed to phonological change.

During the ergative stage of proto Southern Tangkic, direct objects in indicative and imperative main clauses would have been in the absolutive case, marked only by augmentation, and in the case of a past nominal which underlyingly
ended in /-arpa/ augmentation has no effect: the word would end in /-arpa/.\textsuperscript{16} Now, let us assume that word order in these kinds of main clauses was comparable with word order in the prior subordinate clauses which later became past tense main clauses: in that case, direct objects in each clause type would have been clause final, and utterance final with around the same frequency.\textsuperscript{17} This suggests strongly that past nominals in the absolutive case ought to have changed from /-arpa/ > /-ara/, given that the (predecessor of) the past tense and the ablative suffix also changed. Conversely, the fact that the past nominal suffix did not change suggests that the phonological changes in §5 did not occur while proto Southern Tangkic was ergative.

During the accusative stage of proto Southern Tangkic, a past nominal word would end in /-arpa/ only in the nominative case, which was used to mark main clause subjects and imperative clause direct objects. In other cases, additional inflectional material would follow the string /-arpa/, preventing it from ever being utterance final. The key question now is, were utterance final nominatives (in later proto Southern Wellesley) less frequent than utterance final absolutes (in earlier proto Southern Wellesley)? If that turns out to be the case, then provided we assume that proto Southern Tangkic was already a nominative–accusative language when the changes in §5 occurred, we will have an explanation for why past nominal /-arpa/ failed to change to /-ara/.

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\textsuperscript{16} Tangkic word final augmentation never has an effect on words ending /a/ which are trisyllabic or longer.

\textsuperscript{17} If anything, direct objects in main clauses, especially in imperative clauses lacking overt subjects, would have appeared utterance finally MORE OFTEN than those in prior clauses. This only strengthens the argument offered here.
Since the ergative–absolutive case system in proto Southern Tangkic would have resembled modern Yukulta more than any other modern Tangkic language, I take a count based on the three Yukulta texts in Keen (1983). These yield ninety eight utterance-final words which are non-pronominal heads of noun phrases within indicative and imperative main clauses. Of these, sixteen are absolutive-marked direct objects and intransitive subjects, but only six are (ergative or absolutive) subjects or imperative objects. That is, it seems reasonable to assume that the incidence of utterance final past nominals ending phonologically in /-arpa/ dropped significantly when proto Southern Wellesley became accusative. Accordingly, we gain the greatest explanation of modern synchronic facts by reconstructing proto Southern Wellesley as having become accusative before the changes in §5 took effect.

7 Modifier–head noun phrases and nominal predicate sentences in pre- proto Tangkic

In this section I turn to pre-proto Tangkic and reconstruct the word order modifier–head within the pre-proto Tangkic noun phrase and the order subject–predicate within the pre-proto Tangkic nominal predicate sentence. To do so, I will focus on two morphemes and the words which end in them. Both morphemes are reconstructed as originally ending in */NH/. They are the genitive suffix */-pakaraNH/ ~ */-wakaraNH/ ~ */-karaNH/, and the ‘much’ morpheme */muṭaNH/ which appears in modern Southern Tangkic as both a quantificational word stem /muṭa/ ‘much, many’

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*I take Keen’s line breaks and commas to indicate pauses, which demarcate the ‘utterance’ as defined in this chapter.*
and a suffix /-muţani/\(^{19}\) ‘characterised by a plentitude or excess of’. The modern language evidence comes from Kayardild. The relevant historical phonological facts are those of pre-proto Tangkic external sandhi (cf. §4), which deleted word final */NH/ from certain forms in utterance internal position, but not utterance finally.

In modern Kayardild, the nominative form of the genitive\(^{20}\) is different, depending on whether it appears as the predicate in a nominal predicate sentence as in (14) with the structure (15), or as a modifier to a head noun in a noun phrase, as in (16). In the former, the reflex of */NH/ appears, delaminalised to /n/ and augmented; in the latter there is no trace of */NH/.

(14) caaŋ ʈaŋ-ka-karant ‘The track is from a human’ (Evans 1996:152 ex 4-64)

\[
\text{track.NOM person-GEN.NOM}
\]

(15)

```
S
  SUBJECT\textsubscript{NP}  PREDICATE\textsubscript{NP}
```

utterance

(16) ṭapucu-ka-maku ‘elder brother’s wife’

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\(^{19}\) I use the symbol /ń/ to represent the ‘palatalising n’ morphophoneme (Evans 1996:126) which is the modern reflex of */NH/ (Round, in prep).

\(^{20}\) In the case systems of all Tangkic languages, a word inflected in the genitive can be further marked by other cases.
Turning to the ‘much’ morpheme, this can appear as a suffix as in (17), where the nominal word ending in /-muțant/ is the predicate in a nominal predicate sentence with the same structure as (15), or as a quantificational word in itself, modifying a head noun as in (18).

(17) ŋata ka-muțant  ‘I’m a chatterbox’

I.NOM speech-EXCESS.NOM

(18) muțaa wuțant  ‘much food’

much.NOM food.NOM

In (17), a reflex of the */NH/ segment appears, delaminalised and augmented. It should be said that nominals ending in /-muțań/ need not function as predicate nominals, rather they can also appear as head nouns in other types of NPs, or as modifiers in NPs. However, in my corpus of spontaneous Kayardild speech, nominals ending in /-muțań/ occur in predicate nominal function more often than any in other function, by a factor of ten to one (based on a corpus of 49 tokens).

In (18), no reflex of */NH/ is present. (The word /muțaa/ is the augmented form of underlying /muța/). Within an NP the word /muțaa/ need not always be a modifier. It can stand as its own as the predicate in a nominal predicate sentence, but
a corpus examination shows that /muṭaa/ functions as a modifier on the order of ten times more frequently than as a predicate NP (based on a sample of 100 tokens).

Now, in pre-proto Tangkic, words ending in */NH/ could surface sometimes with final */NH/ (namely, in utterance final position), and sometimes without (in utterance medial position). Using edge aligned reconstruction, we hypothesise that the correlation between function and the presence or absence of a reflex of */NH/ in modern Kayardild continues a similar correlation from pre-proto Tangkic. That is, in pre-proto Tangkic, */NH/ was present in predicate nominals but absent from modifiers in an NP. That is, we reconstruct that predicate nominals occurred utterance finally, but modifiers in NPs did not. This can be explained if pre-proto Tangkic had predicate nominal sentences with the same structure as in (15), and noun phrases with the rigid word order modifier–head. Both of these results are significant: in a linguistic area where word order is usually strikingly free, we reconstruct two instances in pre-proto Tangkic in which word order was not free, but was tightly constrained. These significant historical syntactic results are obtained via reference to historical phonology.

8. Conclusion

No method of reconstruction in historical linguistics is failsafe. There will always be specific linguistic changes which are unexpected, and any method which relies on what ‘usually happens’ will sometimes fail or lead us astray. Edge aligned reconstruction is no different in this respect. Nevertheless, I hope to have shown that edge aligned reconstruction does produce plausible results, and that its foundations are well grounded enough and general enough to be applied cross-linguistically where suitable evidence becomes available. Any new method which can shed more, or
different, light on the past is welcome, and to that extent I hope that edge aligned
reconstruction can find a useful place in the standard toolkit of the historical linguist.

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