Phoneticisation in Cundeelee Wangka: English loan words

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Cundeelee Wangka is an Indigenous language of the Wati family in the Western Desert language group, spoken in the Goldfields region of Western Australia (*Cundeelee Wangka – Goldfields Aboriginal Language Centre*, n.d.). It developed as an Aboriginal creole at Cundeelee Mission, east of Kalgoorlie, in the 1950s to 1970s, and is a dialect of Pitjantjatjara (*Cundeelee Wangka – Goldfields Aboriginal Language Centre*, n.d.). Cundeelee Mission, 250km from Kalgoorlie, initially a government ration station, was established as an Evangelical Mission around 1949 and closed in 1986 (Abbott, 2021; ABC News, 2023). The missionaries Dawn and Brian Hadfield played a key role in recording and analysing Cundeelee Wangka (Abbott, 2021).

This paper is analysing the phoneticisation of words borrowed from English into Cundeelee Wangka. If rules or patterns can be found, this can be used to inform language speakers and linguists if this method is used for creating new words. Analysis was done by first broadly transcribing the English words using the International Phonetic Alphabet (IPA). Then, this transcription was compared to the Cundeelee Wangka orthography to determine what changes occurred and any specific environments that dictated this. No stress analysis was done. The SAE accent has changed from the time when these words were first introduced to Cundeelee Wangka, and as a result of migration there would have been foreign accents, in particular varieties of English spoken across the United Kingdom. However, the IPA transcription was also done based of current Standard Australian English (SAE) accents, for two significant reasons. The first is that no data was available on the accents of the time. The second, is that as this paper aims to support future borrowing of English words, this will be taken from SAE as it is spoken now.

It is worth noting that from 94 words included in this paper, only four are verbs (with an additional to verbs that are variations of nouns already included in the dataset). Verbs belong to a closed class of word, whereas nouns are an open class, and are therefore more productive (Coffin and Hanson, 2022). Appendix 2 contains a complete list of words analysed in this paper, consisting of the English word, the IPA transcription and the Cundeelee Wangka word, and any relevant notes, including which words are verbs. Verb endings have been excluded from the analysis.

Appendix 1 contains tables demonstrating the phonemes present in the dataset for both English and Cundeelee Wangka.

<div align="center">**Consonants**</div>

Cundeelee Wangka does not allow for word-final consonants. When borrowing English words, this is solved by either the addition of a vowel or using the suffix *-pa. -pa* seems only to follow *l*, *n*, and *rr*, but there is also one example of n adding a vowel word-finally (iron/*ayana*). Adding *-pa* is more common on English loanwords than Cundeelee Wangka words (Martin, 2016). There are a few exceptions to word-final consonants in Cundeelee Wangka – with *ny* and *n* – and one exception found in the dataset of English loan-words (satellite/*tatilayit*).

Consonant clusters only occur at syllable breaks and are restricted in which consonants can appear and in what order. Retroflexes, rhotics, glides and laterals may only appear as the first consonant in a cluster. *rt* is the only exception to this, if it appears after another retroflex (e.g. *rn + rt → rnt*) (Martin, 2016). Plosives may only appear as the second consonant in a cluster.

Plosives

Cundeelee Wangka has five plosive sounds. Orthographically, they are *p*, *t*, *rt*, *tj* and *k* (see Appendix 1, Figure 3). Unlike English, Cundeelee Wangka does not contrast voicing. It could therefore be expected that /b/, /d/ and /g/ would become *p*, *t*, and *k*, respectively. This is supported by the data and will be analysed in more detail below.

/p/ and /b/ appear as *p* in Cundeelee Wangka in all examples.

/t/ appears to be more complex. In 25 examples, it simply becomes *t*. There is one example each of transforming to *rt* (cut/*karta*) and *tj* (pocket/*pukitja*). There does not seem to be a phonemic environment dictating this difference. There are also three examples of transformation to *rr*. Two of these are word-finally (biscuit/*pitjikirr-pa*; court (courtroom)/*kuurr-pa*), and this feature is discussed below. The third example is in at the start of a consonant cluster (sweet fella (sugar)/*tuwirrpala*), which as discussed above is not allowed. There is also one example of word-final deletion (government (government official)/*kapaman-pa*).

/d/ follows a similar pattern. There is one example of word-final deletion (gold/*kawul-pa*). There is one unexplained intervocalic deletion (needle/*niil-pa*). /d/ becomes *rr* in one example, where it is present at the start of a consonant cluster (naked fella (naked person)/*nikirrpala*), which is not permitted in Cundeelee Wangka. As /d/ seems to follow the patterns of /t/, it could be theorised that /d/ is transforming to /t/ first, and then being phonetically transformed into Cundeelee Wangka phonology.

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/g/ becomes *k* in all examples. /k/ appears as *k* with two exceptions. These are one word-final deletion (tomahawk/*tamiya*), and one transformation to *rr* at the start of a consonant cluster (picture/*pirrtja*). This is consistent with other plosives.

Where plosives are present word-finally in English loanwords, there are three strategies employed to follow Cundeelee Wangka rules. An additional vowel (*i, a, u*) may be added word-finally, the plosive may be deleted (if part of a consonant cluster word-finally), or they may transform into a trill (*rr*) followed by *-pa*. There is one exception in this dataset, with satellite becomes *tatilayit*, keeping the word-final consonant. It is unclear whether it still takes *-pa*.

Nasals

Cundeelee Wangka has five nasal sounds. Orthographically, these are *m*, *n*, *rn*, *ny* and *ng* (see Appendix 1, Figure 3).

/m/ appears as *m* in all examples. /ŋ/ appears as *ng* in all examples. In English orthography, /ŋ/ can be represented by either ng, or just n (as in blanket).

/n/ appears as *n* in all but two examples. There is one word-final deletion (aeroplane/*arrapula*), and one transformation to the retroflex *rn* (pony/*purni*). There is also one example of *n* adding a vowel word-finally (iron/*ayana*). This is the only example outside of the plosive class.

Fricatives

Cundeelee Wangka does not have fricatives. English fricatives appear to transform into plosives. Evidence supports that voiced fricatives will first transform to their unvoiced counterparts (/z/→/s/, /v/→/f/, /ʒ/→/ʃ/, /dʒ/→/tʃ/), and are then transferred to Cundeelee Wangka orthography.

/f/ and /v/ appear as *p* in all examples.

/s/ becomes *tj* in most examples, however there are some exceptions. There are three examples of *rr* word-finally (dress/*turirr-pa*; matches/*matjirr-pa*; patches/*patjirr-pa*), but this is not the only word-final solution for *tj*. There are two examples of *t* (satellite/*tatilayit*; sweet fella (sugar)/*tuwirrpala*). There are three examples of deletion, one word-finally (Jesus/*tjiitja*), and the other 2 at the start of consonant clusters (school/*kuurl-pa*; spanner/*pana*). As *tj* is a plosive, it is not permitted as the first consonant in a cluster. There is also one example of transformation into *ny* (policeman/*purlinyman*), which will be discussed in more detail separately.

/z/ appears as *tj* except for one example of word-final deletion (trousers/*tawatji*).

/ʃ/ appears as *tj* in most examples, with one example of deletion (section car/*tjikinkarra*) at the end of a consonant cluster with another plosive.

/ʒ/ does not appear in this dataset. Evidence from other fricatives indicates it would follow the same pattern as /ʃ/.

/tʃ/ is technically two sounds, however, the regular presence of them as a combination in the data, as well as the presence of /dʒ/ without /ʒ/ in the phonology, has led me to analysis as if they are one sound. However, an alternative explanation is that in such a consonant cluster, the first plosive is always deleted. /tʃ/ always appears as *tj* in this dataset.

/dʒ/ is also two sounds, but, as with /tʃ/ above, here they are analysed as a single sound. /dʒ/ always appears as *tj*.

/h/ is a fricative that is not present in Cundeelee Wangka. In word-initial presentation, /h/ is always deleted. There is one example intervocalically, where it becomes *y* (tomahawk/*tamiya*).

Approximants and Lateral Approximants

Cundeelee Wangka has three lateral approximants, *l*, *rl* and *ly*; a trill, *rr*; and three approximants, *r*, *y* and *w* (see Appendix 1, Figure 3).

/w/ appears as *w* in all examples.

/ɹ/ appears as *r* in most examples. There is one example of *rr* instead (aeroplane/*arrapula*). In the word trousers (*tawatji*), it is trickier to define. There are two possible explanations: /ɹ/ is transforming into *w*, with the addition of a vowel (*a*) in a forbidden consonant cluster; or /ɹ/ is deleted and *awa* is the vowel.

/l/ appears as *l* in most examples. There are three examples of the retroflex *rl* (girl/*kiirl-pa*; policeman/*purlinyman-pa*; school/*kuurl-pa*). At the end of a consonant cluster, a vowel is inserted between *l* and the preceding plosive (aeroplane/*arrapula*; blanket/*pilangkiti*; flour/*pulakarra*).

Discussion

Further analysis could be done on the vowels that are inserted in consonant clusters and word-finally. It is possible that which vowel in inserted is dependent on the surrounding environment. It could also be investigating whether this is fixed, or whether it can vary depending on the broader sentence context or between speakers.

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Vowels

Cundeelee Wangka has six vowels. There are three short vowels, *i*, *a* and *u*, and three long vowels, *ii*, *aa* and *uu* (see Appendix 1, Figure 3). Long vowels can only occur in the first syllable of a word, whereas short vowels can appear anywhere. There is one exception to this rule, dry tea (tea leaves)/*turayitii*. This comes from tea/*tii*, explaining the exception. There are no diphthongs in Cundeelee Wangka and only one vowel is permitted in a syllable.

Monophthongs

/i/ becomes *i* in seven occurrences, and *ii* in nine occurrences. *i* sometimes occurs in the first syllable.

/ɪ/ becomes *i* in all examples.

/e/ becomes *i* in most examples, and *ii* in one example (tent/*tiinti*). There doesn't appear to be a phonetic environment dictating this variation.

/ɛə/ becomes *a* in all examples.

/æ/ becomes *a* in all examples. There is one example of adding *y* initially (apple/*yalpulpa*).

/a/ occurs three times in the dataset. It appears as *aa* in a first syllable (garden/*kaatin-pa*), *a* once wordfinally (motor car/*mutuka*) and *arra* once wordfinally (section car/*tjikinkarra*).

/ʌ/ becomes *u* preceding a nasal, and *a* in all other present environments.

/ɒ/ becomes *a* or *u*. There are two examples of *uu*, both occurring in variants of god. These will be discussed elsewhere. All occurrences are in wordinitial syllables.

/ɔ/ occurs twice, once becoming *uu* (court room (court)/*kurr-pa*) and once becoming *a* wordfinally (tomahawk/*tamiya*)

/ʊ/ becomes *uu* in three examples and *u* in one example (bullock/*puluka*). All examples are in wordinitial syllables.

/u/ becomes *uu* in two examples and *u* in one example (shoot/*tjutapu* (verb)), all in the first syllable.

/ɜ/ becomes *ii* (girl/*kiirl-pa*) once and *aa* once (work/*waaka*).

/ə/ is the most prevalent SAE vowel. It becomes *a* in the majority of examples, and in all word-final examples. It also appears as *u* and *i* in a number of examples across the dataset. There is one example of *arra* (flour/*pulakarra*) which will be discussed separately.

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Diphthongs

/eɪ/ becomes *a* twice following l (aeroplane/*arrapula*; blanket/*pilangkiti*) and *i* once following n (naked fella/*nikirrpala*). It is possible that this is dictated by the phonetic environment, but the dataset is too small to be certain. /eɪ/ also becomes *ii* twice (paper/*piipa*; train/*turiin-pa*) and *ayi* four times (angel/*ayintjul-pa*; highway/*ayiwayi*; jail/*tjayil-pa*; train/*turayin-pa*). As train is transcribed with both *ii* and *ayi*, it is possible that this is interchangeable. An alternative explanation is transcriber error, so the speech data should be reviewed.

/aɪ/ becomes *ayi* except when followed by another vowel, when it instead becomes *ay*, with the following vowel becoming *a* in all examples.

/aʊ/ becomes *a* once (flour/*pulakarra*) and *awu* once (town/*tawun*). It is possible that the phoneticisation of town is influenced by the English spelling. /aʊ/ is also present in trousers. As discussed under consonants, this vowel could be transcribed as either *a* or *awa*, dependent on how /ɹ/ is interpreted.

/oʊ/ presents as *awa* (boat/*pawatu*), *u* (dingo/*tingku*; pony (horse)/*purni*; motor car/*mutuka*), *awu* (gold/*kawul-pa*), *uu* (road/*ruuta*; rope/*ruupa*) and *a* (tobacco/*paka*).

Discussion

The phoneticisation of English vowels into Cundeelee Wangka presents a more complicated pattern than consonants. Differing accents at the introduction of these words could perhaps better explain these patterns. Phoneticisation of English into related languages could also be further investigated.

Exceptions

There are a number of exceptions and unusual presentations in the data, that will be briefly discussed below.

Aeroplane/*arrapula* and tomahawk/*tamiya* both have unusual word-final consonant deletion. *Arrapula* could be due to word length – all borrowed words are between two and four syllables in Cundeelee Wangka. However this doesn't explain dropping /k/ in *tamiya*.

Jam tin becomes *tjampirta*, with no clear reason for this change.

Policeman becomes *purlinyman*. This is the only example of a palatal nasal (*ny*) in the dataset. Discussions with Sue Hanson and Jackie Coffin also showed this as inconsistent with related languages.

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Flour becomes *pulakarra*, with the unusual addition of *k*, again inconsistent with related languages. It is possible there is a suffix *-karra* as a reference suffix included in this data, and original language recordings should be re-assessed.

Tobacco becomes *paka*. This is the only example of word-initial syllable dropping. However, it is possible it is borrowed from the English slang for tobacco, 'bacca' (See *Facts and Thoughts for Smokers*, 1876).

God becomes *katu*, following phonetic rules, but it also becomes *kuurrnga* and *kuutnga*. In discussions with Sue Hanson and Jackie Coffin, it was posed that the suffix *-nga* is an honorific.

Conclusion

This paper has examined the phoneticisation of borrowed English words into Cundeelee Wangka. Some distinct patterns have emerged from this examination, however this is not a definitive list of rules, simply an analysis of patterns present. More research could be undertaken to further analyse and break down patterns, especially in vowel phoneticisation. This analysis, however, is aimed at better informing linguists and language speakers on how English words can be borrowed in the future, to allow for the continued use and development of Cundeelee Wangka, and other Goldfields languages moving forward.

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Appendix 1

Figure 1. IPA consonants. Highlighted are those present in the dataset.

/w/, which is a labial-velar approximant that is represented outside of the phonetic chart.

Figure 2. a.Vowel chart of Australian English monophthongs present in the data set. b. Vowel chart of English diphthongs.
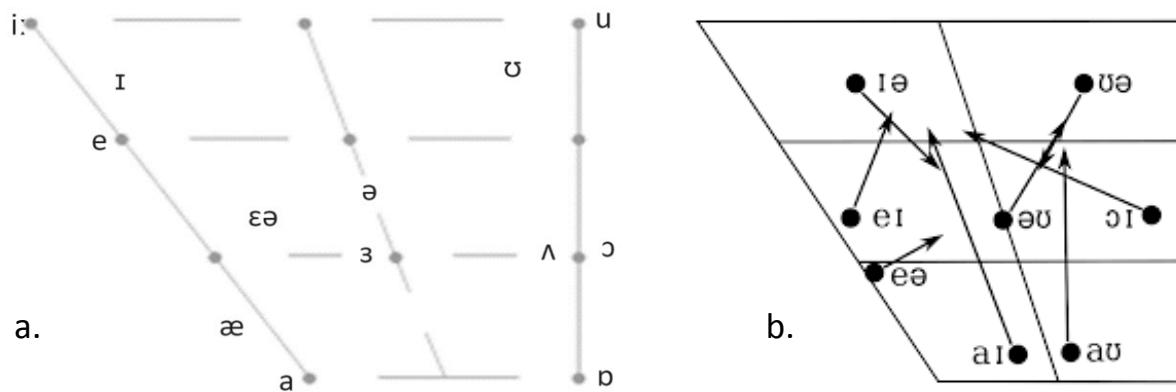

Figure 3.Cundeelee Wangka consonants. Adapted from Martin (2016).

	Alveolar	Retroflex	Palatal	Velar	Bilabial
Plosive	t	rt	tj	k	p
Nasal	n	rn	ny	ng	m
Lateral Approximant	l	rl	ly		
Trill	rr				
Approximant	r		y		w

Figure 4. Cundeelee Wangka vowels. Adapted from Martin (2016).

	Front	Central	Back
High	i ii		u uu
Low		a aa	

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