Word Creation in Goldfields Languages.
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Abstract

This document analyses word creation practices used by speakers of three First Nations languages in the Goldfields Region of Western Australia. Contact with European colonists in the 19th Century meant First Nations peoples were exposed to new concepts, objects and ideas, that needed labels. Identifying the processes Australian language speakers used to generate new words is a valuable tool for Australianists whose work requires equal parts investigation and linguistics. In this paper, the focus is on the languages: Mirniny, Pitjantjatjarra and Cundeelee Wangka. Pitjantjatjarra and Cundeelee Wangka are Western Desert languages of the Wati family, while Mirniny is part of Geoffrey O'Grady's Mirniny subgroup (Hanson, 2017). Of these, Mirniny is a sleeping or remembered language (Austin, 1996) while Pitjantjatjarra and Cundeelee Wangka are living languages with children speaking the language as a mother tongue. We begin by presenting statistics from the three datasets, before moving on to discuss the strategies for word creation: lexical borrowing; semantic extension and coinage including derivation. We analyse the ways in which each language observes morphological rules within these word creation processes and examine patterns of phonological adaptation and semantic extension. Consideration is given to word creation through coinage, and discussion is presented on verbal derivation, onomatopoeia and methods of reduplication.

This study of the processes used by speakers to create new words for new concepts, provides First Nations people with tools to recreate lost words and affixes for sleeping and remembered languages, that are based on the processes traditional language speaker used for word creation.

Lexical borrowing are made from Standard Australian English (SAE) or other Australian languages. Australian languages commonly contain synonymous borrowings from neighbouring languages. Where items have been borrowed from another Australian language, this is noted, however, the vast majority of borrowings identified are from SAE.

This study is comprised of our own primary data, collected with Western Australian Pitjantjatjarra speakers during field work at Irrunytju Community, as well as secondary data in the form of historical wordlists forming the Mirniny Toolbox and material sourced by other linguists, Brain and Dawn Hadfield.

Introduction.

The arrival of European colonists to the Goldfields in the 19th Century had a devasting and irrevocable impact on the First Nations people of the region. Language, culture and lands were systematically removed, along with the forced relocation of Indigenous people to farms, stations, missions and reserves. The placement of First Nations people in farms and stations served the purposes of providing cheap or free labour. Placement in missions purportedly supported integration into European society. Removal from traditional lands provided colonisers and miners with access to gold, water and land for settlements which later grew into towns and cities. Sudden, prolonged and often brutal contact with the European invaders

necessitated the creation of new words and labels for ideas and objects First Nations people had not encountered before.

A study of the lexical creation processes employed for these new concepts and objects will inform GALCAC's future language rejuvenation processes. Mirniny, Kaalamaya and Ngadju languages are incomplete and missing large numbers of lexical items which make rejuvenation of the languages as fluent speech forms, very difficult. This study provides information on traditional lexical creation processes and is the first of a number of studies that will inform the work heritage speakers will do to rejuvenate the languages.

GALCAC research shows lexical creation was accomplished through borrowing from SAE, extension of meaning of existing indigenous words, coinage, derivation, onomatopoeia and reduplication. Where lexical borrowing occurred, speakers filtered SAE phonemes so as to meet the phonological and morphological rules of their own codes, as discussed in 2.0. These adaptations include vowel-final rules in Pitjantjatjarra and Cundeelee Wangka, and avoidance of non-permissible consonant clusters, resulting in uniform and predictable change across lexical items. These patterns are constrained by the consonant-vowel, or consonant-vowel-consonant syllable patterns permissible in each of the 3 languages.

In a similar fashion, semantic extension belies thought processes and matters of cultural saliency, described in section 3.0. That is to say, the ways in which first contact First Nations language speakers extended meaning provides insight into how these people viewed the European culture in relation to their own.

This research showed lexical borrowing to be the most common form of word creation, while coinage, section 4.0, occurred least frequently. In contrast to lexical borrowing and extension of meaning, it can be quite difficult to arrive at the morphological or semantic processes behind coinage. Often time these are remembered by present day speakers as, 'the way the old people spoke', with little more information available.

1.0 Datasets and Statistics.

The first three tables show statistics for word class methods of creation in each language. Little lexical material is available for the Mirniny language and the data set is restricted to 53 items verified as being WA Mirniny. The Pitjantjatjarra is referred to by speakers as the Western Australian dialect of Pitjantjatjarra and so the data set is restricted to items provided by the WA dialect speakers only. Cundeelee Wangka is a speech form that developed on Cundeelee Mission between 1940-80 and is lexically and grammatically based on Pitjantjatjarra with significant influence from Ngaanyatjarra, and elements of Mirniny and Ngadju. Cundeelee Wangka has creolised into a distinct speech form which speakers describe as a south-western Pitjantjatjarra.

1.1 Mirniny

	Nouns	**Descriptors**	**Verbs**	**Total**
Lexical borrowings	**11**	**0**	**1**	12
Semantic extensions	14	0	0	14
Coinage	26	1	0	27

Total	**51**	**1**	**1**	**53**

1.2 Pitjantjatjarra

	Nouns	Descriptors	Verbs	Phrase	Total
Lexical borrowings	118	9	3	1	131
Semantic extension	7	0	0	0	7
Coinage	1	2	8	0	11
Total	**126**	**11**	**11**	**1**	**149**

1.3 Cundeelee Wangka

	Nouns	Descriptors	Verbs	Total
Lexical borrowings	94	0	4	98
Semantic extensions	51	7	18	76
Coinage	20	0	5	25
Total	**165**	**7**	**27**	**199**

- In each of the above datasets, nominals have the highest instance.
- Cundeelee Wangka has the largest dataset. Mirniny the smallest.
- Of the three languages, Pitjantjatjarra has the highest number of lexical borrowings.
- Cundeelee Wangka has the highest number of semantic extensions of all three language groups, even though the majority of the data is lexical borrowings.
- There is only one example of a borrowed phrase appearing in the Pitjantjatjarra dataset; *kaapati* (cup of tea).

1.4 Statistics by Creation Method

	Lexical Borrowing	Semantic Extension	Coinage	Total
Nouns	223	72	47	342
Descriptors	9	7	3	19
Verbs	8	18	13	39
Phrase	1	0	0	1
Total	**241**	**97**	**63**	**401**

1.5 Statistics by Word Class

	Nouns	Descriptors	Verbs	Phrase	Total
Mirniny	51	1	1	0	53
Pitjantjatjarra	126	11	11	1	149

Cundeelee Wangka	165	7	27	0	199
Total	**342**	**19**	**39**	**1**	**401**

1.6 Statistics by absolute total

	Mirniny	Pitjantjatjarra	Cundeelee Wangka	Total
Total	**53**	**149**	**199**	**401**

2.0 Lexical Borrowing.

The creation of new words through the process of lexical borrowing is the most commonly-used method of creation in this study (60.1%). Pitjantjatjarra and Cundeelee Wangka speakers have employed this process at a much higher rate than speakers of Mirniny. The Mirniny wordlist is taken from a sleeping language and is in effect frozen in its historical form, while Pitjantjatjarra and Cundeelee are living languages, thereby accounting for the size differences in data.

Certain classes of words are more likely to undergo change as a result of contact than others (Breen, 2011). In each dataset, nouns appear at a higher rate of incidence than any other word class, as described in 1.5. Nouns are an open word class, and the data presented in 1.0 demonstrates that this group is more likely to contain borrowed, extended and coined words than verbs.

2.1 Adapting Phonemes.

The phonologically-conservative nature of Australian languages (Alpher and Nash, 1999) has resulted in uniform change between SAE and the three Goldfields languages studied here. Sounds in SAE that do not appear in Australian languages such as palatal, alveolar and labiodental fricatives, become lamino-dental and bilabial stops, with few exceptions.

2.1.1 Pitjantjatjarra:
'rubbi**sh**' becomes *raput**j**i*

2.1.2 Pitjantjatjarra:
'Rin**s**o' becomes *rin**tj**upa*

2.1.3 Mirniny:
'**si**ster' becomes ***tj**it**j**a*

2.1.4 Cundeelee Wangka:
'fen**c**e' becomes *pin**tj**i*

2.1.5 Pitjantjatjarra:
'**f**ootball' becomes ***p**utupula*

2.1.6 Pitjantjatjarra:
'fi**v**e' becomes *payi**p**a*

Palatal affricates are replaced with lamino-palatal stops.

2.1.7 Cundeelee Wangka:
'pat**ch**es' becomes *pa**tj**irrpa*

2.1.8 Pitjantjatjarra:
'**ch**air' becomes ***tj**iya*

2.1.9 Pitjantjatjarra:
'banda**g**e' becomes *panti**tj**i*

2.1.10 Pitjantjatjarra:
'porri**dg**e' becomes *pari**tj**i*

2.2 Consonant Drop.

Where borrowing requires filtering a sound that is not permitted in the target language, codes adapt or avoid, choosing to drop complex SAE consonant clusters, in favour of familiar constructions. Glottal fricative /h/ does not feature in Australian languages (Dixon, in Walsh, 1992). Where it appears word-initially, speakers simply drop the consonant. Our research shows this results in a vowel-initial borrowing.

2.2.1 Pitjantjatjarra:
'**h**alf' becomes *aapa*

2.2.2 Pitjantjatjarra:
'**h**oliday' becomes *alatayi*

2.2.3 Pitjantjatjarra:
'**h**elp' becomes *alpa*

2.2.4 Cundeelee Wangka:
'**h**ammer' becomes *ama*

2.2.5 Cundeelee Wangka:
'**h**ighway' becomes *ayiwayi*

2.2.6 Cundeelee Wangka:
'**h**ospital' becomes *utjapitalpa*
Pitjantjatjarra and Cundeelee Wangka allow vowel-initial formations, whereas Yankunytjatjarra (a neighbouring dialect of Pitjantjatjarra) does not (Goddard & Defina, 2020).

Consonant cluster [sch] does not appear in any of the languages analysed in this study. Phonemically this is a blend [sk]. In the example below (2.2.7) speakers of Pitjantjatjarra have adapted school by dropping the initial blend in favour of a velar stop. The vowel-final rule seen in Pitjantjatjarra and Cundeelee Wangka is observed with the addition of word-final schwa.

2.2.7 Pitjantjatjarra:

“**sch**ool’ becomes ***k****uula*

In the following example, speakers of Pitjantjatjarra and Cundeelee Wangka replace the labiodental fricative with a bilabial stop. Because SAE permits a wide variety of syllable structures, Indigenous syllabic CV/CVC rules have been met by employing epenthesis. This example, ‘knife’ is found in both Pitjantjatjarra and Cundeelee Wangka, but readers will note the final vowel difference [a] and [i].

2.2.8 Pitjantjatjarra:
‘**kn**ife’ becomes ***n****ayi****p****a*

2.2.9 Cundeelee Wangka:
‘**kn**ife’ becomes ***n****ayi****p****i*
These strategies result in the adapted word becoming one or two syllables longer than its SAE origin. Dixon (in Walsh, 1992) explains that words in Aboriginal languages are usually of two or more syllables. As a result, monosyllabic borrowings are lengthened by adding a vowel. Hence,

2.2.10
SAE knife = 1 syllable
Pitjantjatjarra *nayi/pa* = 2 syllables

2.2.11
SAE knife = 1 syllable
Cundeelee Wangka *nayi/pi* = 2 syllables

2.3 Epenthesis

In lexical borrowing, strategies such as vowel insertion are employed in order to meet the phonemic CV/CVC rule and morphological patterns. Anaptyxis enables speakers to adapt borrowings to meet syllabic construction rules while mimicking SAE phones.

2.3.1 Pitjantjatjarra:
‘cake’ becomes *kay****ik****i*

2.3.2 Pitjantjatjarra:
‘lime’ (plaster) becomes *lay****im****i*

2.3.3 Pitjantjatjarra:
‘to**w**n’ becomes *taw****u****n****u***

2.3.4 Cundeelee Wangka:
‘b**i**ble’ becomes *pay****i****lpulpa*

2.3.5 Cundeelee Wangka:
‘g**o**ld’ becomes *kaw****u****lpa*

2.3.6 Cundeelee Wangka:
‘tr**ou**s**er**s’ becomes *t****a****w****a****tji*

Lexical borrowings usually gained at least one more syllable than the borrowed SAE item.

In this final example, speakers of Mirniny have added an extra syllable by inserting a glide intervocalically. Although not epenthetic, this borrowing shows evidence of the CVC rule and Dixon's syllabic rule (cited in Walsh, 1992).

2.3.7 Mirniny:
'tea' becomes *tji**y**a*

2.4 Phrasal Adaptation.

In all three datasets only one phrase was noted,

2.4.1 Pitjantjatjarra:
'cup of tea' becomes *kaapati*
Discourse examples in the GALCAC Pitjantjatjarra database show *kaapati* can be an offer of tea, a question whether one would like a cup of tea, or an order to make a cup of tea, depending on tone of voice.

2.5 Schwa Adoption.

Word-final schwa is common in SAE, represented by the graphemes ar, er, or, re.

Contemporary SAE does not vocalise the final rhotic phoneme as other dialects of English do such as the American pronunciation of 'car'. The rhotic-drop found in the below examples may be reflective of the contemporary SAE rhotic drop. However, the period of time these borrowings and phonotactic filtering took place would have been during the period when the Received Pronunciation (RP) dialect of English was commonly spoken by Europeans. In RP, the rhotic would have been pronounced.

2.5.1 Pitjantjatjarra and Cundeelee Wangka:
'motorc**ar**' becomes *mutuk**a***

2.5.2 Pitjantjatjarra:
'doll**ar**' becomes *tal**a***
Dollar is more specific than 'money' (borrowed, *mani*). Even though we did not find any examples of *tala* being extended to money, our understanding of extension and speaker patterns of use, allows us to suggest that it probably did occur.
Money also appears in semantically-extended forms like Mirniny, *puri* (discussed below in 3.0 Semantic Extensions).

2.5.3 Pitjantjatjarra and Cundeelee Wangka:
'damp**er**' becomes *tamp**a***

2.5.4 Pitjantjatjarra and Cundeelee Wangka:
'dinn**er**' becomes *tin**a***

2.5.5 Pitjantjatjarra and Cundeelee Wangka:
'lett**er**' becomes *lit**a***

2.5.6 Cundeelee Wangka:
'doct**or**' becomes *tukut**a***

2.5.6 Pitjantjatjarra:
'doct**or**' becomes *takat**a***

2.5.7 Cundeelee Wangka:
'wi**re**' becomes *way**a***

It would appear that Australian language users possess a keen ear for SAE phones. Methods used for filtering borrowed words reveal, not only a productive system of adaptation and borrowing, but one that demonstrates an awareness of SAE phonology, and a clever method of reproduction that obeys the sound rules of the heritage language, without changing the target so much that it is unrecognisable to an SAE speaker.

3.0 Semantic Extension

3.1 Extensions by Domain

	Human-made	**People and Kinship**	**Food, Drink, Fire and Cooking**	**Animals and Nature**	**Total**
Mirniny	6	3	5	0	14
Pitjantjatjarra	4	1	1	1	7
Cundeelee Wangka	28	32	15	1	76
Total	**38**	**36**	**21**	**2**	**97**

- In a dataset of 401 lexemes, almost one quarter (97) were created using semantic extension.
- This figure is comprised of 72 nouns (74.23%), 7 descriptors (7.22%) and 18 verbs (18.56%).
- Cundeelee Wangka returned the greatest percentage of words created through the process of semantic extension; 76 from 97 (78.35%).
- Mirniny, with the smallest dataset, had the second-highest percentage of words created through semantic extension; 14 from 97 (14.43%).
- Pitjantjatjarra had the smallest percentage of semantic extensions; 7 from 97 (7.22%).

New items created via semantic extension fall into one of four semantic domains: human made; people and kinship; food, drink, fire and cooking; animals and nature.

3.2 Human-made

Datasets showing extensions of meaning for labelling European concepts of human-made items contained the second-highest number of items. Colonisation saw First Nations people exposed to a language and culture entirely different to their own, one which possessed tools, machinery and housing very different to those used by Aboriginal Australians. It follows these new and unfamiliar items needed labels as terms of reference.

In studying the items which were assigned as extensions, the following considerations appeared to influence the First Nations people's choice of word:

- similarity of use and appearance
- commonalities in materials of composition
- colour
- texture
- items of clothing, labelled for the body part they covered.

3.2.1 Similarity of use and appearance

Where European items were seen to have qualities of appearance or use similar to that of Indigenous items, traditional meanings were extended to the un-named concepts.
This included similarity in purpose or use, even if appearance was different, as well as similarity in appearance, even if purpose or use was different.

3.2.2 Pitjantjatjarra:
'house' or 'building' becomes *warli*
The Pitjantjatjarra word for a home, camp or dwelling place, *warli*, extended to include western-style housing. In this example the use is the same, even if the appearance and construction was vastly different.

3.2.3 Mirniny and Cundeelee Wangka:
'money' becomes *puri, purntangu* and *apu*
Traditional words for stones and rocks, *puri* and *purntangu* (Mirniny) and *apu* (Cundeelee Wangka) came to be used for the European concept of money, due to similarity of appearance.

3.2.4 Mirniny and Cundeelee Wangka:
'house' becomes *karrpa* and *ngirrmi*
Traditional terms for 'ribs' or 'ribcage', *karrpa* (Mirniny and Cundeelee Wangka) and *ngirrmi*, (Cundeelee Wangka) were extended to mean house, because the frame of a European dwelling looked similar the shape of a ribcage (Hadfield, 2020). It is not uncommon for non-body parts to be extended in this way (Dixon, 2002).

3.2.5 Cundeelee Wangka:
'bullet', 'capsule' becomes *kalka*
The Cundeelee Wangka word used to describe small rounded pebbles or seeds was extended to bullets, capsules and other small, round things (Hadfield, 2020). That this extension is about appearance and size or shape and not the murderous properties of the bullet, nor its association with guns is noteworthy. We could assume that there was little violence at the Cundeelee Mission, meaning bullets were not associated with violence, however, this would not preclude residents from witnessing violence outside the mission, if at all.

3.2.6 Cundeelee Wangka:
'blanket spread out' becomes *milyi-milyi*
Speakers of Cundeelee Wangka made comparison between a spread out blanket and the bed of leaves placed down for cooked meat to be placed onto (Hadfield, 2020). Cundeelee Wangka also contains borrowed *pilangkiti* 'blanket'.

3.3 Commonalities in materials of composition

3.3.1 Cundeelee Wangka:
'rifle' becomes *warta*
Rifles, being made mostly of wood and iron, came to be known by Cundeelee Wangka, *warta,* used to denote trees, stumps and wooden artefacts (Hadfield, 2020). Again, there is no extension from kill, injure or an extension from violent words, a theme that proved frequent amongst other Indigenous languages (Mc Gregor, 2000).

3.4 Colour and Texture

3.4.1 Cundeelee Wangka:
'tea' and 'oil' become *maru*
The Cundeelee Wangka word for 'black' has come to be extended to other black items such as tea and oil. Hoogmartens and Verstraete (2020) found that there were no real traditional equivalents for tea, because before colonisation any hot drink had medicinal qualities. Therefore, extensions came from similarities in composition of materials (leaves, grass and plant rubbish) as well as existing words for 'dark', 'water' and 'hot' (Hoogmartens & Verstraete, 2020). In this example, we can see that speakers of Cundeelee Wangka have extended the colour 'black' to include a label for European-style tea.

3.4.2 Cundeelee Wangka:
'blanket' becomes *warntu*
Warntu, also appears as blanket in Ngaanyatjarra and Martu Wangka. It is probably an inter-language loan from Tjupan (another Goldfields language). In Tjupan, a neighbouring Goldfields language, *warntu* is glossed as matted fibres, likely hair, being a type of dreadlock.

3.5 Clothing and Covering

Our dataset shows that aside from colour (as discussed above in 3.4.1) clothing was extended from labels for the body parts each piece covered.

3.5.1 Mirniny:
'slippers' becomes *maltjarra*
Medicine men, *muparn* (also 'devil') were known to wear slippers made from feathers that allowed them to walk about undetected. Our dataset includes this word *maltjarra*, 'slippers'. We suggest it has been extended from the original meaning, that is slippers worn by the 'feather foot'. However, it should be noted that due to association with the feather foot and medicine man, this word should be used with caution.

3.5.2 Cundeelee Wangka:
'skirt' becomes *karilpa*
Speakers of Cundeelee Wangka have extended the meaning of 'hindquarters', *karilpa,* to mean skirt. Hadfield (2020) wrote that this was because the item of clothing covered the hindquarters. Body parts may also be used as directional or locational terms, and so this item of clothing, 'skirt' has taken on a locational name, that being the part it is worn over or covers (Dixon, 2002). Similarly, speakers of Warumungu combine body part with the suffix 'belong to' in order to create names for European clothing (Simpson, 1985). In this way shoe becomes *jinakari,* and trousers become *warlikari.*

3.6 People and Kinship

The semantic domain People and Kinship is where the data revealed the most marked influence of missionary linguistics. Given that Cundeelee Wangka, a dialect of Pitjantjatjarra, was used by residents at the Cundeelee Mission, this is not surprising. In fact, Cundeelee Wangka was the only dataset (in the category of semantic extension) that contained any religious or mission-related words (28 from 76, or 36.84%). Because Mirniny is a sleeping or remembered language, its dataset is effectively frozen (Austin, 1986). The most recent data in the Mirniny dataset is from O'Grady & O'Grady's Mirniny wordlist (cited in Velichova-Rebelos, 2013). The Pitjantjatjarra dataset is contemporary, with all information being collected within two years prior to the publication of this document.

Here we include examples from the category, People and Kinship. This section can be viewed in full at section 9.0, Appendices.

3.6.1 People and Kinship
The following examples are traditional people-like words that have been extended to take on missionary, or religious connotations.

3.6.2 Cundeelee Wangka:
'lord' becomes *puurrpa*
Puurrpa, extended from holder of the sacred sticks to mean 'lord', and also 'boss'.

3.6.3 Cundeelee Wangka:
'angel' and 'minister' becomes *tjukurrtjarra*
tjukurr-tjarra
story-HAV
having a story
Tjukurrpa being the creation story, has been extended from person with the *tjukurrpa*, to include a person with a religious story, such as an angel or minister. Association has been drawn here, between the idea of indigenous spirituality and a Christian spirituality, that is; a person sharing an important story.

3.6.4 Cundeelee Wangka:
'seat of super natural power' becomes *ngalya*
Extended from traditional meaning, 'forehead' and 'mind'.

The concept of good and evil is a familiar trope within missionary linguistics. The following are terms that have been extended to include these ideals.

3.6.5 Cundeelee Wangka:
'rejoice' becomes *pukurlpa*
pukurl-pa
happy-EUPH
happy
Extension of feelings of joy or happiness to rejoice. The inference being rejoice in God's love or word.

3.6.6 Cundeelee Wangka:
'righteous' becomes *tjukarurru*
'Easily understood', or 'straight' has been extended to encompass the religious concept of being righteous under God.

3.6.7 Cundeelee Wangka:
'turn around in the opposite direction' becomes the verb *pinkutjinga-*
Changing direction, or turning around has come to mean turning one's life around, or repenting through God's love.

3.6.8 Cundeelee Wangka:
'sin' or 'evil' becomes *kurra*
The traditional word for bad has been extended to 'sin' through missionary linguistics. This item appears as both noun and verb, *kurra-* to sin.

Missionary, or colonial linguistics operated with the aim of gaining command over language for creating languages of command (Brutt-Griffler, 2006). In addition to offering food, shelter and education in a European way of life, missions were places where speakers of language were shamed and encouraged, often forcibly, to use SAE in place of traditional languages. In this way, missions were places where language was first controlled, then removed. But what of those missions whose non-Indigenous leaders actively encouraged and promoted the use of heritage languages alongside SAE? Right or wrong in the eyes of the church, and publicly or privately, these places did exist. In these missions, language persisted. Residents of Cundeelee Mission continued to use their first languages in addition to SAE, and Aboriginal English, and today the language is classed as a living language. Upon the closure of the mission, the people moved back to their homelands and continued to use Cundeelee Wangka. Today it is spoken in Tjuntjuntjarra, an Aboriginal community in remote Western Australia, as well as towns such as Kalgoorlie, Boulder and Norseman.

The influence of colonial linguistics, a close companion of missionary linguistics, is evident in the number of words for trooper and policeman. Men of authority or Law existed on the continent before invasion, however, the type of law and the interaction between lawman and the individual was different. McGregor (2000) finds that three principal processes are used for constructing terms for policeman in Aboriginal languages. Indeed, our dataset was in agreement with McGregor's findings, revealing words for policeman created through three methods of creation: lexical borrowing, semantic extension and coinage.

3.6.9 Mirniny:
'policeman' becomes *yarta*
Also glossed as 'eagle' in our database, *yarta* has been extended to include the European lawman. This could be via association with the size of the bird, or it's predatory qualities (Mc Gregor, 2000). Extensions for policemen, taken from names for birds is common, Noongar referred to trooper and policeman as *manatj*, or the 'black cockatoo' (Mc Gregor, 2000) for the way the trooper strutted around like a cockatoo and had a headdress viewed as similar to a cockatoo.

3.6.10 Mirniny:
'policeman' becomes *walka*

In total, the Mirniny dataset contains five entries for policeman; two semantic extensions and three coinages (8.0). This may be as Austin (1986) suggests, frequently updating or changing labels so as to prevent the police themselves from learning these terms.

In contrast, the Pitjantjatjarra dataset has only one borrowed word for policeman, *pulitja munu*, whereas the Cundeelee Wangka dataset is entirely without mention of police.

3.8 Food, Fire, Drink and Cooking

3.8.1 Methods of creation, food and drink.

Hoogmartens and Verstraete (2020) found that extensions for traditional equivalents for food, drink and tobacco were rare. In most cases, Indigenous language speakers exposed to European staples flour, sugar, tea and tobacco, preferred to filter SAE words to label the new concepts. They ascribe this to differences in texture, taste and consumption. Where traditional labels were extended, Hoogmartens and Verstraete (2020) found that it was due to similarities in appearance such as flour/dust and tea/ leaf rubbish.

The GALCAC dataset contains only a small number of extensions of traditional equivalents of food. This domain includes anything consumed, including tobacco, and the act of smoking. Our findings were in agreeance with Hoogmartens and Verstraete; most food-type words are phonologically adapted into the target language. Where extensions occur, these are due to similarity of taste and appearance, while items that do not possess qualities similar to those of Indigenous foodstuffs, are labelled for the difference.

3.8.2 Cundeelee Wangka:
'steak' becomes *ilytjan*
Ilytjan, meaning 'flesh', has been extended to steak. It should be noted that Hadfield (2020) does not differentiate between animal or human flesh, nor does the gloss suggest meat, only steak. Existing *kuka,* is commonly used across Western Desert languages (to which Pitjantjatjarra and Cundeelee Wangka belong) to label meat (Mirniny, *tjurru*) while food that is not meat, i.e., vegetables, is labelled as *mayi* (Mirniny, *ngamu*). This is in agreement with Hoogmartens and Verstraete (2020) in that the texture and appearance of steak was different to that of traditional forms of meat, thereby requiring a separate label.

3.8.3 Cundeelee Wangka:
'sweetened tea' becomes *wangara*
Wangara, sugar or sweet substances, is extended to mean sweetened tea. This is different to unsweetened tea, which is labelled *maru,* or 'black', by similarity of appearance (discussed at 3.4.1). It is worth noting the difference in labelling between this type of sweet substance, sweet tea and that of alcohol, which is also named with extensions from sweet, as below.

3.8.4 Cundeelee Wangka:
'wine' becomes *wama* 'sweet nectar'

3.8.5 Pitjantjatjarra:
'alcohol' becomes *wama* 'sweet nectar'

3.8.6 Pitjantjatjarra:
'alcohol' becomes *tjuratja* 'lerps'

Wama is the word for a sweet nectar in both Pitjantjatjarra and Cundeelee Wangka. *Tjuratja* are 'lerps', which produce a sugary, sweet scale. Indigenous words for alcohol are commonly extended from labels for nectar and other sweet substances (Goddard and Defina, 2020) and we can see the practice continued here with *wama* and *tjuratja.* The association between alcohol and sweet is obvious. Alcohol has a high sugar content, thereby making it taste sweet.

3.8.7 Cundeelee Wangka:
'drunk' becomes *wapan-wapanpa*
From the Cundeelee Wangka for foolish, an association between foolish or silly behaviour and being drunk. *Wapan-wapanpa* is a reduplication, but our database does not have a record of *wapanpa,* only *wapanma-* 'to open'. Reduplication often denotes an increased state of being, so this suggests the state of being foolish, or drunk. However, given there is no entry for *wapanpa* in our data, we cannot analyse this morpheme any further.

3.8.8 Cundeelee Wangka:
'tobacco' becomes *mingkurlpa*
Mingkurlpa, 'native tobacco', has been extended to include commercial tobacco (Hadfield, 2020).

3.9 Animals and Nature

Europeans introduced many animal and plant species into the Australian ecosystem. Lexical borrowing was the most popular method of labelling (See appendix for more animal borrowings). Labelling by semantic extension was rare; our dataset shows only two examples in this domain (3.9.1). Indigenous Australians also employed coinage alongside semantic extension and lexical borrowing (9.0).

3.9.1 Pitjantjatjarra:
'summer' becomes *kurli*
Here 'hot weather' has been extended to the season 'summer'.

3.9.2 Cundeelee Wangka:
'month' becomes *pira*
The Cundeelee Wangka term for 'moon' has been extended to denote a calendar 'month'.

We found that semantic extension of lexical items can occur alongside borrowing. Extension provides linguists with an insight into an Indigenous world view. In particular, salient aspects of European culture are compared to that of Indigenous Australian culture and these aspects are reflected in the lexical choices.

4.0 Word Coinage.

New words are examples of the creativity of a code, and by extension, longevity of a language. Languages generate new words using productive morphological processes. These are usually based on an attribute of shape, sound or action (Walsh, 1993).

- Mirniny and Cundeelee Wangka had 27 and 25 coinages in their respective datasets.
- Coinage was the least frequently used method, for each language.
- Coinage was achieved through compounding, derivation, and onomatopoeia.

4.1 Compounds
One method of coinage, (Simpson 1985) is to compound nouns with associative (ASSC) or belonging suffixes. In her research on Warumungu (1985), Simpson gives the following example of compounding noun with an ASSC suffix.

4.1.1 Warumungu: (Simpson 1985)
jina-kari
foot-belong
shoe

Our datasets were without nominal-ASSC compounds, as discussed by Simpson (1985). There were examples of nominal-nominal (NOM-NOM) compounds in the Cundeelee Wangka dataset, and if we analyse these in line with Simpson, we arrive:

4.1.2 Cundeelee Wangka:
'light above' or 'god' becomes *munga katu*
munga-katu
NOM-NOM
night-god
light above

4.1.3 Cundeelee Wangka:
'shoe' becomes *tjinapuunpa*
tjina-puun-pa
NOM-NOM
foot-tree (specific) -EUPH
shoe
Coinage through compounding has proven to be a productive method of creation (Amery 1993). The compounding of NOM-NOM is seen in the Adelaide language, Kaurna, and in 4.1.4 and 4.1.5 we provide a couple of examples, for comparison to Goldfields methods

4.1.4 Kaurna (Amery, 1993):
'horse cart' becomes *nanto worta*
nanto-worta
NOM-NOM
horse-behind
horse cart.

4.1.5 Kaurna (Amery, 1993)
'bridge' becomes *wadlakatta*
wadla-katta
NOM-NOM
tree lying on the ground-club
bridge
In summary regarding 4.1.3, using the methods explained by Simpson (1985) and Amery (1993), association with a shoe or foot covering rooting its wearer to the earth. Particularly because the *puunpa* is described as a tree with fleshy, edible roots (Hadfield, 2020).

In 3.5 labels for items of clothing were extended from the names for parts of the body they covered. Consider the following compounds.

4.1.6 Mirniny:
‘black coat’ becomes *kartiya purlta*
kartiya-purlta
black-blackhead
black coat

4.1.7 Cundeelee Wangka:
‘gloves’ becomes *mara pukarti*
mara-pukarti
hand-covering
gloves

4.2 Onomatopoeia

Onomatopoeia is a productive method of generating labels in Australian languages (Simpson, cited in Amery 1993). It has been shown to be particularly useful for naming birds and animals. The Noongar word for ‘Willie wagtail’ *jirti-jirti* being just one example (D. Smith-Ali, personal communication, January 10, 2018). Consider the Cundeelee Wangka word for ‘pig’.

4.5 Cundeelee Wangka:
‘pig’ becomes *ngantarr-ngantarrpa*
ngantarr being the grunt noise a pig makes.
We see this process repeated in neighbouring languages, Martu Wangka (Burgman, 2005) and Ngaanyatjarra (Hackett & Glass, 2003)
.
4.6 Martu Wangka:
‘pig’ becomes *ngurr-ngurrpa*

4.7 Ngaanyatjarra:
‘pig’ becomes *ngantarr-ngantarrpa* or *nguurr-nguurrpa*

The arrival of Europeans saw the introduction of many new and unfamiliar animals that needed to be labelled. Accordingly, coinages for labelling animals were popular across the datasets, with words for sheep, cattle, horse and rabbit appearing repeatedly, often alongside lexical borrowings: *tjiipi*; *puluki*; *purni* and *rapita*. The following are examples of animals words that do not employ onomatopoeia.

4.8 Coinages, unknown origin.

4.8.1 Mirniny:
‘sheep’ becomes *yarni*

4.8.2 Mirniny:
‘horn’ becomes *kularn*

Many of the words for introduced animals are so old, tracing the origin of their coinage may be near-impossible.

Walsh (1992) demonstrated 'horse', *nantu* traced the path of the first explorers. There is evidence to show this extension made it all the way to the Goldfields, as both Mirniny and Pitjantjatjarra have their own adapted horse words, *nanyju* (Mirniny) and *nyanytju* (Pitjantjatjarra). We shall label these as inter-language borrowings from an unknown source. Our dataset included labels for introduced animals, that are probably borrowed from other indigenous languages in the same fashion as *nantu,* however, since we have no evidence to suggest their origin, we have included them here in coinages. For example, older generations of Pitjantjatjarra speakers remember their grandparents using *ngaya* for cat, but they are unable to explain how this word was coined (Norma Bryant, personal communication, April, 22, 2022).

4.8.3 Pitjantjatjarra:
'cat' becomes *ngaya*
Hadfield mentions the mythical cat, *tjarrnga*, from a Wangkatja creation story. She believes cats would have been familiar to Indigenous Australians, but has no explanation as to coinage origins. For the residents at Cundeelee Mission, if a word couldn't be coined, they would adopt a borrowing or extend the meaning of an existing lexical item (Hadfield, personal communication, April 23, 2022).

Understanding of culture offers explanation towards methods of Indigenous neology. Hadfield believes decisions about new words would have been made by menfolk, who as leaders of their respective communities, were the ones with the authority to make any kind of change. This authority was given to them by the creation beings, who appeared in dreams with permission to make a change. Anything outside of this, was not acceptable (D. Hadfield, personal communication, April 23, 2022).

5.0 Verbal Derivation

As a class of words, verbs belong to a closed group. Our dataset showed a much higher rate of creation for nouns, than verbs (83.17% as opposed to 9.41%). We argue the rich tense system for marking verbs in Australian languages, means this class of words is already extremely productive. In fact, it takes a catastrophic event, or changes in science and technology for new verbs to enter a lexicon. Consider the circumstances surrounding the creation and subsequent entry of words like google, googling, electronic mail, email and emailing to the SAE lexicon in recent years. Rather than coinage, verbs were derived from existing words (borrowings and semantic extensions) using existing Indigenous verbalising (VERB) suffixes.

5.1 Transitive loan suffix, *-mila-*
Speakers of Pitjantjatjarra use the productive loan suffix *-mila-* to form transitive (TRANS) verbs from borrowed SAE lexical items. The loan suffix may itself be a loan from Arrernte, and is also used in Yankunytjatjarra (Goddard, 1983).

Verbs formed using the transitive loan borrowing are *la* class and will always attach to *-mila-* even if rules of morae parity are broken (Goddard, 1983).

For the purpose of *-mila-* we present examples in present (PRES) tense.

5.1.1 Pitjantjatjarra:
'helping' becomes *alpamilarni*

alpa-mila-rni
help-TRANS-PRES
al/pa/mi/la- = 4
helping.
La class verbs are a transitive class, with even morae (Defina, 2020). As posed above by Goddard (1983) in the process of TRANS, this loan stem accumulates four syllables.

5.1.2 Pitjantjatjarra:
'cleaning' becomes *kilinamilarni*
kilina-mila-rni
ki/li/na/mi/la- = 5
cleaning
We can see that Goddard's supposition regarding la class morae holds when borrowed words are transitivitised.

In his Yankunytjatjarra grammar (1983), Goddard lists at least 50 verbs formed through this method. Ostensibly any SAE nominal loan that becomes transitive when derived can take the *-mila-* TRANS suffix. Intransitive verbs, including borrowed items, are derived using the wa class *-rri-*, as below.

Wa class verb stems have an odd number of morae (Defina, 2020).

5.1.3 Pitjantjatjarra:
'working' becomes *warrkarringanyi*
warrka-rri-nganyi
work-VERB-PRES
warr/ka/rri- = 3
working

5.1.4 Pitjantjatjarra:
'winning' becomes *winarringanyi*
wina-rri-nganyi
winner-VERB-PRES
wi/na/rri- = 3
winning
The difference between a loan using *-mila-* or *-rri-* is dependent upon transitivity.

5.2 Verbalisers *-rri-* and *-arri-*

Cundeelee Wangka uses the 'become' verbalising suffixes, *-rri-* and *-arri-* to derive verbs. The -rri- suffix attaches to vowel-final roots and takes wa class. The -arri- suffix attaches to consonant-final roots and takes zero class endings (Hadfield, 2020). It should be remembered that *-rri-* and *-arri-* only attach to nouns that can 'become', not all lexical borrowings will take this suffix.

Given that zero class stems have even-numbered morae and *wa* class odd, at first glance Defina's theory does not hold with Cundeelee Wangka borrowed *puka-,* 'bog', as given below in 5.2.1.

5.2.1 Cundeelee Wangka: *-rri- wa* class, INTRANS

‘is becoming bogged’, *pukarringanyi*
puka-rri-nganyi
bogged-VERB-PRES
pu/ka/rri- = 3
is becoming bogged

However, compare these derived, borrowed verbs with traditional Cundeelee Wangka verbs (again using Defina’s morae theory).

5.2.2 Cundeelee Wangka: -arri- zero class, INTRANS
‘is angry’, *mirrparnarrinyi*
mirrparn-arri-nyi
angry-VERB-PRES
mirr/pa/rna/rri- = 4
is angry

5.2.3 Cundeelee Wangka: -arri- zero class, INTRANS
‘is falling asleep’, *kunkunarrinyi*
kunkun-arri-nyi
asleep-VERB-PRES
kun/ku/na/rri- = 4
is becoming asleep

5.2.4 Cundeelee Wangka: -rri- wa class, INTRANS
‘is becoming alive, *wankarringanyi*
wanka-rri-nganyi
alive-VERB-PRES
wan/ka/rri- = 3
is becoming alive

In contrast, VERB of borrowed *tjutjapu* ‘shoot’ does not take the ‘becoming’ suffix, because one cannot ‘become shooting’.

5.2.5Cundeelee Wangka: -rri- wa class, TRANS
‘is shooting’, *tjutjapunganyi*
tjutapu-nganyi
shoot-PRES
tju/ta/pu- =3
is shooting

The same applies to borrowed, *titjama-* ‘teach’, one cannot ‘become teach’. This item takes *ra* class suffixes.

Where Cundeelee Wangka lexical items have been extended from their original meaning to include European concepts, such as *waka-* ‘spear’ to ‘inject’, they continue to use the traditional Cundeelee Wangka suffixes.

From the examples above, Goddard’s (1983) *-mila-* irregular morae rule for verbal loan stems in Pitjantjatjarra also applies to Cundeelee Wangka *-arri-* and *-rri-* verbal loan stems. However, verbalisation of these borrowings always remain faithful to the *-arri-, -rri-*

consonant-final/verb-final rule. Disregarding of rules of morae parity, these affixes have proven to be productive in terms of generativity.

7.0 Conclusion

Languages ensure their viability through an ability to create and accept new items into the lexicon. Language dynamisms is essential for new ideas, objects and concepts to become part of a lexicon. This paper revealed the four methods of word creation employed by Aboriginal language speakers of the south-western Goldfields region: lexical borrowing; semantic extension and coinage including derivation.

Mirniny, Pitjantjatjarra and Cundeelee Wangka speakers used productive methods of lexical creation in order to label new ideas and concepts in order to adapt the languages. Using these processes, gaps in the lexicons can be filled to provide opportunity for younger generations to once again speak the language fluently.

Mirniny has a small dataset due to language loss and a lack of historical documentation. The linguistic material that does exist is frozen and representative of, perhaps, the early 1920s-30s when the existing material was documented. As the language has not been spoken fluently for many years, the lexicon has shown fewer examples of adaptation. Cundeelee Wangka, however, formed from a desire to incorporate people from several languages into the community and therefore was highly adapted as the creolised speech form developed. The word formation processes demonstrated in the Cundeelee Wangka dataset provide an excellent source of Aboriginal-driven word creation processes.

Contemporary speakers can use the understanding of these traditional word creation processes to inform the practice of language revitalisation.

GALCAC linguists are undertaking a closer study of the phonemes (2022) in borrowings to identify the phonotactic rules employed by each language to filter the borrowings. By understanding the rules, heritage language speakers can employ the borrowing strategy and then filter the phonemes with confidence that the item will reflect traditional patterns. Borrowings will then be pronounced using these traditional phonemic rules and be as close as possible to how the traditional speakers would have pronounced them. This paper is forthcoming (2022).

Following generations of linguistic loss, there has been a surge in language reclamation amongst speakers of sleeping or remembered Australian languages. A revitalised language can never be exactly as it was, but by using the language's traditional word creation processes to generate missing lexical items, there is the best-possible chance of recreating a code that is faithful to the original, and one that is more likely to be embraced and used by those wishing to reclaim it (Zuckerman & Walsh, 2011).

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