The Expression of Location in Wumpurrarni English:

Continua and Coherence in an Australian Contact Language

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Table of Contents

List of Tables

List of Figures

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Glossing Conventions

Data sources in examples – e.g. (SD001:SA1:6yo)

SD	001:	S	A	1	:6yo
The corpus code, referring to Samantha Disbray	The transcript identification number	"Speaker"	Family group (if not identified within a main family group, speaker is given a two digit number without a letter)	Speaker number within family group	Age in years, not included if speaker is older than 18 years.

Glossing

Examples have been glossed in line with the Leipzig glossing rules (Comrie et al., 2015). For ease of reading, English words have been used in place of formal linguistic notation where the gloss remains equally precise. For example, the Wumpurrarni English pronoun *dei* is glossed as 'they' rather than '3PL' because *dei* and *they* have equivalent meanings, whereas the pronoun *im* is glossed as '3SG' rather than 'him' because *im* and *him* are not equivalent (*im* is not specified for gender). Where examples of Wumpurrarni English have been cited from the literature, the glossing has been edited to match the format and analysis presented here.

Locative markers which do not specify the location relation, such as *na* or *-kVna*, are glossed as LOC when marking LOCATION, ALL when marking GOAL, and ABL when marking SOURCE. Markers which do specify the relation, such as *insaid* 'inside' or *jana* 'up', are glossed with their rough English equivalent. The determiners *the*, *da*, *dis*, *dat*, and *dem* have all been broadly glossed as DET(erminer), following Disbray (2008), because the specifics of their functions have not been established. Unintelligible sections of speech have been marked with '[xx]', and personal names have been replaced with 'NAME'. Sections of each example which the reader should pay attention to have been bolded; the bolded section is often, but not always, the locative phrase.

The transcriptions of Wumpurrarni English have been made in such a way to give an approximation of pronunciation while also maintaining a degree of orthographic consistency. Thus, some morphemes may occur with varying spellings throughout this thesis.

Chapter 1: Literature Review

1.1 Introduction

Wumpurrarni English is a contact language spoken in the Northen Territory, Australia, which mainly derives from English, Warumungu, and other Kriols.[1] Wumpurrarni English can be spoken in a variety of ways which are lighter, i.e. more like English, or heavier, i.e. less like English and more like Warumungu (Disbray, 2008). This is described as variation along a 'continuum', and occurs in many contact languages (Hudson, 1981; Le Page & Tabouret-Keller, 1985; Sandefur, 1979). Locative phrases, in which speakers express the location of entities or events, exhibit much of this variation, as illustrated by the heavier phrase in example 1.1 and the lighter phrase in example 1.2.

   1.1   *pikinini bin   bogi   na   **na**   **ngappa-kana**.*
         child   PST swim now LOC water-LOC
         the children swam in the water now. (SD062:SB3)

   1.2   *no i   bin   hurt imself **an da**   **baik**.*
         no 3SG PST hurt REFL on DET bike
         no she hurt herself on the bike. (SD072:SA2)

This thesis sets out to describe the expression of location in Wumpurrarni English, using locative phrases produced by adult speakers in naturalistic discourse as the data source. Wumpurrarni English is a largely undocumented language, therefore this is an important contribution to understanding its structure and its variation. Furthermore, this description affords insight into the Wumpurrarni English continuum, which is vital as some scholars have recently disputed the existence of continua in other Kriols (Bundgaard-Nielsen & Baker, 2016; Dickson & Durantin, 2019). This thesis also contributes to a growing body of literature on lectal coherence, which is the tendency for linguistic features from the same lect to co-occur,

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[1] In this thesis, 'Kriols' refers to the whole set of Australian contact languages with influence from English and one or more Aboriginal languages. All of these Kriols, or at least the majority, have some shared history and shared features and each of them may be identified as distinct languages, as is the case for Wumpurrarni English, or related dialects. Note, however, that this is an umbrella term and not all of these languages are necessarily classified as creoles/Kriols by the speakers or linguists working with them, and there is a great deal of variation between some of these languages.

and provides a case study for the diachronic development of schemas, which are abstract multi-morpheme units that speakers use to build utterances.

In this chapter I describe Wumpurrarni English and the concept of creole continua. I then summarise how location is expressed in the language and its sources: English, Warumungu, and other Kriols. Finally I review sociolinguistic research into Wumpurrarni English and related languages, introduce the theories of coherence and schemas, and justify the research questions. Chapter 2 details the methodology for the analysis and gives a background of the data. Chapter 3 presents the results for the first research question, first providing a sketch grammar of the morphosyntax and semantics of Wumpurrarni English locative phrases, and then discussing how this relates diachronically and synchronically to its source languages. Chapter 4 addresses the second research question by investigating co-variation between morphemes according to their source language and discussing what this reveals about continua, coherence, and schemas in Wumpurrarni English, and ultimately summarises the findings and reflects on limitations and future avenues for research.

1.2 Wumpurrarni English

Wumpurrarni English is spoken primarily in the town of Tennant Creek, Northern Territory (Disbray, 2008). It is the main language of communication among Aboriginal people in Tennant Creek and is typically not spoken by non-Aboriginal people, making it an intra-group language like other Kriols (Dickson & Durantin, 2019; Simpson, 2013). Wumpurrarni English is similar in many ways to other Kriols spoken in the Northern Territory, and parts of Western Australia and Queensland, however Disbray (2008) considers it a distinct language. This is because of its significantly different lexemes and morphology due to influence from Warumungu, a history which is relatively disconnected from other Kriols, and the fact that the community consider it to be distinct from other Kriols. In this section I will describe the history and language ecology of Tennant Creek, the linguistic history of Wumpurrarni English, and then focus on the idea of a continuum in Wumpurrarni English, which constitutes one of the central investigations of this thesis.

1.2.1 Tennant Creek

Tennant Creek, referred to in Warumungu as *Jurnkkurakurr*,[2] is situated along the Stuart Highway on the edge of the Barkly Tablelands, on Warumungu country. Warumungu country covers a broad area stretching approximately 100kms south of Tennant Creek, 120kms north, 250kms east, and 10kms west (*Nyinkka Nyunyu*, n.d.; Tindale, 1974). Their country is bordered by that of Warlpiri, Kaytetye, Warlmanpa, Wambaya, and Alyawarr people (*AIATSIS Map of Indigenous Australia*, 2015), and today Tennant Creek has residents who speak all of these languages (Australian Bureau of Statistics [ABS], 2020; Disbray, 2008a).

The first contact with Europeans came with McDouall Stuart's expedition north from Adelaide in 1860, where he made it exactly as far as Tennant Creek before he was forced to turn back due to resistance from the local Warumungu people (Ashenden, 2010; Edgar, 2001; Nash, 1984; Stuart, 1860). A repeater station for the Overland Telegraph Line which was established in 1872 marked the beginning of Tennant Creek as a colonial settlement and the subsequent forced displacement of Warumungu people to reserves, stations, missions, and mines in the surrounding country (Disbray, 2008; Disbray & Simpson, 2005; Nash, 1984). From the 1970s, Aboriginal people living in these surrounding areas began migrating (back) to Tennant Creek, which coincided with a battle for land rights and other recognitions of Aboriginal people in the area (Christen, 2006, 2009; Disbray, 2008; Maurice, 1988; Nash, 1984). Most Warumungu people now live in Tennant Creek (Disbray & Simpson, 2005).

Tennant Creek population	*2006*	*2016*
Population	2,921	2,991
Aboriginal and/or TSI population	1,425	1,536
Language spoken at home		
English	1,715	1,609
Indigenous Australian languages	640	711
Warumungu	232	234

Table 1.1: Comparison of Tennant Creek census data from 2006 and 2016 (ABS, 2020).

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[2] *Jurnkkurakurr* traditionally refers to a sacred watering hole just outside of Tennant Creek, close to where an Overland Telegraph station was built, but the name has come to refer to the modern town as well. Other names for the area include *Nyinkka Nyunyu*, which is a site within Tennant Creek, and *Patta*, which refers to the land on which all these sites lie (Christen, 2007; J. Simpson, p.c., October, 2020).

In 2006, around the time when the data for this thesis was collected, there were just under 3,000 residents of Tennant Creek. About half of these people identified as Aboriginal and/or Torres Strait Islander, about 20% spoke an Indigenous Australian language at home (ABS, 2020). This is compared to more recent 2016 census data in Table 1.1. As shown, the demographics have remained roughly stable.

Although the Warumungu community have been committed to maintaining the strength of the Warumungu language, currently its use in everyday communication is uncommon, especially for younger generations (Papulu Apparr-Kari, 2020; Simpson, 2013). Simpson (2013) showed that even speakers heavily involved in Warumungu maintenance mainly speak Wumpurrarni English or varieties of Australian English in everyday talk. This is due to various sociopolitical factors such as the lack of recognition of Aboriginal languages in colonial institutions and the dominant pressure of English as the *de facto* language of Australian communication, culture, and the arts. Vaughan et al. (2015) found that in conversations between four child-caregiver pairs in Tennant Creek, no more than ten percent of morphemes derived from Warumungu.[3] Disbray and Wigglesworth (2008, pp. 180–181) state that with this level of input it is unlikely that the children will ever "use more than the occasional token of the traditional language", though they observe that Wumpurrarni English "reflects Warumungu ways of speaking in many ways". Disbray (2008, p. 142) found that for children's elicited Wumpurrarni English narratives, half used no Warumungu at all and the rest used a very limited amount. Warumungu nominals, case markers, and discourse markers are the most frequent morphemes to be used, although it is not always possible to determine if these morphemes are a part of Wumpurrarni English or if they are the result of codeswitching into Warumungu (Disbray, 2008; Disbray & Wigglesworth, 2008; Vaughan et al., 2015).

Disbray (2008) explains that the name 'Wumpurrarni English' was developed in consultation with the community. Speakers rejected use of the term 'Kriol' as they specifically associated it with Roper River Kriol. *Wumpurrarni* is the Warumungu word for 'black', and by metonymy 'Aboriginal, a Warumungu person' (Simpson, 2002). The speakers thus chose to incorporate this word into the name of the language to express their Warumungu identity (Disbray, 2008). While the language name could potentially be translated as 'Aboriginal English', Disbray (2008) avoids conflating the two terms, as while in certain cases the two lects may be similar,

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[3] That study and this thesis are based on the same corpus.

Aboriginal English refers to a broader range of lects spoken by Aboriginal people all over Australia whereas Wumpurrarni English is specific to this geographically bound community (Butcher, 2008).

During her fieldwork between 2003 and 2005, Disbray (2008) noted that Wumpurrarni English was typically negatively valued in the community, as opposed to the high values attributed to Warumungu and Standard Australian English. The name 'Wumpurrarni English' thus reflected a common local conception that it is not a language but a different way of speaking English: a 'mixed up' English or a 'pidgin' according to some speakers. However, Disbray notes that by 2005 attitudes had already begun to shift: speakers became more comfortable speaking heavy varieties in front of her – Standard Australian English is the typical way of communicating with non-Aboriginal people – and they began to recognise its unique features that place it as a distinct language. Given the 15 year gap between then and now, attitudes towards Wumpurrarni English have likely changed even further.

1.2.2 Linguistic History

Little has been recorded about the exact history and development of Wumpurrarni English. Based on the history of Tennant Creek described above, Disbray and Simpson (2005) hypothesise that Wumpurrarni English began developing in the late nineteenth century, as the Warumungu people developed a pidgin – or learnt and expanded an existing pidgin – to communicate with the English-speaking colonisers. This development continued with the establishment of the missions, stations, and mines, and then further into the 1940s when Aboriginal children began attending schools (Linklater & Tapp, 1968).

This timeline began slightly later than the Kriols in the coastal regions of the Northern Territory, such as Roper River Kriol. Harris (1986) proposes that English-lexified pidgins in this area began to form in the early and mid nineteenth century with the establishment of British military settlements. Leichhardt (2002) met Aboriginal people speaking an English-lexified pidgin at Port Essington in 1845. These pidgins were then developed further and creolised in the late nineteenth century as larger and more permanent settlements were established by pastoralists migrating from New South Wales, through Queensland, and into the Northern Territory (Harris, 1986; Sandefur, 1986). This migration not only brought a greater population of English speakers, but also speakers of pidgins that had been developing in New South Wales and Queensland between English and Aboriginal languages of those areas, which influenced

the development of Northern Territory pidgins (Sandefur, 1986). Due to these migrations, Wumpurrarni English would have had contact with these languages over the past century and a half and they are thus important to consider when describing its linguistic derivation. The languages that it would likely have had contact with include South-East Australian Pidgin English (Simpson, 2000), Roper River Kriol (Sandefur, 1979), Barunga Kriol (Ponsonnet, 2016), Fitzroy Valley Kriol (Hudson, 1981), Alyawarr English (Dixon, 2017), and other named lects, but also others which due to the complex language mixing occurring in the past 200 years and a lack of linguistic documentation have gone unnamed and undescribed. In this thesis, all of these languages are bundled under the term 'Kriols'.

Wumpurrarni English, therefore, has multiple source languages: Warumungu, Australian English, and these other Kriols (Disbray, 2008; Disbray & Simpson, 2005). It is also important to note that these inputs did not occur at a single point in time, rather all of these languages have been providing input across the whole timespan of Wumpurrarni English's development. This is evidenced most clearly in some of its morphemes.[4] For example, the possessive preposition *blanga* is a morpheme used frequently in Fitzroy Valley, Roper River, Barunga, and other Kriols (Hudson, 1981; Schultze-Berndt et al., 2013), but only occurs rarely in Wumpurrarni English and is only used by older speakers (1.3) (Disbray & Simpson, 2005). This suggests that *blanga* was borrowed from these Kriols into Wumpurrarni English earlier in its development. This is also the case for the locative *langa* (1.4) (Disbray, 2008; Hudson, 1981; Schultze-Berndt et al., 2013).

1.3   *an   weya   jala   **blanga**   beibi?*
     and   where   mouth   POSS   baby
     and where's the baby's mouth? (SD006A:SA2)

1.4   *dei   bin   slip   **langa**   kaiv.*
     they   PST   sleep   LOC   cave
     they slept in the cave. (SD062:SB3)

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[4] The examples in this section come from the corpus that the present study is based on, and the analysis presented here is my own.

There is also evidence of input from English across time. For example, 1.5 shows the Wumpurrarni English word *motika* 'car', derived from *motorcar* in an older form of Australian English. Example 1.6, on the contrary, shows the word *ka* 'car' which has been borrowed from English more recently, or potentially represents codeswitching between Wumpurrarni English and English. Unsurprisingly, these modern English forms are more often used by younger speakers.

1.5   *yu   kan   jamp   ina   **motika**,   yu   garra   gad   drai   now.*
        you   cannot   jump   in   car   you   must   get   dry   now
        you can't jump in the car, you have to dry off first. (SD074:SE1)

1.6   ***ka**   bip-in   horn,   **ka**   bip-in   horn.*
        car   beep-PROG   horn   car   beep-PROG   horn
        the car's beeping its horn, the car's beeping its horn. (SD105A:SC2, 9yo)

Wumpurrarni English has also had input from different forms of Warumungu across time. Meakins, Disbray and Simpson (2020) investigate why *-kVna* became the most common locative suffix in Wumpurrarni English, over the alternative forms *-jjV* and *-ngkV*.[5] Part of the reason, they argue, is that by the 1980s younger speakers of Warumungu had begun to use *-kVna* in places where *-jjV/-ngkV* would be expected in traditional Warumungu. This increased use of *-kVna* in modern Warumungu lead Wumpurrarni English in the same direction. Today, only older speakers use *-jjV* or *-ngkV* when speaking Wumpurrarni English (2.5).

1.7   *jana   na   yuwala-**jja**.*
        up   LOC   tree-LOC
        up in the tree. (SD072:SA2)

1.2.3 Creole Continua

Wumpurrarni English, like many contact languages, is characterised as being spoken on a continuum (Bickerton, 1973; Disbray, 2008; Vaughan et al., 2015). That is, within the Wumpurrarni English there is a spectrum of lects, ranging from the acrolect, which is most like English and least like Warumungu, to the basilect, which is most like Warumungu and least

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[5] These suffixes are described later in section 1.3.2.

like English. A diagram illustrating this continuum is presented in Figure 1.1, reproduced from Disbray (2008, p. 39).
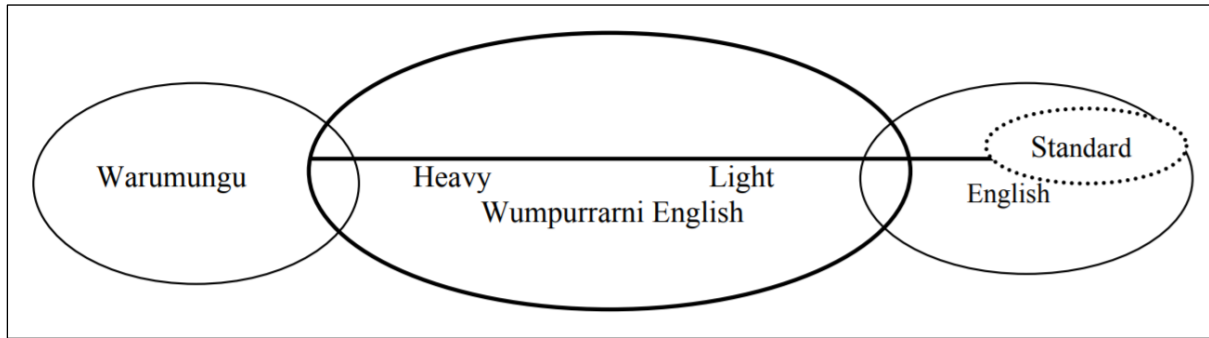
Figure 1.1: Disbray's (2008, p. 39) representation of the continuum in Wumpurrarni English.[6]

The words 'acrolectal' or 'light', and 'basilectal' or 'heavy' all have value judgements associated with them which do not necessarily reflect the language ecology of the Wumpurrarni English community. An acrolect (Greek *akron* 'summit') refers to a prestigious lect, compared to the basilect (Latin/English *basi-* 'base') which refers to a non-prestigious lect. Similar implications are gleaned from 'light' and 'heavy'. While it is true that, at a national and state level in Australia, English is considered prestigious and Aboriginal languages less so, English and Warumungu are both prestigious within the community in Tennant Creek (Department of Infrastructure, Transport, Regional Development and Communications, 2020; Disbray, 2008; Simpson & Wigglesworth, 2019). Thus both ends of the continuum may be prestigious targets for Wumpurrarni English speakers, with Warumungu possessing what is termed 'covert prestige' (Eckert, 2012; Trudgill, 1998). Speakers may target either end depending on social and linguistic context, their language proficiencies, and their own preferences; these factors are discussed by Disbray (2008, 2016).

Different lects along the continuum are characterised by the proportion of usage of light variants, i.e. derived from English, versus heavy variants, i.e. derived from Warumungu. The position of other variants, such as those derived from Kriols or those different to English but

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[6] Disbray tends to use 'heavy' and 'light' rather than 'basilectal' and 'acrolectal' and I will follow this usage, mainly for readability. Wumpurrarni English speakers use none of these terms, instead they might use *wumpurrarni-wei* 'Wumpurrarni/black way' or *laik yumob tok na kemp* 'how you talk at home' for heavier speech, in comparison to *papulanyi-wei* 'non-Aboriginal way' for light speech (Disbray, 2008). The etymology of *papulanyi* 'non-Aboriginal, European' is likely from Warumungu *papulu* 'house' and a short form of *-warinyi* 'inhabitant' (Simpson, 2002).

not associated with another source language, are typically grouped together with the heavy Warumungu-derived variants or positioned separately as mesolectal variants (Disbray, 2008). Some examples of these variants and their classifications along the continuum are compiled in Table 1.2 (Baker et al., 2014; Disbray, 2008; Disbray & Simpson, 2005; Sandefur, 1979; Simpson, 2013; Vaughan et al., 2015; and some of my own observation). Disbray (2008) observes that these variants cluster to a certain degree. For example, she notes that Warumungu nouns in Wumpurrarni English are less likely to occur with determiners than English nouns, and that Warumungu suffixes are more likely to attach to Warumungu nouns than English ones. She also finds that Warumungu insertions occur more frequently in heavy speech than in light speech, arguing that this is because the dissimilarity of the phonologies of light Wumpurrarni English and Warumungu creates a "barrier" between mixing the two (Disbray, 2008, p. 56).

| Domain | Heavier | | Lighter |
	Warumungu influence	Kriol influence	English influence
Morphology	Locative -kVna, possessive -kayi, other Warumungu morphemes	Transitive -im, durative -bat, locative langa, possessive blanga, expanded pronouns (dubala, minyu…), other Kriol morphemes	Plural -s, past tense -ed, progressive -ing, other SAE morphemes
Phonology	Palatal or dental stops		Dental fricatives
Syntax	Noun phrases (NP) without determiners, frequent object topicalisation		Use of determiners, auxiliary-inversion
Semantics	Altered meanings of English-derived morphemes (e.g. kil 'hit')		Use of SAE morphemes with SAE meanings

Table 1.2: Examples of source language influences on Wumpurrarni English and how they relate to heaviness or lightness.

Thought must be given, however, to the importance of Kriol influence and to the position Kriol-like speech on the continuum in Wumpurrarni English. Given the historical influence from Kriols, and the Kriol-derived morphemes available to Wumpurrarni English speakers which are not derived from Warumungu nor directly from English, Kriol may constitute its own end of the continuum rather than being situated in between English and Warumungu.[7] This would result in a more complex, multidimensional understanding of the Wumpurrarni English

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[7] However, as shown in Table 1.2, many of the influences on Wumpurrarni English are difficult to distinguish as Warumungu or Kriol influences. This is because many Kriol forms have themselves been influenced by other Aboriginal languages which have similar structures to Warumungu.

continuum. Bickerton (1972), Washabaugh (1977, 1978), Le Page and Tabouret-Keller (1985), and Rickford (1987) all endorse a similar position: that variation in creoles cannot be satisfactorily explained by a two-target, acrolectal-to-basilectal continuum.[8] Instead, they advocate for a multidimensional models which can account for the various other factors influencing speech within a community, such as other linguistic influences, age, gender, geographic distribution, language attitudes, and so on.
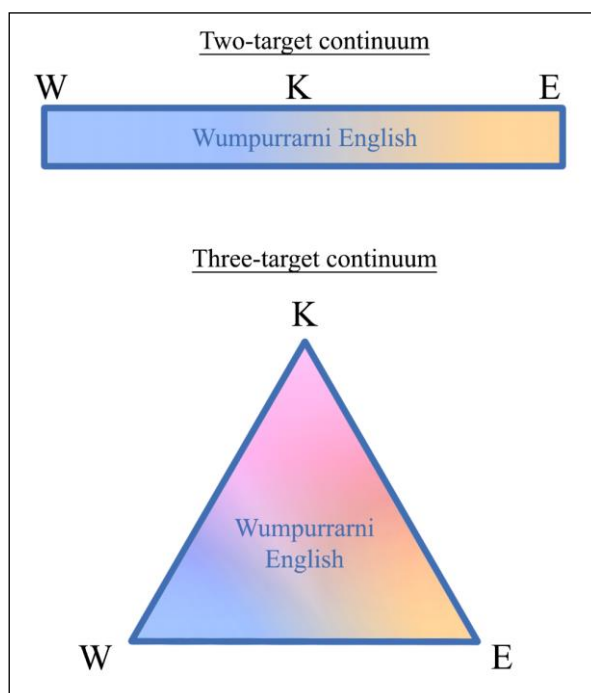
Figure 1.2: Two potential models of the continuum in Wumpurrarni English (W = Warumungu-like, K = Kriol-like, E = Kriol-like).

With this in mind, Figure 1.2 presents the original two-target continuum model – equivalent to Figure 1.1 – alongside an alternative three-target model with Kriol as its own end. The three-target continuum may be a more accurate reflection of speakers' linguistic options. For example, Disbray (2008, p. 153) states that lack of Warumungu features does "not necessarily indicate a light style of Wumpurrarni English". This is not explained by the two-target model, as when a speaker shifts away from Warumungu (heavy) they must be shifting towards English (light). The three-target model accommodates this better: perhaps the label 'heavy' is applied both to Warumungu-like and Kriol-like speech, and thus a speaker may shift away from Warumungu (heavy) and towards Kriol (heavy) without shifting towards English (light). This

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[8] Common terms for what I refer to as the 'two-target' model are the 'unidimensional' or 'linear' model.

updated model, then, represents a step towards a more multidimensional model of the continuum in Wumpurrarni English. Testing its validity is one of the main aims of this thesis.

Continua have been an important topic in creole studies worldwide. The idea of a continuum was first discussed by linguists such as DeCamp (1971), Bickerton (1973), and Bell (1976) in their descriptions of variation in creoles in Jamaica and Guyana.[9] In contrast to diglossia, where there is an acrolect and a basilect and they do not overlap (see Hudson, 2002; Sayahi, 2014), a continuum occurs when there is a non-discrete spectrum of lects which may be described in relative terms as 'lighter' or 'heavier' than each other but cannot be classified into one acrolect and one basilect (Grama, 2015). For example, Table 1.3 shows a variety of ways a Guyanese English speaker could express 'I gave him one', condensed from Bell (1976, p. 139).

	Utterance
Heavier ↑	mɪ bɪn gi: æm wan
	mɪ bɪn gi: i: wan
	mɪ dɪ gɪ i: wan
	mɪ dɪ gɪ i: wan
	a dɪ gɪ i: wan
	a gɪv i: wan
↓ **Lighter**	a gɪv ɪm wan
	aɪ geɪv hɪm wʌn

Table 1.3: A continuum of utterance constructions in Guyanese English (Bell, 1976, p. 139).

Several factors contribute to the formation of creole continua. Necessarily is that speakers have at least two sets of forms which they can blend, one set which is prestigious and one which is not (Mufwene, 2008). There are also various sociolinguistic reasons that speakers may intentionally aim to speak heavier or lighter in different situations, leading to variation along a continuum (Le Page & Tabouret-Keller, 1985). However there are also other reasons, more specific to contact languages, which may affect the development of continua. Mufwene (2008, p. 91) argues that continua form because in the development of creoles the speakers are "not engaged as a team", rather they are each trying to communicate using their own linguistic tools,

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[9] Initially it was referred to as a *post*-creole continuum, as it was thought that creoles tended to 'de-creolise' and eventually revert to the acrolect (DeCamp, 1971), but this claim has been disputed (DeGraff, 2005; Mufwene, 2008).

which are likely different to the tools of their interlocutors, given the contexts in which creoles develop. This argument is applicable to the development of Wumpurrarni English in two ways: first in the original sense that speakers of early forms of Wumpurrarni English had different linguistic backgrounds, and second in the sense that the language began developing in multiple places around Tennant Creek by groups of people who would have had limited contact.

Whether or not all creoles exist along a continuum is a contentious question. Bundgaard-Nielsen and Baker (2016) investigate the phonology of Roper River Kriol and find no evidence of variation indicative of a continuum. Instead, their results suggest a diglossic situation between Kriol and Standard Australian English. Further, they argue that the continuum-like variation that was described in Kriol (e.g. Sandefur, 1979) was due to the fact that there was a high proportion of second language speakers of Kriol back then. Dickson and Durantin (2019) agree with these suggestions, stating that geography confers a stronger effect on variation than a potential continuum. It is possible that these theories also hold true for Wumpurrarni English, although with its separate sociohistorical context from Roper River Kriol, they may not. It may also be the case that the continuum exists in some linguistic domains but not others.

1.3 Location

Levinson and Wilkins (2006) classify three major conceptual divisions of space and its expression in language. The first division is topology, which is the expression of the static location relation between a 'figure' and a 'ground' (Talmy, 1978). The second is motion, which also expresses a location relation between the figure and ground but is dynamic rather than static. Thirdly, they discuss frames of reference, which are static angular expressions of the position of something in relation to a frame that can be intrinsic, relative, or absolute.

This thesis will focus on the first two divisions, and thus '(the expression of) location' is defined as both static topological location and dynamic location. In many languages, including Wumpurrarni English and its sources, the same linguistic expressions used for topological relations are also used for temporal relations, but these are not discussed here. In this section I will give a brief description of the major means of expressing location in the source languages of Wumpurrarni English: English, Warumungu, and other Kriols. I will also describe what is known about the expression of location in Wumpurrarni English itself, based on the limited literature on the topic.

1.3.1 In English

This section is based on Huddleston & Pullum (2002). English predominantly expresses location in prepositional phrases or with adverbs. For example, in the sentence *the bird is **on the bed***, the preposition *on* specifies a location relation between the bird, which is the figure, and the bed, which is the ground. Prepositions in English can be categorised into those expressing LOCATION (static), GOAL (dynamic), or SOURCE (dynamic), however there is some overlap. In this case, *on* expresses LOCATION, and more specifically SUPPORT. Adverbs may also be used to express location, - e.g. *the bird is **nearby*** – or to further specify it in conjunction with prepositions – e.g. *the bird is **right** on the bed*. Some of these morphemes, such as *inside* or *nearby*, can occur as prepositions or adverbs. Finally there are deictics, such as *here* or *there*, which may occur alone – e.g. *the bird is **here*** – or with prepositions – e.g. *the bird is **up here***.

1.3.2 In Warumungu

The description in this section is based on Simpson (2002, 2017). Location in Warumungu is mainly expressed by case suffixes, as well as with a range of locative nominals for optional specification of the relation.[10] In intransitive sentences, LOCATION (locative case) is marked by the suffixes *-jjV* or *-ngkV*, as in 1.8, while *-kVna* marks GOAL (allative case), as in 1.9. Every nominal within the locative phrase is marked for case.

1.8   *ngappa   ngunta   karlampi-**jji**   jara-**ngka**.*
     water   lie.PRS   creek-LOC   creek.water-LOC
     water is lying in the creek. (Simpson, 2002, p. 101)

1.9   *kangkurr   wanppinyi   warlukun-**kuna**.*
     immerse   fall.PST   fire-ALL
     he fell into the fire. (Simpson, 2002, p. 100)

In transitive sentences, *-kVna* marks both LOCATION and GOAL, as in 1.10 and 1.11.[11]

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[10] 'Nominal' in Warumungu, similar to many Aboriginal languages, is a class of words which have undifferentiated morphosyntactic properties and cover the semantic ranges of entities, properties, numerals, kin terms, location relations, demonstratives, genitive pronouns, and more.
[11] *-jjV and -ngkV* are ergative suffixes in transitive sentences, marking the actor, so are not used as locatives in transitive sentences. *-ngkV* typically attaches to one or two syllable words; *-jjV* attaches to two syllable words with a long vowel, words with more than two syllables, and English loan words. The *V* represents a vowel which occurs as /u/, /a/ or /i/ based on harmony with the last vowel of the stem.

1.10   *wawarta*   *ajjul*   *pakinjina*   *ngappa-**kana***   *jara-**kana***.

clothes   3PL.S   wash.PST.CONT   water-LOC   creek.water-LOC

they (more than two) were washing clothes in the water. (Simpson, 2002, p. 101)

1.11   *wangarri*   *nyirrinta*   *warlukun-**kuna***.

stone   put.PRS   fire-ALL

she's putting the stone in the fire. (Simpson, 2002, p. 100)

The ablative suffix *-ngara* marks SOURCE (ablative case), as in 1.12, regardless of transitivity:

1.12   *kiwari*   *ama*   *wanppinyi*   *manppaji-**ngara***.

child   3SG.S   fall.PST   tree.fork-ABL

the child fell out of the tree-fork. (Simpson, 2002, p. 102)

Locative nominals include *kantu* 'inside, down', *jana* 'up', *purtangara* 'behind', *kantangara* 'below'. These are optional, and are used in combination with the case suffixes, as in 1.13.

1.13   *kiwari*   *turtu*   *ngunta*   *marla-**ngka***   ***kantangara**.*

child   sleep   lie.PRS   shade-LOC   beneath

the child is sleeping in the shade. (Simpson, 2002, p. 134)

Directional nominals *kajunu* 'north'*, kankuru* 'south'*, kakurru* 'east'*,* and *karu* 'west' may be used with the suffixes above – e.g. *kajunu-ngara* 'from the north' – or with unique suffixes – e.g. *kankuru-purtta* 'southwards' or *kara-mantti* 'on the west side' (Simpson, 2002, pp. 131–133). There are also deictics such as *ngalanya* 'this, here' or *alinya* 'that, there'.

1.3.3 In Kriols

The description in the section is based on Sandefur (1979) and Munro (2005) for Roper River Kriol, Ponsonnet (2016) for Barunga Kriol, Hudson (1981) for Fitzroy Valley Kriol, Dixon (2017, 2018) for Alyawarr English, and Schultze-Berndt et al. (2013) for an overall review. Across Kriols, location is typically expressed with prepositional phrases and adverbs, quite similarly to English. However, the most common locative prepositions leave the location

relation less specified than English prepositions. This is due to influence from the case systems of the respective Aboriginal languages influencing each Kriol, an effect which is discussed in depth for Roper River Kriol by Munro (2005, pp. 139–149). Thus, Kriols typically have some form or forms of the preposition *langa*, *la*, or *na* – derived from English *along* – which mark LOCATION (1.14) or GOAL (1.15), plus a form or forms of *burrum*, *brom*, or *from* – derived from English *from* – which mark SOURCE (1.16).

1.14 *wal*   *ai*   *bin*   *bon*   **la**   *natwut*
      well   1SG   PST   born   LOC   [place name]
      well, I was born at Nutwood Station. (Munro, 2005, p. 143, RRK)

1.15 *wal*   *ai*   *bin*   *gu*   **la**   *denambirini.*
      well   1SG   PST   go   ALL   [place name]
      well, I went to Tanumbirini. (Munro, 2005, p. 142, RRK)

1.16 *yu*   *waif*   *yu*   *si*   *loda*   *grandrimen*   *bren*
      2SG   wife   2SG   see   QUANT   country.man   friend
      burrum   *borralulua-***wei**   *makatha.*
      ABL   Borroloola-way   McArthur
      (with) your wife you see a lot of countrymen, friends (from the same place), from (in the direction of) Borroloola way, McArthur River. (Munro, 2005, p. 143, RRK)

They may also make use of suffixes derived from source languages, such as *-wei* 'way' in 1.16. Alyawarr English also retains the locative case marker *-itwew* from Alyawarr (1.17), which may be used in conjunction with the prepositions above (Dixon, 2017).

1.17 *na*   *i*   *gat*   *jamp-an*   *thet*   *ka-***itwew**.
      no   3SG   got   jump-on   DET   car-LOC
      no, he's got to jump on that car. (Dixon, 2017, p. 34, AlyE)

There are some other locative prepositions and adverbs such as *atsaid* 'outside', *bihain* 'behind', or *top* 'on top', which may combine to specify the relation, as in 1.18.

1.18   *im*   **atsaid**   **langa**   *awus.*

        3SG   outside   LOC   house

        he is outside the house. (Sandefur, 1979, p. 152, RRK)

In Fitzroy Valley Kriol, when the semantic relation is GOAL and the goal is a place, the preposition can be omitted, as in 1.19.

1.19   *wi*   *bin*   *go*   *Debi.*

        we   PST   go   Derby

        we went to Derby. (Hudson, 1981, p. 64, FVK)

Finally, there are also deictics such as *hiya/iya* 'here' and *deya/jeya* 'there.

1.3.4 In Wumpurrarni English

This section is based on Disbray (2006, 2008) and Meakins et al. (2020). Location expression in Wumpurrarni English is highly similar to the Kriols described above, but also has strong influence from Warumungu. The most common locative preposition is *na*, but *nanga*, *la*, and *langa* also rarely occur, and these can all mark LOCATION (1.20) or GOAL (1.21).

1.20   *i*   *bin*   *hit-im*   *im*   *rait*   **na**   *im-kayi*   *purluju.*

        3SG   PST   hit-TR[12]   3SG   right   LOC   3SG-POSS   head

        it hit him right on the head. (Disbray, 2008, p. 275)

1.21   *lidlboi*   *bin*   *klain-ing-ap*   **na**   *tri*   *top.*

        boy   PST   climb-PROG-up   ALL   tree   top

        the boy climbed to the top of the tree. (Disbray, 2008, p. 229, 8yo speaker)

There are also more specific prepositions and adverbs derived from English – e.g. *ina* 'in', *ana* 'on', *insaid* 'inside' (1.22) – or Warumungu – e.g. *kantu* 'inside, down', *jana* 'up, above',

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[12] The *-im* transitive suffix is almost homophonous with the *im* third person object pronoun and in many cases there is no way to distinguish them. Some discussion of this is given by Simpson and McConvell (2006) and Disbray (2008). The *-im* suffix can also be subject to vowel harmony, where its vowel assimilates to the final vowel of the stem it attaches to.

purtangara 'behind' (1.23). As shown in these utterances, it is common to use multiple locative markers in the same expression, one specific and one nonspecific.

1.22 *ye, go **insaid na** kabiaus na.*

      yes go inside ALL cubby.house now

      yes, go into the cubby house. (Disbray, 2008, p. 275)

1.23 *i bin jamp **kantu ina** plein.*

      3SG PST jump inside ALL plane

      it jumped into the plane. (Disbray, 2008, p. 275)

Locative phrases are also frequently double-marked with two nonspecific locatives. This is most common with the Warumungu locative suffix *-kVna* (1.24), although *-kVna* also occurs alone (1.25).

1.24 *beibi slip **na** mangkaja-**kana**.*

      baby sleep LOC blanket-LOC

      the baby is sleeping on the blanket. (Meakins et al., 2020, p. 11)

1.25 *kunapa deya stand-ing tri-**kana**.*

      dog there stand-PROG tree-LOC

      the dog is standing there by the tree. (Meakins et al., 2020, p. 11)

Aspects of the Warumungu case marking system have been lost in transfer. For example, *-kVna* is used almost exclusively in Wumpurrarni English for both location and goal regardless of clause transitivity, instead of being in complementary distribution with *-ngkV* and *-jjV*. The vowel harmony process is also not always applied, with a tendency towards *-kana* over *-kina* or *-kuna* regardless of the stem. Finally, only the final phrase item is marked, whereas in Warumungu all NP elements receive case marking, as in examples 2.6 and 2.8. However, Meakins et al. (2020) show that the first two of these changes, the preference for *-kVna* and the loss of vowel harmony, were already in progress in Warumungu by the 1980s.

The Warumungu suffix *-ngara* appears not to have been adopted into Wumpurrarni English, with SOURCE instead being expressed with *fom* 'from' (1.26). There is no mention of omitted locative prepositions as in Hudson (1981).

1.26	*an*	*dat*	*dog*	*kud-n*	*jamp-at*	***fom***	*dat*	*windo.*
	and	DET	dog	could-not	jamp-out	from	DET	window

and the dog couldn't jump out of the window. (Disbray, 2008, p. 232, 8yo speaker)

1.4 Variation

In every language there are multiple ways to express the same thing, and speakers are constantly selecting variants out of those available in their 'feature pool' (Cheshire et al., 2011). Understanding which variants speakers select, and why, when, and how they select them, is a prime focus in sociolinguistic research (Coupland, 2007; Eckert, 2008; Eckert & Rickford, 2001). In contact languages this selection process is magnified because the variants may derive from starkly different languages, and therefore a speaker's selections can drastically alter the form of their utterance (Mufwene, 2008). In this section, I first review some of the sociolinguistic research regarding Wumpurrarni English and neighbouring Kriols. I then explore the literature on lectal coherence, which is the tendency for variants from the same source or with the same associations to co-occur with each other. Finally, I discuss the theory of schemas, which is one way to understand why coherence might exist.

1.4.1 Sociolinguistics in Wumpurrarni English and Kriols

The majority of the literature on Wumpurrarni English has focused on child-caregiver interactions (Disbray et al., 2004; Morrison & Disbray, 2007; Simpson, 2013; Vaughan et al., 2015) and children's narratives (Disbray, 2008, 2016), and these studies are typically interested in the amount of Warumungu used in Wumpurrarni English. The results of these were summarised in section 1.2.1. There are two studies, however, which investigate linguistic features more relevant to this thesis.

A preliminary quantitative study of location in Wumpurrarni English by Disbray (2006) lays the foundations for this thesis. She found that *na* was used in 65% of locative phrases, the more specific prepositions (*ina*, *in*, *ana*, *an*, etc.) were used in 26%, *-kVna* was used in 14%, and the

other unspecified prepositions (*la*, *langa*, *nanga*) were used in 4%.[13] *na* was used for LOCATION and GOAL similarly often. No clear age-related trends were found, except that the youngest age group (<5yo) never used *-kVna* and the second youngest (6-15yo) only used it in combination with *na*, e.g. *na woda-kana* 'in the water'.

Disbray and Simpson (2005) investigate a different domain, the expression of possession, but their methodology and findings also inform this thesis. They found that possession is most commonly expressed using possessive determiners such as *mai/main* 'my', *yo/yos* 'your', or others formed with the possessive clitic *-kayi* (also occurring as *-ka*, or *-kari*, all derived from the Warumungu genitive suffix *-kari)* such as *im-kayi* '3SG-POSS' or *u-kayi* 'whose'. The *-kayi* clitic attaches to full NPs (1.27).

1.27　***dis-wan-iya-kayi***[14]*,　　dis-wan　　**maanjun-wan-kayi**　julaka.*
　　　　DET-NOM-here-POSS　DET-NOM　small-NOM-POSS　bird
　　　　this one here's, this bird belonging to the small one. (Disbray & Simpson, 2005, p. 66)

The possessive pronouns most commonly come pre-nominally (1.28) but may also come post-nominally (1.29). This is likely due to influence from Warumungu, which also has the possibility for pre- or post-nominal possessors. The same has also been noted in Fitzroy Valley Kriol (Hudson, 1981, p. 73), but not in Roper River Kriol (Munro, 2005, p. 139; Sandefur, 1979, p. 145).

1.28　*yu　　fil-im　　**main**　　　　**gats-mob**　emti.*
　　　　you　feel-TR　1SG-POSS　guts-PL　　empty
　　　　you feel my empty stomach. (Disbray, 2008a, p. 41)

1.29　***mungku　main**　　　　no　gud.*
　　　　stomach　1SG-POSS　no　good
　　　　my stomach's no good. (Disbray, 2008, p. 41)

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[13] The study did not analyse expressions of SOURCE.

[14] The hyphenation here has been directly copied from Disbray and Simpson (2005), however it is not clear whether *iya* is indeed acting as a suffix/bound form. The nominalising suffix *-wan* has been discussed by Disbray (2008), and Murphy and Leslie-O'Neill (2020).

Interestingly, they found that the post-nominal position occurred more frequently when the possessor or the possessed were expressed with Warumungu words. This is related to the idea of coherence across the continuum in Wumpurrarni English: if a speaker uses Warumungu words, they are more likely to also use Warumungu structures.

Dixon's (2017, 2018) research on variation in Alyawarr English is another excellent analogue to this thesis. Alyawarr English is a language spoken in the small community of Ipmangker, 175kms south of Tennant Creek, which has significant parallels to Wumpurrarni English in its linguistic history and structure. Dixon investigated three variables – aspectual morphology, either *VERB-ing*, *VERB-bat*, or unmarked; first singular subject pronouns, either *a* (/ʌ/) and *am* (/ʌm/); and transitivity marking, either *VERB-im* or unmarked – and their rate of use by children in school and home contexts. As expected, the heavier, less English-like variants were used more at home than at school. For one variant this was categorical, as *-bat* was never used at school, while for the others it was probabilistic. These results suggest some coherence influenced by extralinguistic context, but Dixon does not analyse whether there is an intercorrelation between the variants themselves.

1.4.2 Lectal Coherence

Lectal coherence is the degree to which variants from the same lect – i.e., associated with the same style, status, or social characteristic – co-occur (Guy & Hinskens, 2016). This idea is situated within the theory of 'bricolage' and the previously mentioned notion of 'feature pools': speakers can choose from a range of features which are all associated with different characteristics (Cheshire et al., 2011; Eckert, 2003; Hebdige, 1991). To hypothesise that coherence is strong is to hypothesise that when someone speaks 'in *X* way' they will consistently use all of the linguistic features associated with *'X'*. In the case of Wumpurrarni English, this would mean that when someone speaks heavily, they would consistently use all of the heavy features available to them, and vice versa for light speech. If coherence were weak, then a Wumpurrarni English speaker may 'mix and match' heavy and light features with no tendency to use associated features with each other. Quantitatively, coherence appears as correlations between associated features within an utterance, a turn, a context, or a speaker (Wiese & Rehbein, 2016). This correlation is called 'co-variation': associated variants will co-vary by occurring or not occurring in the same contexts as each other (Oushiro, 2016; Wiese & Rehbein, 2016). Disbray (2008) notes clustering of heavy and light features in Wumpurrarni English, but it is not her focus to show quantitative evidence of this.

Harris (1951) first distinguished between individual coherence and utterance coherence. Individual coherence is the tendency for speakers to consistently use linguistic features associated with the same characteristics, whereas utterance coherence is the tendency for utterances to be built from features associated with the same characteristics. On utterance coherence, he argues that it is unlikely that words with different social associations, for example casual slang and academic jargon, will occur in the same utterance. While acknowledging the potential for incoherence, he supposes coherence to be the norm. Labov (2006, p. 5 [1996]) takes the opposite position, at least for individual coherence, stating that "in New York City, most idiolects do not form a simple, coherent system: on the contrary, they are studded with oscillations and contradictions". However, Labov shows that these inconsistencies are systematically conditioned by sociolinguistic factors such as age, gender, and ethnicity.

More recently, there has been an influx of research on coherence. Guy (2013) measured the coherence of sociolects in Brazilian Portuguese by analysing four variables – nominal plural marking, verbal plural marking, -*S* deletion, and denasalisation – which each have a standard, prestigious variant and a nonstandard, stigmatised variant. He found tentative evidence for sociolectal cohesion: participants who used a relatively high, medium, or low rate of the standard form of one variable were much more likely than chance to use the standard form of the other three variables, and vice versa for the nonstandard variants. However, 20% of participants showed no consistency. Thorburn (2014) found little co-variation between locally indexed variables in Nain Inuit English, a new contact language, potentially because the social meanings of the variables have not yet fully developed within the community. Thorburn's thesis, notably, is the only study that focuses on coherence in a contact language. Becker (2016) found that only 27% of New York City English speaking participants used consistent rates of three ethnically and regionally indexed variables. Waters and Tagliamonte (2017) found that Toronto English speakers who used one innovative variant frequently – e.g. quotative *be like*, intensifier *really*, extender *and stuff* – were not more likely to use other innovative variants. Similar findings – showing some evidence of coherence but not strong support for its ubiquity or strength – are common in the literature (Oushiro, 2016; and other articles in Hinskens & Guy, 2016). Thus, further research is vital to understand more about the role of coherence, especially in contact languages.

1.4.3 Schemas

A theoretical framework which may in some contexts explain lectal coherence is that of schemas. Schemas are part of a theory within usage-based cognitive linguistics which hypothesises that utterances are produced using memorised multi-morpheme units, rather than being pieced together morpheme-by-morpheme (Bybee, 1995; Tomasello, 2002). In this section I first explain what schemas are and how they are acquired. I then discuss how this theory relates to and has the potential to account for coherence.

The foundational premise of the theory is that "grammar and lexicon are not separable", and that the lexicon stores not only single morphemes but also multi-morpheme units, constituents, or even whole utterances (Bybee, 1998, p. 421; Erman & Warren, 2000; Tomasello, 2002). These units may be fully concrete, i.e. a unit that is phonologically defined and unchangeable, fully abstract, i.e. a template specifying word classes or semantic categories, or somewhere inbetween. The fully concrete units are termed 'constructions', while 'schemas' refers to the abstract frames of semi-specified parts of speech.[15]

An example of a construction in English is *I don't know*. This phrase is stored as a single unit, and in production is recalled as such rather than being pieced together from the morphemes *I*, *do*, *-n't*, and *know* (Bybee, 1998). Evidence for this analysis is that the phrase often has a discourse function rather than a literal analytic meaning, and when it does have this discourse function it usually occurs in a reduced phonetic form (Scheibman, 2000), something like [ɐɾə̃nɔʉ] or [ɑeə̃nɔʉ] in Australian English. Less frequent but even clearer examples of constructions are idioms, such as *wait with bated breath*, which always occur in the same form and are also understood as a whole rather than analysed into their components (Bybee, 1998).

Ono and Thompson (1996) propose many fully abstract English schemas, such as the utterance schema [*NP V NP PP*]. Part of their evidence for such a schema comes from an interaction where two speakers appear to simultaneously fill its slots with different concrete phrases in overlapping speech, reproduced in 1.30.

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[15] Although note that this depends on the author. There are also other terms in other theoretical frameworks which refer to similar but not identical units, such as 'prefabs' (Erman & Warren, 2000) or 'chunks' (McCarthy, 2006).

1.30   [*NP*   *V*   *NP*   *PP*]

        K: Greg   got   it   from the library

        D: for your daughter   (Ono & Thompson, 1996, p. 229)

In a partially concrete schema, on the other hand, there are some parts which are phonologically defined and others which are slots that must be filled based on meaning and context. Tomasello (2002) argues that this is the most typical case. In 1.30, instead of a fully abstract schema, K may have been using the partially concrete schema [*NP got it from NP*], which D inaccurately predicted would be [*NP got it for NP*]. Another example of a partially concrete schema is [*what's NP doing V-ing?*] (Tomasello, 2002).

Tomasello (2001, 2002) describes the acquisition of schemas as follows. When children hear a construction, such as *I don't know*, they store that construction as a single unit along with its communicative function. If they hear and store other similar constructions, such as *I don't think so*, *I don't have it*, and so on, they may begin to generalise a partially abstract schema like [*I don't VP*]. This generalisation occurs when the learner intuits that *know*, *think so*, and *have it* are 'congruent' (Sebba, 1998).[16] Because those parts are congruent, they can each fill the verb phrase (VP) slot of the schema [*I don't VP*], and also the VP slots of other schemas. Once schemas and constructions have been acquired, they are then 'cut and pasted' together to form utterances (Erman & Warren, 2000; Mufwene, 2008; Tomasello, 2002). This acquisition process is also influenced by frequency effects (Bybee, 2007; Cameron-Faulkner et al., 2003; Tomasello, 2002).

One advantage of this theory is that it accounts for why, when there are many grammatical ways to express something, there is often only one common or 'native-like' way of expressing it (Bybee, 1998; Wray, 2002). Pawley and Syder (2013, p. 196) ask why an English speaker might say *I want to marry you* but rarely *My becoming your spouse is what I want*, arguing that the answer is because if new phrases are built from a set of previously heard phrases then they will naturally tend to take similar forms, barring some creativity. As Langacker (1987, p. 412) summarises, "a speaker learns the patterns he [sic] is exposed to and uses them in preference to unfamiliar ones".

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[16] Sebba's work specifically focuses on the degree of congruence required between parts of languages when codeswitching.

This point is relevant to some situations of coherence, although schemas have not, to my knowledge, been applied to coherence. If a speaker receives coherent input in multiple lects, then this theory would predict that their production would also be coherent, at least to a degree, because they would be storing and using separate sets of coherent schemas from each lect. If schemas do not exist, the speaker's production would have no reason to cohere, as they would have a lexicon with morphemes from each lect, rules to combine them, and no reason to group morphemes from the same lect together – unless there are other processes at play.

1.5 Research Questions

Except for a section in the appendix of Disbray (2008) and brief mentions in other literature, summarised in Section 1.3.4, the expression of location in Wumpurrarni English is undescribed. I aim to fill this gap, focusing on the syntactic structure of locative phrases, the semantic ranges of locative markers, and how these relate to its source languages. Therefore the first research question for this thesis is:

1. How is location expressed in Wumpurrarni English?

I then aim to investigate the theories of continua and coherence. As discussed in section 1.2.3, Kriols including Wumpurrarni English are typically said to be spoken on a continuum, but these claims have been questioned. By analysing quantitative and qualitative co-variations between the language derivations of morphemes within a phrase, I intend to uncover the degree of coherence within Wumpurrarni English. This analysis will, in turn, further our understanding of the continuum in Wumpurrarni English: does it exist, and is the two-target or the three-target model more accurate? Therefore the second research question is:

2. How do morphemes in locative phrases co-vary according to their source language?

Furthermore, as discussed in section 1.4.2, there is little research on coherence in contact langauges; this study will begin to fill that gap. Finally, I will also discuss whether schemas and constructions appear to be a useful framework for understanding coherence and the continuum in Wumpurrarni English.

Chapter 2: Methodology

2.1 The Data

This thesis is based on 20 video recordings of Wumpurrarni English speakers in Tennant Creek, which were collected by Samantha Disbray and Betty Morrison Nakkamarra in 6-month intervals from 2003 to 2005. The videos were transcribed in CLAN (MacWhinney & Wagner, 2010) mainly by Disbray and Morrison, with help from other community members. All transcripts were also checked by myself and my colleague Vincent Murphy. The recordings were made as part of the Aboriginal Child Language Acquisition project (ACLA), and were aimed at capturing child-caregiver interactions and longitudinal language acquisition.[17] They mostly consist of parents, grandparents, and other caregivers talking to, reading picture books with, and playing games with eight focus children.[18] There are five main family groups represented in the videos.[19]

The videos range between 10 and 60 minutes long, and the transcribed sections typically cover a 10 to 30 minute section of the full video. These sections were selected by the transcribers for their rich and naturalistic conversation. There are 93 videos in the full Wumpurrarni English ACLA corpus; I chose a subset of 20 to analyse by extracting the number of words spoken by each speaker in each transcript, then selecting four transcripts that had the most words for each family group. I also ensured the videos represented a range of time points. The details of each transcript are listed in Table 2.1. In total, these 20 transcripts consist of approximately 32,000 words, 6,900 utterances, and represent eight hours of recording. Within these transcripts I identified 515 locative phrases, which will be defined in Section 2.2.

There were 66 speakers in the transcripts, and 36 of these speakers produce at least one locative phrase. Twenty-six of those 36 speakers are associated with one of the main family groups. There is an uneven gender distribution, as 32 of those speakers are female while only four are male.[20] The speech is also unevenly distributed, with 6 speakers producing more than two thirds

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[17] The Tennant Creek research made up one of four branches of the ACLA project. Data collection was also undertaken for the languages Gurindji Kriol at Kalkaringi (Meakins, 2007), Light Warlpiri at Lajamanu (O'Shannessy, 2006), and Kimberley Kriol at Yakanarra (Moses, 2009).

[18] The main picture books featured in the recordings include 'the frog story' ("Frog, where are you?", Mayer, 1969), 'the shanghai story' ('Pintaru-kurlu', Egan, 1986), and the 'monster', 'hunting', and 'bush coconut' stories (O'Shannessy, 2004).

[19] Originally I had intended to investigate variation across the family groups, but with little detailed sociolinguistic information about the families and a lack of promising preliminary results I abandoned this inquiry.

[20] This was because the project followed caregivers, who are mostly women, and also because the researchers were women and it is typical for researchers to work with participants of the same gender.

of the locative phrases. The speakers were categorised into three broad age groups: Elders, Adults, and Children. These groups were defined primarily by family relations – the Elders were predominantly grandparents, and the Adults typically parents – as well as age – the Elders were all older than 40, the Children all under 18.

ID	Family	Date	Utterances	Locative phrases
SD006A	A	AUG 03	406	14
SD028	A	JAN 04	359	26
SD057	A	AUG 04	383	26
SD072	A	MAR 05	346	53
		A Subtotal:	1494	119
SD020	B	AUG 03	160	10
SD062	B	AUG 04	494	76
SD065	B	JAN 05	445	24
SD067A	B	JAN 05	149	23
		B Subtotal:	1248	133
SD006B	C	AUG 03	377	25
SD021	C	JAN 04	247	21
SD092	C	SEP 05	323	46
SD105A	C	SEP 05	256	4
		C Subtotal:	1203	96
SD007	D	AUG 03	310	7
SD015	D	AUG 03	258	12
SD044D	D	AUG 04	238	30
SD093	D	SEP 05	267	30
		D Subtotal:	1073	79
SD005	E	AUG 03	623	33
SD009	E	AUG 03	682	15
SD054	E	AUG 04	110	7
SD074	E	MAR 05	472	33
		E Subtotal:	1887	88
		Grand total:	6,905	515

Table 2.1: Distribution of the data by main family group in each transcript.

2.2 The Locative Phrase

Each of the 20 transcripts was combed for phrases which expressed location, in the sense defined in section 1.3. After finding all the ways location was expressed, I developed a narrower definition of a 'locative phrase' to create a manageable and coherent scope. The definition is as follows:

1. The phrase consists of a noun phrase and **optionally** one or more locative markers; or
2. The phrase consists of a deictic pronoun (such as *hiya*, *deya*, or Warumungu-derived equivalents) and **necessarily** a locative marker;[21] and
3. The phrase expresses the location, source, or goal of an action or entity.

A 'locative marker' is any morpheme which has the purpose of identifying that phrase as expressing location, source, or goal, or which has the purpose of specifying the spatial relation. I did not predetermine the set of locative markers in order to capture the full range of possibilities, in line with the 'principle of accountability' (Tagliamonte, 2012). Examples 2.1-2.8 showcase several locative phrases from the data in illustration of their range. The locative phrases have been bolded. Examples 2.1 and 2.2 show the common *na* preposition:

2.1   *damab*   *plei*   ***na***   ***swing****,*   *sid-dan*   ***na***   ***faya***   *na.*
     they   play   LOC   swing,   sit-down   ALL   fire   now
     they play on the swing, now they sit down around the fire. (SD044D:SD1)

2.2   *it*   *go*   ***na***   ***fingka***   *iya.*
     it   go   ALL   finger   here
     it goes on your finger here. (SD028:SB1)

Examples 2.3 and 2.4 show lighter locative phrases, with prepositions *an* and *neks tu*.

2.3   *dat-s*   *da*   *cat*   ***an*** ***da***   ***plein****.*
     that-is   DET   cat   on   DET   plane
     that's the cat on the plane. (SD028:SA2)

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[21] The reason for this is explained in section 2.2.1.

2.4 ***neks tu NAME na.***
    next to NAME now

    next to NAME now. (SD057:SA1)

Examples 2.5 and 2.6 show heavier locative phrases. The first locative phrase in 2.5 uses the Warumungu suffix *-kVna*, while the second locative phrase uses no markers at all. I will refer to this as a 'bare locative phrase'. Example 2.6 uses the Warumungu form *jana* 'up', as well as double-marking the phrase with two nonspecific markers *na* and *-jjV*.

2.5 *puj-im* ***pram-kana*** *na,* *beibi* *turtu* ***pram***.
    put-TR pram-ALL now, baby sleep pram.

    put it in the pram now, the baby is sleeping in the pram. (SD067A:SB3)

2.6 ***jana na yuwala-jja***.
    up LOC tree-LOC

    up in the tree. (SD072:SA2)

Example 2.7 shows a locative phrase with a preposed and a postposed locative marker containing a coordinated NP.

2.7 *yungkurnu* *bin* *slip* *na,* *naidaim,*
    monster PST sleep now, night.time,

    nanga mun an sta andanith.
    LOC moon and star underneath

    the monster slept now, at night time, underneath the moon and stars. (SD044D:SD1)

2.2.1 Exclusions

To narrow the scope of analysis, I excluded the following location-related forms. Firstly, using morphosyntactic properties, I excluded any phrases which only consisted of a deictic locative, such as *iya* 'here' or *deya* 'there', without an adjacent locative marker, because these were overwhelmingly frequent and would have obscured the analysis of the full locative phrases. I also excluded cases where a locative marker occurred adverbially without an adjacent NP (2.8) or as a verbal suffix (2.9). These forms were excluded because they are significantly different

constructions to the locative phrases and would have confounded the analysis. A large part of this difference is because these markers modify the event semantics instead of specifying the event location.

2.8   *go* ***insaid*** *now, dat do is opin.*

       go   inside   now   DET   door   is   open

       go inside now, the door is open. (SD057:SA2)

2.9   *karnungu bin klam-**ap** na tri.*[22]

       boy   PST   climb-up   ALL   tree

       the boy climbed up the tree. (SD072:SA2)

There were also exclusions made on semantic grounds. Locative phrases were frequently used to express meanings which did not match the definition of location laid out in this thesis. These included expressions of time (2.10), other types of metaphorical location (2.11), STIMULUS (2.12), and RECIPIENT (2.13). These were not included as I wanted to focus solely on expressions of physical location and because there would potentially be differences across these semantic fields that I was not prepared to account for.

2.10   *deya, sing-in-at* ***na naittaim*** *kaman.*

       there   shout-PROG-out   LOC   night.time   come.on

       [they were] there, shouting out at night, come on. (SD093:SB1)

2.11   ***an telefone****, tok **an the** telefone*.

       on   phone   talk   on   DET   phone

       on the phone, talk on the phone. (SD057:SA4:4yo)

2.12   *ah pawumpawu deya luk jina-**kana**.*

       ah   poor.thing   there   look   foot-STIMULUS

       oh poor thing, look there at your foot. (SD021:SB1)

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[22] Here, *na tri* is indeed a locative phrase, but *-ap* has not been considered part of it. *-ap* can be shown to be a suffix of *klam* rather than a preposition because of its prosody and the fact that *klam* very rarely occurs without a directional suffix.

2.13   *deya   giv   it   **na**   NAME-ki.*

       there   give   it   DAT   NAME-DAT

       there, give it to NAME. (SD072:SA2)

2.2.2   Difficulties in Classification

There were often cases of ambiguity, where it was difficult to be sure if a morpheme was a locative marker or if a phrase was expressing location. In this section I discuss how the most common dilemmas were resolved.[23] The most common word in the corpus is *na*, because as well as a locative marker it is a frequent discourse marker, derived from English *now* but with broader usage. Discourse *na* often occurs after phrases, and given that Wumpurrarni English allows for postposed locative markers, these two meanings of *na* can sometimes be confused.[24] For example, in 2.14 both occurrences of *na* could have either meaning.

2.14   *deya   im   wok-in   jana **na**   plein **na**   rigin?*

       there   3SG   walk-PROG   up   LOC   plane   now   reckon

       there, it's walking up on the plane now see? (SD028:SA2)

By way of illustration, the same utterance could also be glossed as in 3.15-3.17. In these utterances, the locative phrase is bolded.

2.15   *deya   im   wok-in   **jana na   plein na**   rigin?*

       there   3SG   walk-PROG   up   LOC   plane   LOC   reckon

       there, it's walking up on the plane now see? (SD028:SA2)

2.16   *deya   im   wok-in   jana   na   **plein   na**   rigin?*

       there   3SG   walk-PROG   up   now   plane   LOC   reckon

       there, it's walking up now, on the plane see? (SD028:SA2)

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[23] Less regular ambiguities were solved on a case-by-case basis with the help of Vincent Murphy, as discussed in section 2.3.4.

[24] In lighter speech, discourse *na* was pronounced with a diphthong like English *now* /næɔ/, rather than /nɐ/, in which case it was easy to distinguish the two. *na* can also mean 'nah, no', but these were easier to differentiate from context, phonology, and the fact that they appear in different syntactic positions.

2.17   *deya   im   wok-in   jana na **plein** na   rigin?*

there   3SG   walk-PROG   up   now   plane   now   reckon

there, it's walking up now, on the plane now see? (SD028:SA2)

As shown, the interpretation of *na* as a locative or discourse marker has subtle effects on semantics and significant effects on the understanding of locative phrase structure. I decided to never count postposed *na* as a locative marker, because a) there were very few cases of a locative phrase with no markers but postposed *na* (e.g. 2.18), b) these cases numbered even fewer than completely bare locative phrases with no possible markers (e.g. 2.19), and c) discourse *na* is highly frequent. Taken together, these facts suggest that it is more likely for postposed *na* to be a discourse marker than a locative marker. Therefore, I have used the gloss in example 2.14. However, this is only a rule of thumb and more research, including consultation with speakers, is vital to clarify this.

2.18   *puj-im   pram   **na.***

put-TR   pram   now

put it in the pram now. (SD067A:SB3)

2.19   *mangkaja,   pud-um   **mangkaja**   deya   luk.*

blanket   put-TR   blanket   there   look

the blanket, put it on the blanket there look. (SD007:SD4)

Further complicating the matter, there were some utterances where I suspected *na* to be a lenited version of the determiner *da*, particularly in children's speech. Given the rarity of this phenomenon, and the fact that children's speech is not included in the analysis of this thesis, this will not affect the results. Phonological research could investigate this further.

Two other common locative markers, *ina* and *ana*, can be confused with the locative markers *in* and *an* followed by either the determiner *a*, the locative marker *na*, or the discourse marker *na*. The first option was ruled out as the determiner *a* is almost never used in Wumpurrarni English, even in light speech. The other options were ruled out by phonology. In utterances where it was certain that discourse *na* was following *in* or *an*, as in 2.20, the /n/ was geminated.

This did not happen with *ina* or *ana*, which suggests that they should not be analysed as *in na* or *an na*.

2.20 *pud   it   **in   na**,   pud   it   awei   na   box.*

      put   it   in   now   put   it   away   ALL   box

      put it in now, put it away in the box. (SD005:SE3)

Bare locatives, where location is expressed with an NP and no locative marker, are inherently difficult to identify. I only coded these phrases as locatives when the locative meaning was clear, as it is for the second *mangkaja* in 2.19. Where the locative meaning of the phrase was not certain, as for the first *mangkaja* of 2.19, or for *dat klin woda* in 2.21, it was not included. This means the number of bare locatives in the data is likely lower than in reality.

2.21 *rins   imselb   **dat   klin   woda**.*

      rinse   REFL   DET   clean   water

      rinse yourself with/in that clean water (SD074:SE3)

2.3 Coding

2.3.1 Extracting Locative Phrases

In this section I explain the coding method, the intercoder reliability testing, and other steps taken in the pre-processing of the data. After each of the twenty transcripts were proofed and time-aligned by myself and Vincent Murphy, I listened to and read them looking for locative phrases. When I identified one, I placed a hash character (#) after each locative marker, as in 2.22 and 2.23.

2.22 *na   yu   kan   go   tu #   motika-kana #.*

      no   you   cannot   go   ALL   car-ALL

      no you can't go to the car. (SD074:S03)

2.23 *dubala   sid-dan   jana #   na #   tri-kina #,   na #   yuwala-kina #   rigin.*

      3DU   sit-down   up   ALL   tree-ALL   ALL   tree-ALL   reckon

      those two sit up in the tree, in the tree see. (SD072:SA2)

If there was a bare locative phrase, I inserted a hash with a 'b' (#b) before the NP, in the place where the preposition would be, as in 2.24.

2.24 *dei   bin   go #b   natha-mob-kayi   kemp,   disaid.*
      they   PST   go   other-PL-POSS   camp   this.way
      they went to another group's camp, over here. (SD062)

The hash was a unique symbol not used elsewhere in the transcripts, allowing for efficient extraction of all locative phrases and markers using regular expressions.

2.3.2 Source Languages of Locative Markers

In order to investigate the second research question, how Wumpurrarni English morphemes co-vary according to their source language, I assigned a letter to each locative marker based on its language derivation. The system is defined as follows:

- **W:** The marker is derived from Warumungu, e.g. *-kVna*, *kantu*, *jana*.
- **K:** The marker is ultimately derived from English but is not an English word, e.g. *na*, *ina*, *langa*.[25]
- **E:** The marker is derived from English and is an English word, e.g. *in*, *an*, *niya*.

While K and E markers both ultimately derive from English, I hypothesised that they would pattern differently. The K markers have either been borrowed from a neighbouring Kriol or borrowed from English long ago and creolised in Wumpurrarni English,[26] so today they are phonologically, semantically, and/or morphosyntactically distinct from their English derivations. Thus they might not be socially associated with English or light Wumpurrarni English. E markers, on the other hand, have either been borrowed more recently or they were borrowed earlier but have not changed as much, and so remain very similar to their English derivations. Thus I hypothesise they will be more closely associated with English and a light Wumpurrarni English. This method is not perfect: Vaughan et al. (2015, p. 6) state that separating out acrolectal and basilectal Kriol forms is "in practice, next to impossible", and that is what I am attempting to do here. Table 2.2 displays every locative marker identified in the data and its assigned language code. Bare locative phrases may derive from Kriols, as they are

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[25] 'K' for 'Kriol'.
[26] It may be informative to investigate whether there are differences between these two derivations – morphemes borrowed from Kriols and morphemes developed within Wumpurrarni English – but distinguishing these would be even more difficult.

present marking GOAL in Fitzroy Valley Kriol (Hudson, 1981), but since they are not markers they are not included here.

Code	Markers
W	*-jja, -jju, -ka, -kana, -kina, -kuna, -ngka, jana, kantu*
K	*ana, ina, la, langa, na, nanga, weya*[27]
E	*an, anda, andanith, ap, at, awei, bihain, fom, genst, in, insaid, intu, klos, neks, niya, o, off, out, ova, pas, rait*[28]*, raun, said, thru, tu*

Table 2.2: Every identified locative marker categorised by its language derivation.

I have not attempted to identify morphemes or phrases which represent codeswitching out of Wumpurrarni English because, as noted in Chapter 1, there is no principled method for this among languages which are the sources of a contact language. This matter could be addressed in future research.

2.3.3 Semantics

I coded each locative phrase for its semantic expression. The semantic categories were mainly adapted from Levinson and Wilkins (2006), as the framework they use is designed for typological analysis with a strong focus on Australian Indigenous languages. I also drew from Huddleston and Pullum's (2002) description of location in English. The broad semantic categories were GOAL, LOCATION, and SOURCE. GOAL marks the endpoint of an action, such as the target that the figure is moving towards (2.25) or the position where the figure will be after the action (2.26).

2.25   *dei*   *go-in*   ***Adelaide***   *damab*   *deya.*

       they   go-PROG   Adelaide   they   there

       those people there are going to Adelaide. (SD021:S04)

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[27] These occurrences of *weya* are not as pronouns but as an innovative locative preposition used by two children, as in *i bin fol-dan weya dat stik* 'he fell over on the stick' (SD092:SC6:4yo).

[28] *rait* does not have a locative meaning itself but specifies the locative meaning when used in combination with other locative markers, such as *rait na fut-kana* 'right in his foot' (SD093:SD1), and therefore matches the definition in section 2.2. The marker *o* 'of' is similar and is discussed in section 3.1.1.

2.26 *yu   pud-um   deya   **na**   **yo**   **kuwarta***.
    you   put-TR   there   ALL   your   ear
    put it there in your ear. (SD005:SE3)

SOURCE, in opposition to GOAL, marks the starting point of an action, the place or position where the figure originates (2.27 and 2.28).

2.27 *dei   bin   kik   dem   out   **fom**   **deya***.
    they   PST   kick   them   out   from   there
     they kicked them out of there. (SD093:SB1)

2.28 *an   dei   bin   git-im   dat   litl   joey   **fom**   **dat**   **pawj**.*
    and   they   PST   get-TR   DET   little   joey   from   DET   pouch
    and they got that little joey from the pouch. (SD072:SA2)

LOCATION marks the static, topological relation between a figure and a ground. This category was further split into the following four narrow categories. CONTACT marks a ground which comes into contact with the figure (2.29).

2.29 *sneik   bait-im   im   na   yu   luk,   **rait**   **na**   **fut-kana**.*
    snake   bite-TR   3SG   now   you   look   right   LOC   foot-LOC
    the snake bites him now, see, right on his foot. (SD093:SD1)

SUPPORT, a hyponym of CONTACT, marks a ground which is in contact with and is vertically supporting the figure (2.30).

2.30 *im   turtu   **bed-kana**.*
    3SG   sleep   bed-LOC
    it's sleeping on the bed. (SD067A:SB3)

CONTAINMENT marks a ground which surrounds the figure (2.31).

2.31   *pikinini   bin   bogi   na   **na**   **ngappa-kana**.*

child   PST   swim   now   LOC   water-LOC

the children swam in the water now. (SD062:SB3)

PROXIMITY marks a ground which the figure is at (2.32) or otherwise near (2.33).

2.32   *a   bin   meik-im-bat   **na**   **Alroy**   bifo.*

1SG   PST   make-TR-DUR   LOC   Alroy   before

I used to make them at Alroy. (SD065:SB1)

2.33   *sid-dan-bat   **na**   **fiya**   na.*

sit-down-DUR   LOC   fire   now

they were sitting around the fire now. (SD065:SB7)

There were a total of 22 phrases out of the 515 for which the semantic expression could not be identified.

2.3.4 Intercoder Reliability

To ensure my definitions and method were coherent and that I was applying the coding consistently, my colleague Vincent Murphy coded four of the same transcripts. In these transcripts we identified a total of 86 locative markers, including #b bare locatives. Of these, we agreed on 68, giving a preliminary agreement score of 79%. The 18 disagreements were distributed as follows. Five disagreements were in phrases with heavy use of Warumungu, which is understandable given neither Vincent nor I are proficient in Warumungu. These utterances, and other Warumungu utterances that I was unsure about, were checked by Jane Simpson. Eleven disagreements were quickly agreed upon in discussion after the coding: of these, seven were markers that Vincent missed and agreed should be included, two were markers that I missed and agreed should be included, and two were words that Vincent initially coded as locative markers but agreed should not be included. The final two markers were difficult to judge. These potential markers are *na* in 3.34 and *said* in 3.35. For 3.34, there were no contextual or phonological clues confirming whether *na* is a locative or not, so we decided to exclude it. For 3.35, we were unsure of exactly how the construction works but decided that

said should be included as a locative marker here. A similar construction was also found in 2.36.

2.34 *deya   im   plei-in   an   i   gad   natha-wan*
     there 3SG play-PROG   and 3SG with other-NOM

     iya   na   natha-wan.
     here   now   other-NOM

     she's playing there, she's got another one here now/on another one. (SD067A:SB3)

2.35 *an   dat   man   bin   sid-dan   na   tri   **said**.*[29]
     and DET   man   PST   sit-down   ALL   tree beside

     and that man sat down beside the tree. (SD044D:SD1)

2.36 *da   bin   meik-im   big   fiya,   na   do   **said**.*
     they PST   make-TR   big   fire   LOC   door beside

     they made a big fire, beside the door. (SD062:SB3)

Thus the initial agreement of 79% shows that my coding was sufficiently consistent, and the fact that the disagreements were resolved through discussion shows that my definitions for locative phrases and markers are coherent. These discussions further informed and improved my coding as I checked and re-checked the rest of the transcripts.

With this coding method, I identified a total of 515 locative phrases in the 20 transcripts. From these, the 59 phrases produced by children were excluded in order to ensure my analysis was not influenced by variation due to the acquisition process. A further 37 phrases which were direct repetitions of the preceding locative phrase by the same speaker were excluded, in order to provide a clearer understanding of the frequency of types of phrases and markers. This left a total of 419 locative phrases which constitute the dataset to be analysed in this thesis.

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[29] If this locative phrase meant 'on the tree's side' then *said* would not have been included as a locative marker, rather as a possessed noun within the NP. The same logic applies for example 2.36.

Chapter 3: The Expression of Location

This chapter presents the results and discussion regarding the first research question: how is location expressed in Wumpurrarni English? I begin by analysing the morphosyntax of Wumpurrarni English locative markers and phrases. I then survey the semantic ranges of the locative markers. Finally, I discuss how the expression of location in Wumpurrarni English relates to its source languages.

3.1 Morphosyntax

3.1.1 Classes of Locative Markers

Locative markers in Wumpurrarni fall into three fairly distinct morphosyntactic classes: suffixes, prepositions, and adverbs. First, and most clear, are the locative suffixes which all derive from Warumungu. The range and frequency of these are shown in Table 3.1.

Morpheme	Allomorph	Count
-kVna	*-kana*	55
	-kina	25
	-kuna	7
	-ka	2
***-kVna* total:**		**89**
-jjV	*-jju*	2
	-jja	1
***-jjV* total:**		**3**
-ngkV	*-ngka*	2
***-ngkV* total:**		**2**
Grand total:		**94**

Table 3.1: Forms and counts of the locative suffixes in Wumpurrarni English.

These are distinguished from other markers by their form, deriving from the Warumungu locative suffixes, their position, attaching to the end of the NP, and their underspecified semantics, which will be discussed in section 3.2. In Warumungu, case suffixes attach to all elements of the phrase (Simpson, 2002); in Wumpurrarni English, Disbray (2008) states that they only attach to the final element. This is mostly supported by the present data. In the four

examples where the NP has a pre-nominal element, such as a determiner (3.1) or a nominal modifier (3.2), the suffix only attaches to the final element.

3.1   *yu   pud-im   **im-kayi**   **mungku-kana**.*
      you   put-TR   3SG-POSS   stomach-ALL
      put it on her belly. (SD021:SB1)

3.2   *wat   i   stap,   **damp   kemp-kana***?
      where   3SG   stay   dump   camp-LOC
      where did he stay, at the dump camp? (SD021:SB1)

In the only occurrence of a suffix marking a coordinated NP, it also attaches only to the final element (3.3). Therefore, analogous to the possessive clitic *-kayi* derived from the Warumungu genitive suffix *-kari* (Disbray & Simpson, 2005), the Warumungu suffix *-kVna* appears to have been adopted into Wumpurrarni English with the distribution of a clitic.[30]

3.3   ***karnanti   an   kampuju-kuna*** *dem   maanjun~maanjun   prokprok.*
      mother   and   father-LOC   DET   little~PL[31]   frog
      all those little frogs next to their mum and dad. (SD072:SA2)

One exception, however, is in example 3.4 where *-kVna* attaches only to the first element of the NP, *but* 'boot', which may be acting as a nominal modifier or an unmarked possessor to *warakul* 'hole'.

3.4   *i   bin   luk   **kantu   na   but-kina   warakul***
      3SG   PST   look   inside   LOC   boot-LOC   hole
      fo   dat   prokprok.
      for   DET   frog
      it looked inside the boot['s hole] for the frog. (SD072:SA2)

---

[30] However, without enough data to confirm this, I will follow Disbray's (2008) terminology and continue to refer to *-kVna*, *-jjV*, and *-ngkV* as suffixes.

[31] Reduplication has many uses in Wumpurrarni English, including plural marking as is likely here, or intensification (Disbray, 2008). On the other hands, some forms such as *prokprok* 'frog' or *jukjuk* 'bird' have cemented in their reduplicated form and do not carry such meaning.

The second class of locative markers is prepositions. Prepositions come before the NP, they can and usually do occur as the sole marker, and are typically but not always semantically underspecified. These are most commonly K markers like *na*, *ina*, and *ana*, or E markers like *in*, *an*, and *fom*. This is the largest class of words and also the most common. Over three quarters of locative phrases have a preposition, and *na* accounts for more than half of the preposition tokens.

There is one exception to prepositions coming before the NP, shown in example 3.5 where *ana* occurs postnominally. This potentially represents a structure unique to this speaker or to the heavy style she is using in this sand story.[32]

3.5 *dei   bin   pud-im   kaliko   **na**   **big-wan**   **ana**,*
     they   PST   put-TR   sheet   ALL   big-NOM   ALL

     jak-im   laikajat   laikajat.
     chuck-TR   like.that   like.that

     they put them on the sheet, on the big one, they chucked them like that. (SD062:SB3)

The class of prepositions, however, has some overlap with the third class, the locative adverbs. Before explaining the prepositions further, I will define the adverbs and set out the distinctions between these interrelated classes. Locative adverbs are distinguished by three features. The first is their tendency to *not* occur as the sole locative marker, rather they are added for an additional specification of the location relation. Examples of locative adverbs are *kantu* (4.6), *andanith* (3.7), and *out* (3.8).

3.6 *dei   bin   sid-dan-bat   **kantu**   **na**   **rum**.*
     they   PST   sit-down-DUR[33]   inside   LOC   room

     they were sitting in the room. (SD072:SA2)

---

[32] A sand story is style of storytelling common to many Australian Aboriginal cultures where a speaker narrates while drawing pictures in the ground (Green, 2014).

[33] The semantic difference between verbal aspectual suffixes *-ing* and *-bat* in Wumpurrarni English has not been clearly shown. Disbray (2008) glosses *-ing* as 'progressive' and *-bat* as 'durative', a method which I will follow here. See, e.g., Sandefur (1979) and Hudson (1981) for discussion of equivalent suffixes in other Kriols.

3.7   *yungkurnu bin   slip   na,   naidaim,*

      monster   PST   sleep   now,   night.time,

      nanga mun   an   sta   andanith.

      LOC   moon and star   underneath

      the monster slept now, at night time, underneath the moon and stars. (SD044D:SD1)

3.8   *an   i   bin   av-im   dat   sharp-wan   stik-in*

      and 3SG PST have-TR DET sharp-NOM stick-PROG

      out o   dat   hol.

      out of   DET hole

      and it [the scorpion] had its stinger sticking out of the hole. (SD072:SA2)

Some of these same adverbs can also occur alone (3.9), hence the ambiguity between them and prepositions. This is especially likely when the NP consists of a deictic pronoun (3.10-3.11), and is more common in lighter speech (3.11). Nevertheless, adverbs occur with other markers more often than not.

3.9   *im   deya, im   kraul* ***andanith   da   blengkit***, *pawumpawu.*

      3SG there 3SG crawl underneath DET blanket   poor.thing

      there it is, it's crawling underneath the blanket, oh dear. (SD028:SA2)

3.10 *yu   pud-um men-mob* ***andanis   deya***.

      you put-TR man-PL   underneath there

      put the men underneath there. (SD067A:SB1)

3.11 *pipl   bin   swim-ing   **out iya**, yu   no   wat   they*

      people PST swim-PROG out here you know   what they

      bin   av-im   [xx], no   gud   ai-s.

      PST   have-TR xx   no   good   eye-PL

      people come swimming out here, you know, and they get sore eyes. (SD074:SE1)

The second feature, related to the first, is that adverbs have more specific meanings than locative prepositions or suffixes. The third is their ability to occur either before the NP – and

always before the preposition if there is one – or after the NP. Since there are no phrases except for example 3.5 which contain two prototypical locative prepositions, I take 'co-occurs with prepositions' to be the defining characteristic of a locative adverb. As subsets of locative adverbs, I also distinguish those which can occur alone and those which cannot. These classes are shown in Table 3.2. Note, however, that many of these markers occur only a handful of times and thus their classifications may be liable to change as new data is analysed.

Class	Subclass	Morphemes
Locative preposition		*an, ana, anda, at, bihain, fom, genst, in, ina, intu, la, langa, na, nanga, o, off, ova, pas, raun, tu*
Locative adverb	Can occur alone	*andanis, ap, insaid, jana, kantu, niya, out, thru,*
	Cannot occur alone	*awei, klos, neks, rait, said*

Table 3.2: Locative prepositions and adverbs in Wumpurrarni English.

Three of the adverbs cannot occur alone because they require a specific preposition to follow them: *awei fom* (3.12), *klos ap* (3.13),[34] and *neks tu* (3.14).

3.12 *NAME, git **awei fom deya**!*
NAME get away from there
NAME, get away from there! (SD057:SA2)

3.13 ***klos ap na hil** wi gata go.*
close up ALL hill we must go
we have to go right up to the hill. (SD062:SB3)

3.14 ***neks tu NAME** na.*
next to NAME now
next to NAME now. (SD057:SA1)

---

[34] Note that *klos ap* is also followed by *na*, and followed by *nanga* in its other occurrence, whereas *awei fom* and *neks tu* have no following preposition.

The adverb *said* only occurs twice, both times postnominally, and both times in co-occurrence with *na* (3.15 and 3.16). Given this distribution, it is possible that this form is in fact a suffix, analogous to the directional nominal suffix *-wei* in Roper River Kriol (3.17). While directional *-wei* is not found attaching to nouns in Wumpurrarni English, it does occur commonly in the adverbs *diswei* 'this way' *dadei* 'that way', as does *-said* in *disaid* 'this way, on this side' and more rarely *datsaid* 'that way, on that side'. Examples 3.15 and 3.16, then, may be cases of this typically unproductive suffix *-said* being using productively. However, this theory cannot be confirmed given the paucity of occurrences.

3.15 *an   dat   man   bin   sid-dan **na**   **tri**   **said**.*[35]

       and   DET   man PST   sit-down ALL tree beside

       and that man sat down beside the tree. (SD044D:SD1)

3.16 *da   bin   meik-im   big fiya, **na**   **do**   **said**.*

       they   PST make-TR big fire   LOC door beside

       they made a big fire, beside the door. (SD062:SB3)

3.17 *yu   waif yu   si   loda   grandrimen bren*

       2SG wife 2SG see QUANT country.man friend

       ***burrum borralulua**-**wei**   makatha.*

       ABL   Borroloola-way   McArthur

       (with) your wife you see a lot of countrymen, friends (from the same place), from (in the direction of) Borroloola way, McArthur River. (Munro, 2005, p. 143, RRK)

Finally, phrases with the preposition *o* 'of' highlight an issue in distinguishing between locative adverbs and verbal directional suffixes. *o* occurs three times: once following the adverb *out* (3.18) and twice alone (3.19 and 3.20). However, its occurrences alone are following what has been interpreted as a verbal suffix *-at* 'out'.

3.18 *they   come **out**   **o**   **there** now.*

       they   come   out   of   there now

---

[35] If this locative phrase meant 'on the tree's side' then *said* would not have been included as a locative marker, rather as a possessed noun within the NP. The same logic applies for example 3.24.

they come out of there now. (SD074:SE1)

3.19 *an   i   bin   av-im   dat   sharp-wan   stik-in-**at***

  and   3SG   PST   have-TR   DET   sharp-NOM   stick-PROG-out

  ***o   dat   hol**.*

  of   DET   hole

  and it [the scorpion] had its stinger sticking out of the hole. (SD072:SA2)

3.20 *prokprok   i   bin   kam-at   na,   i   bin*

  frog   3SG   PST   come-out   now   3SG   PST

  *klam-**at   o   dat   ding**,   ja.*

  climb-out   of   DET   thing   jar

  the frog, he came out now, he climbed out of the thing, the jar. (SD072:SA2)

In all three of these cases, this 'out' morpheme could have been analysed as an unbound adverb *out* or a bound suffix *-at*. As explained in section 2.2.1, 2.2.1 directional suffixes were excluded from analysis, and were primarily identified by checking if that verb always or predominantly occurred with a directional suffix in other utterances. This test suggested the morpheme is a suffix in *klam-at* and *stik-in-at*, but not in *come out*. However, this leads to a strange conclusion: that the locative phrases in the similar expressions *come **out o there*** and *klam-at **o dat ding*** have different structures. Clearly more research is needed to clarify the function and distribution of directional suffixes and to distinguish them from unbound adverbs. Alternatively, it is possible that there is in fact little real difference between them in circumstances like this.

3.1.2 Locative Phrase Structure

With the three classes of locative markers defined and described, I now present the word order of locative phrases in Wumpurrarni English:[36]

(adverb)   (adverb)   (preposition)   NP   (-suffix)   (adverb)

---

[36] Items in parentheses are optional.

This structure accounts for every locative phrase found in the dataset but there are three further notes on the use of adverbs. First, the only times there are two adverbs in a phrase are with the constructions **klos ap** *na* or **rait thru** *na*, and there are never more than two adverbs. However, there is no reason to believe it would be ungrammatical to add more adverbs. Second, a preposed and postposed adverb have never been found in the same phrase, but it is unclear whether whether this is ungrammatical or just uncommon. Third, postposed adverbs and locative suffixes never co-occur. This is likely due to a lack of data, as there are only nine postposed adverbs, but may also suggest an aversion to combining the two. A simplified phrase structure for the noun phrases found in the dataset is as follows, noting that their true structure would be more complex:

(determiner)   *(adjective/nominal modifier)*   *noun*   *(-suffix)*
                                                  pronoun
                                                  proper noun

The suffix slot in this NP structure refers to non-locative suffixes. Those found in the data are the nominaliser *-wan*, topicaliser *-ngini*, plural *-s*, and possessive *-kayi*. There are only examples of locative suffixes attaching to *-wan* words (3.21); how they interact with the other suffixes is uncertain.

3.21 *yumob*   *muv*   *deya*   *na,*   **klin-wan-kana***.*
      2PL   move   there   now   clean-NOM-ALL
      you kids move there now, onto the clean one. (SD009:SE3)

Table 3.3 displays the frequencies of each combination of locative class, disregarding the different positions and dual use of adverbs.[37] The phrase with the postposed preposition *ana* has been excluded. Figure 3.1 generalises the data further, showing the proportion of locative phrases which have no locative markers (7%), one marker (78%), two markers (14%), or three markers (1%). Of the 60 phrases which have two markers, half are double-marked with two nonspecific markers and half have at least one specific marker. Now, with the morphosyntax of the locative markers and phrases described, the following section analyses their semantics.

---

[37] Interestingly, when grouped in this way, there is at least one occurrence of every logically possible locative marker combination.

Marker combination	Count
prep	265
suff	53
prep + suff	36
bare (no marker)	29
prep + adv	20
adv	10
prep + suff + adv	4
suff + adv	1
Total:	**418**

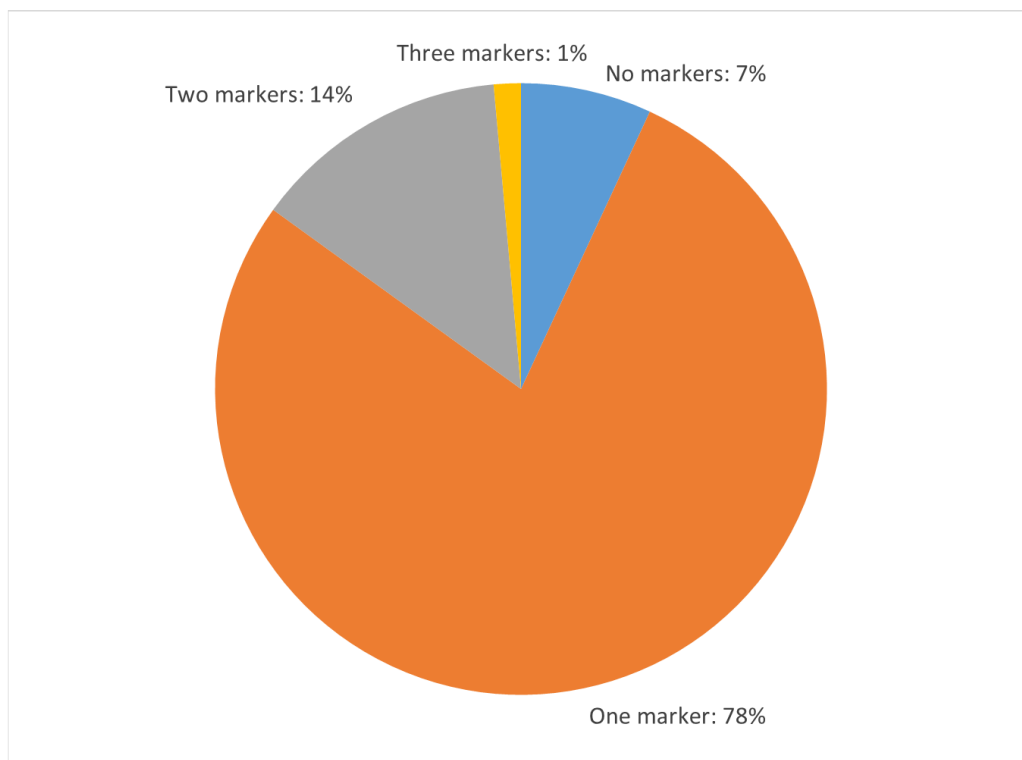**Table 3.3:** Counts of all locative marker combinations found in the dataset.

Figure 3.1: Proportion of locative phrases according to number of locative markers.

3.2 Semantics

3.2.1 Semantics of Prepositions

In this section I mainly focus on the semantics of the locative prepositions, because they occur the most frequently, but I also briefly discuss the other classes. In particular I concentrate on the most common prepositions: *na* (n = 176), *in* (29), *ina* (29), *fom* (23), *an* (21), and *ana* (6).[38] First, I want to determine whether the variants of *na* are semantically differentiated or not. These are *nanga* (9), *langa* (8), and *la* (2). There are too few of these variants to statistically analyse, but Figure 3.2 shows that, in line with expectations from the literature (Disbray, 2008; Schultze-Berndt et al., 2013), there is no evidence that they have differential semantic tendencies across the expressions of GOAL, LOCATION, and SOURCE. For the rest of this section I therefore combine all of these variants under the label NA (195). Figure 3.3 depicts the distribution of NA and the other previously mentioned prepositions.
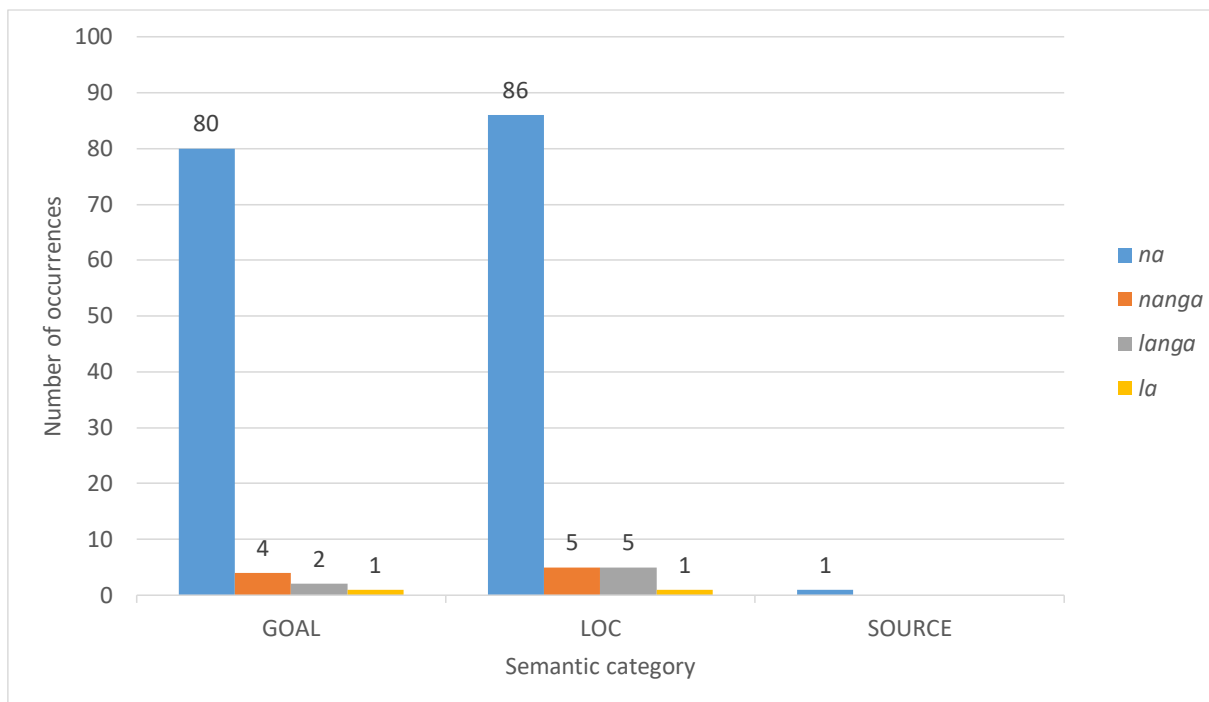

Figure 3.2: Broad semantic distributions of *na*, *nanga*, *langa*, and *la*.

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[38] All other prepositions occur less than ten times each; *ana* has been included because it provides the pair to *an*, analagous to *in* and *ina*, and it is interesting to examine how these forms compare.
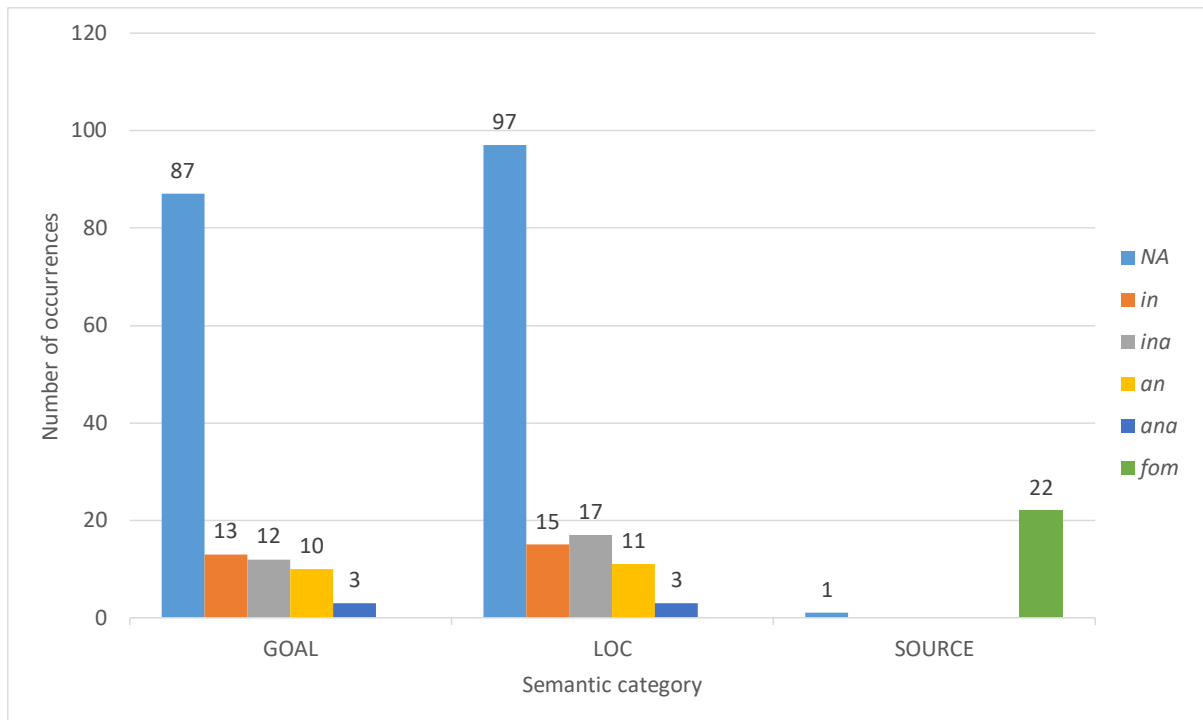
Figure 3.3: Broad semantic distributions of *NA*, *in*, *ina*, *an*, *ana*, and *fom*.

These results also mostly align to expectations, with all prepositions but *fom* being used approximately uniformly across GOAL and LOCATION. There are also prepositions which appear to be restricted to one or the other, such as *intu* for goal (3.22) or *at* for location (3.23), but these are less common.

3.22 *wal i bin ran~ran, i bin ran **intu dis tri***
well 3SG PST run~DUR[39] 3SG PST run into DET tree
i bin it-im im!
3SG PST hit-TR 3SG
and he was running and running, and he ran into this tree, he hit it! (SD092:SC7)

3.23 *NAME **at priskul***?
NAME at preschool
is NAME at preschool? (SD005:SE6)

---

[39] Here the reduplication is marking durative aspect, further emphasised by a lengthening of the vowels and a heightened pitch.

Also as expected, *fom* only ever marks SOURCE. Surprisingly, there is one phrase where *na* marks SOURCE (3.24). In this utterance the verb *ged-im* carries the ablative semantics, so the meaning is clear even though *na* does not typically mark SOURCE. Of note is that this phrase is from the same speaker who used postposed *ana*. Both of these utterances also come from a sand story that she is performing for two children, so she may be intentionally speaking in a unique way to create interest. Indeed, in the transcript notes, Disbray wrote that the speaker was recommended as a skilled storyteller.

3.24   *"wi go ged-im ding na, parnttali **na tri**".*
        we   go   get-TR   thing   now   bush.orange   ABL   tree
        "let's go get those things now, bush oranges from the tree" (SD062:SB3)

The only other markers of SOURCE are *o*, as discussed above, *off* (3.25), and rarely *-kVna* (3.26).

3.25   *ah ah ya yu gid-im **off im**.*
        ah   ah   ya   you   get-TR   off   3SG
        ah ah yeah get it off her. (SD015:SD4)

3.26   *an i bin jamp-at fom dat nes na, fom dat*
        and   3SG   PST   jump-out   from   DET   nest   now   from   DET
        *boi-kayi takka, **takka-kana**, yu luk deya*
        boy-POSS   hand   hand-ABL   you   look   there
        and it jumped out from the nest now, out of that boy's hand, out of his hand, see? (SD006B:SC7)

Focusing on semantic LOCATION, Figure 3.4 depicts the distributions of the same prepositions across the four narrow subsections of LOCATION.
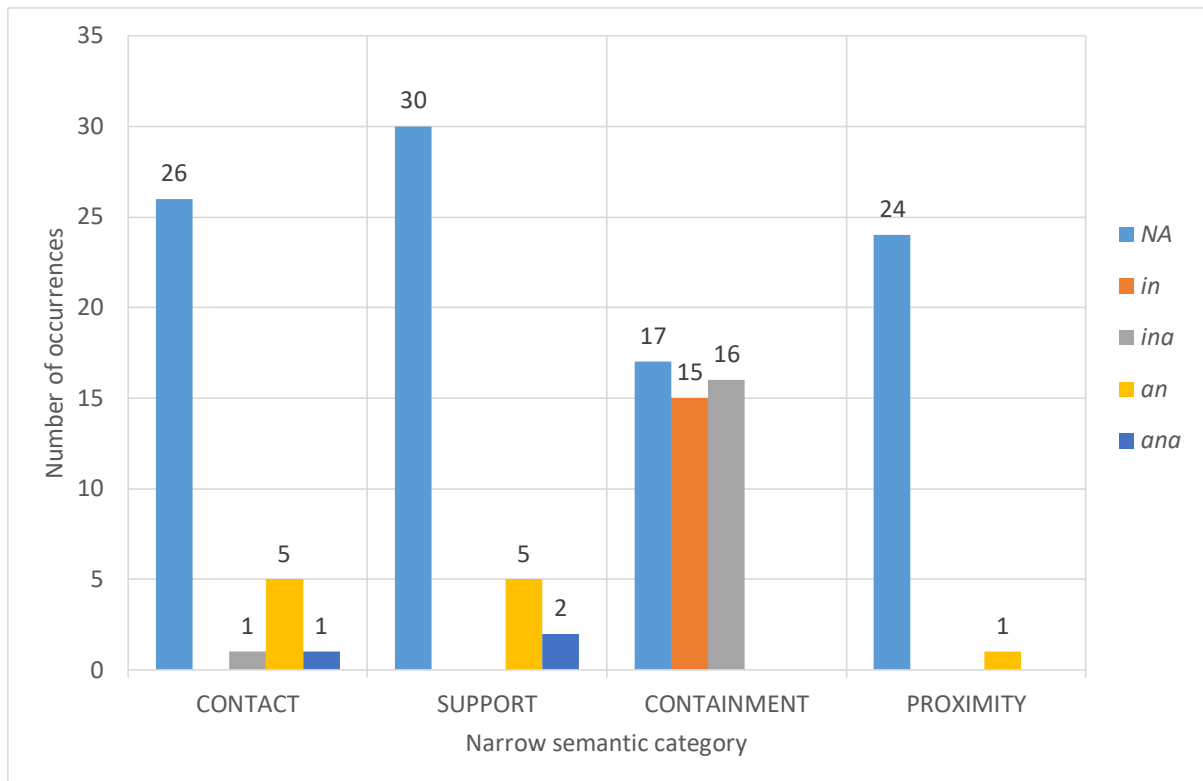
Figure 3.4: Narrow LOCATION semantic distributions of *NA*, *in*, *ina*, *an*, and *ana*.

This further shows the versatility of *NA*, which is used across all categories. It is used slightly less often for CONTAINMENT, but this is due to an increased preference towards *in* or *ina* for this category. *NA* is also almost the only preposition used to mark PROXIMITY, which may be due to the fact that it is a semantically underspecified marker and PROXIMITY is often an underspecified relationship, expressing a generic 'closeness'. The one time that *an* is used to mark proximity is in example 3.27, where the locative phrase is more idiomatic than literal. The construction is very similar to and likely to be borrowed directly from the English *on both sides*.

3.27 *i   bin   na   midl   an   dubala   **an**   **both**   **said***
      3SG   PST   LOC   middle   and   3DU   LOC   both   side
      garra   stik.
      with   stick
      he was in the middle and there were two men on either side of him with sticks.
      (SD093:SD1)

Apart from 3.27, *an* and *ana* always express SUPPORT or CONTACT, as *on* does in English.[40] *in* is entirely restricted to the expression of CONTAINMENT, whereas *ina* has one exception where it marks contact (3.28). This reveals that, at least for this speaker, *ina* has a broader or slightly transposed semantic range compared to its English derivation *in*, and it is potentially slightly different to Wumpurrarni English *in* as well.

3.29	*an*	*koki*	*bin*	*greb-im*	*dat*	*pusi*	*na*	*yu*	*luk,*
	and	bird	PST	grab-TR	DET	cat	now	you	look

ina   fingka-kana.

LOC   finger-LOC

and the bird grabbed that cat, you see, on its finger. (SD028:SB1)

In sum: *na* is by far the preferred locative preposition for all semantic categories except for source; the semantic ranges of *in* and *ina* show little differentiation, and the same for *an* and *ana*, suggesting that their distinctions lie outside of semantics;[41] and apart from rare innovations by certain speakers, locative prepositions in Wumpurrarni English typically behave similarly to their English derivations.

3.2.2 Semantics of Other Locatives

Briefly looking at the semantic ranges of the other locative in Wumpurrarni English, it is clear that the only semantic limitation of the suffixes is a dispreference to mark SOURCE, as depicted in Figure 3.5, however *-kVna* does mark SOURCE five times. This semantic expansion of *-kVna* in Wumpurrarni English may be a change in progress alongside its expansion to mark LOCATION in intransitive clauses and the reduction of vowel harmony (Meakins et al., 2020).[42] The suffixes show no trends across the narrow categories of LOCATION.

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[40] Even in 3.27 *an* expresses SUPPORT in a way. The physical situation that the speaker is describing is one of PROXIMITY, where the two men were surrounding the one in the middle, but slightly less literally the speaker is setting out the two 'sides' of the man in the middle, and expressing that the two men are being supported by those sides.

[41] Disbray (2008, p. 70) states that *ina* and *ana* occur "overwhelmingly without determiners". This is supported by the present data: over 90% of *in* and *an* precede determiners, while *ina* and *ana* precede a determiner only twice in their 43 occurrences. The low co-occurrence of *ina* and *ana* with determiners is potentially because the *-a* represents a historical determiner (*a*, *da*, or *dat*) that has become fused to the preposition. Thus the difference between these prepositions is clearly morphosyntactic, although it may be that *ina* and *ana* also retain some semantic remnant of the determiner.

[42] The changes described by Meakins et al. (2020) are also in progress in the modern Warumungu of speakers growing up after the 1980s, as well as in Wumpurrarni English. Future research could investigate whether these younger speakers ever use *-kVna* to mark source when speaking Warumungu.
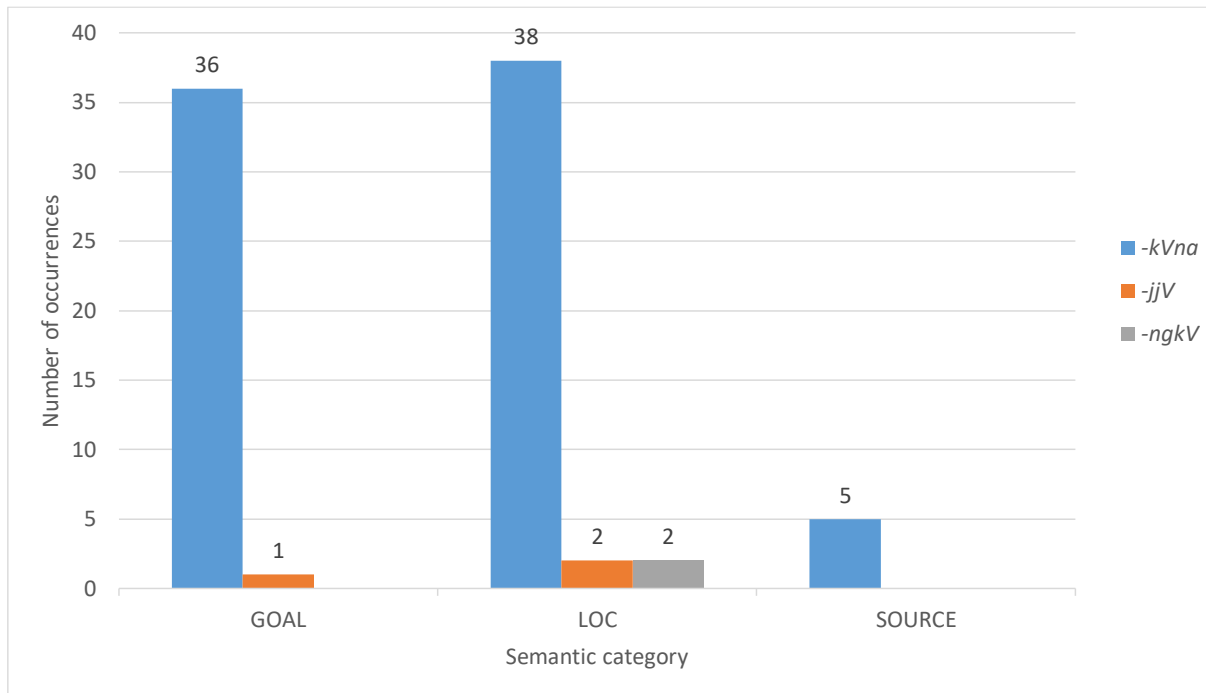
Figure 3.5: Broad semantic distribution of *-kVna*, *-jjV*, and *-ngkV*.

Locative adverbs are too infrequent too graph, but in general they matched their semantics in their source language, with some subtle divergences. For example, the six occurrences of *kantu* all clearly express 'inside', whereas in Warumungu *kantu* can also mean 'down', so the range of this marker has potentially narrowed in Wumpurrarni English. There are also some uses of the adverb *insaid* which appear slightly different to how they would be used in English. *inside* in English typically denotes a figure contained on all sides by the ground. In example 3.29, *insaid* is used to denote a figure that is only partially enclosed, where *in* would more likely be used in English.[43]

3.29 *i   bin   lak-im-ap   papi   **na**   **yard   insaid**.*
      3SG   PST   lock-TR-up   puppy   ALL   yard   inside
      it locked up the puppy in the yard. (SD044D:SD1)

The same speaker also produces example 3.30, where the English equivalent would be closer to *into*.

---

[43] For example, the Corpus of Contemporary American English (Davies, 2008) contains 2,846 tokens of *in the yard* and only 7 of *inside the yard*.

3.30 *an   im   go   bek   **na   skin   insaid**   na .*
      and 3SG go   back ALL   skin   inside   now
      and it went back into his skin. (SD093:SD1)

These are all of the cases of postposed *insaid*; all three cases of preposed *insaid* act more similarly to English *inside*. This represents a small piece of evidence for coherence: when the syntax of *insaid* is less English-like, its semantics also tend to be less English-like. There is also some degree of intra-speaker coherence, as on both occasions SD1 uses *insaid* with less English-like syntax and semantics.

Bare locatives were used to express GOAL 24 times (3.31), LOCATION 5 times (3.32), and never SOURCE. They tend to be used when the noun refers to a place (3.33), but not always (3.34).[44] These findings are reminiscent of Hudson's (1981) description of Fitzroy Valley Kriol, however she states that bare locatives are never used for LOCATION and that they are only used when the noun refers to a place.[45]

3.31 *dei   bin   go   **natha-mob-kayi**   kemp,   disaid.*
      they PST   go   other-PL-POSS   camp   this.way
      they went to another group's camp, over here. (SD062:SB3)

3.32 *fut   bin   gid   stak   deya,   dat   jina   **yuwala**.*
      foot PST   get   stuck there   DET   foot   stick
      his foot got stuck there, his foot on the stick (SD006B:SC7)

3.33 *dei   go-in   **Adelaide**   damab   deya.*
      they go-PROG   Adelaide   they   there
      those people there are going to Adelaide. (SD021:S04)

---

[44] Note that a bare locative phrase is only produced by a child once, in *i bin go skul na* 'he went to school now' (SD009:SE8:4yo).

[45] However, whether Hudson means a proper noun referring to a place or any type of place noun, and if so how that is defined, is unclear.

3.34   *wanppinyi*   *ama*   ***purluju****.*

        fall.PST   3SG.S   head

        it fell onto his head. (SD015:SD4)

3.3 Discussion

In summary, Wumpurrarni English has been shown to have three classes of locative markers – prepositions, suffixes, and adverbs – which are distinguished based on morphosyntactic and semantic properties. Prepositions, in particular *na*, were the most common way to mark location. Most locative phrases had a single locative marker, but many also had two or none. Finally, NA and the suffixes were used broadly across GOAL and LOCATION, and rarely for SOURCE, while the other markers tended to have more specific semantic distributions. I now discuss what these results reveal about Wumpurrarni English's historical development and its structural relationship to its source languages.

3.3.1 Historical Influence from Source Languages

The suffixes derive from Warumungu, the prepositions from English and Kriols, and the adverbs from English and Warumungu. However, most of these markers show some divergence from their form or function in the source languages. These divergences can often be linked to complex substrate influences from the other source languages. One clear and intriguing example of this is the semantic generalisation of the form *-kVna*. This occurred through a multi-step process, schematised in Table 3.4.

First, the form *along* which has a specific locative meaning in English, was borrowed into Kriols as a generic marker of GOAL and LOCATION due to influence from the many Aboriginal substrate languages which typically have two case markers for location – one for allative and locative, and another for abalative – or three – one each for allative, locative, and ablative (Levinson & Wilkins, 2006; Munro, 2005; Sandefur, 1979; Schultze-Berndt et al., 2013). There are two potential routes for the second step. *langa* might have been borrowed into Wumpurrarni English as the reduced form *na* with the same semantic range, which would have been further reinforced by the Warumungu case system, which has a three-way distinction in intransitive clauses – allative *-kVna*, locative *-ngkV/-jjV*, and ablative *-ngara* – and a two-way distinction in transitive clauses – allative and locative *-kVna*, and ablative *-ngara* (Meakins et al., 2020;

Stage	Form	Substrate influence	Outcome
1	*along* from English.	Broad *'ALL + LOC vs. ABL'* or *'ALL vs. LOC vs. ABL'* case systems in many Aboriginal languages.	Kriol preposition *langa* which marks *ALL + LOC*.
2a	*langa* and *na* from Kriol.	Reinforced by Warumungu case system.	*langa* and *na* are borrowed into Wumpurrarni English as *na.*
2b	*on/in* from English.	Semantic distribution of Kriol *langa*, reinforced by Warumungu case system.	*na* develops in Wumpurrarni English as *ALL + LOC* marker.
3	*-kVna* from Warumungu.	Semantic distribution of *na* in Wumpurrarni English, and continual influence from *langa* in surrounding Kriols.	*-kVna* is adopted into Wumpurrarni English with the same semantic distribution as *na.*

Table 3.4: Forms and functions of English, Kriol, and Warumungu locative markers leading to the current semantic range of *-kVna* in Wumpurrarni English.

Simpson, 2002). Locative *na* has also been documented as a variant of *langa* in some Kriols, such as Barunga Kriol (Ponsonnet, 2016), so it is possible that Wumpurrarni English speakers borrowed the form *na* directly. Alternatively, the Wumpurrarni English *na* may have developed partially independently from the Kriol locative, perhaps deriving from English *in* and *on*, with a semantic substrate influence from the Kriol and Warumungu systems.[46] Then, in the third step, with influence from *na* in Wumpurrarni English and *langa* in Kriols, *-kVna* has now been adopted into Wumpurrarni English with an identical semantic distribution as *na*. This was shown by Meakins et al. (2020) and has been supported by the present data. Both *na* and *-kVna* are even rarely used to mark source, which further supports their semantic equivalence and has not been previously shown.

3.3.2 Structural Relation to Source Languages

Analysing the synchronic structure of locative phrases of Wumpurrarni English, there are intriguing parallels with its source languages. These structures are illustrated in Figure 3.6, with Roper River Kriol standing as an example of Kriols.

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[46] The source of the final *-a* vowel in both *na* and *langa* is unclear. It is potentially related to a fusion of the determiner in the English *in/on/along the/a N*, which may also contribute to the lack of determiners in Kriol and Wumpurrarni English, as appears to be the case for *ina* and *ana*. It may also be due to a general preference for vowel-final words. This is not, to my knowledge, discussed in the literature; for example the derivation of *langa* in Roper River Kriol is given by Hudson (1981) simply as *along*.
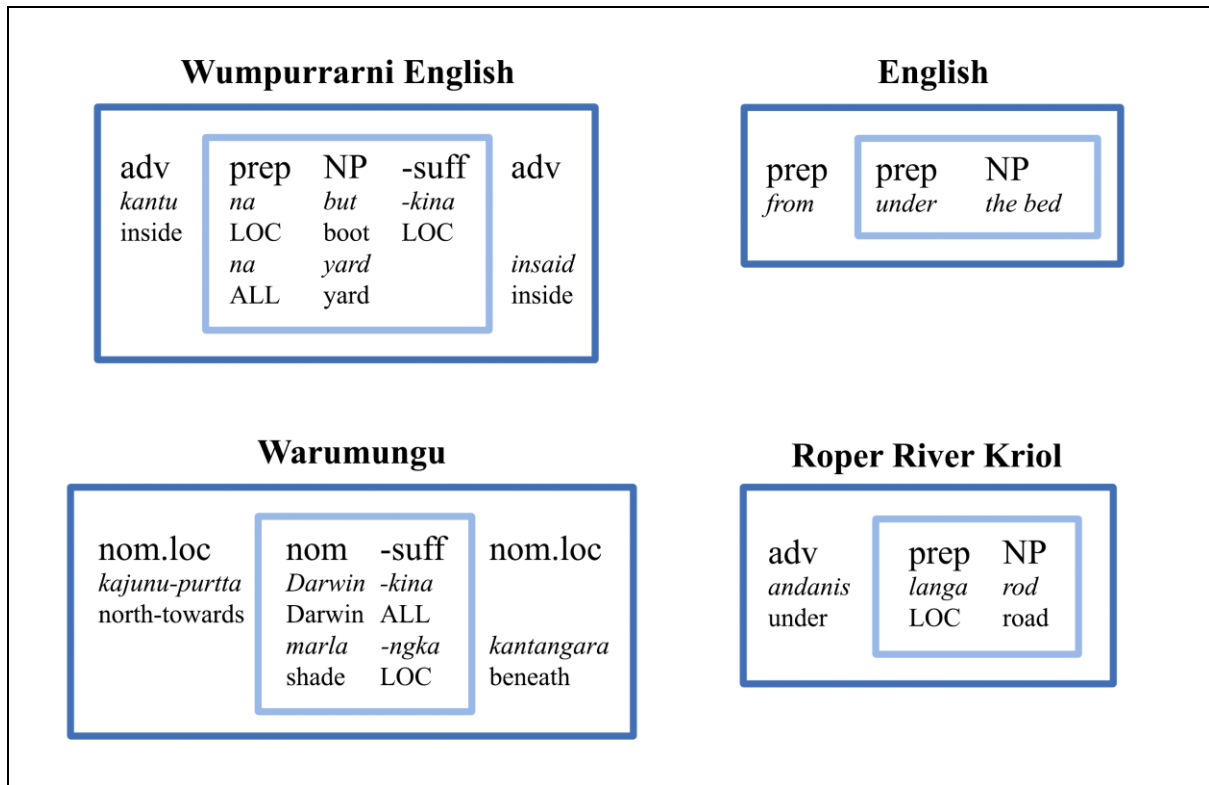
Figure 3.6: Schematised locative phrase structures in Wumpurrarni English and source languages.[47]

In Warumungu and Roper River Kriol, there is a fairly distinct contrast between the necessary internal constituent – marked in light blue – and the optional external components – marked in dark blue. The internal constituent is the minimal, core element of the locative phrase, which nonspecifically marks location with a suffix or the preposition *langa*. The outer components, the locative nominals or adverbs, may then optionally be added to specify the location relation. In English this structure does not exist so clearly. There is no distinction between a class of nonspecific markers and a class of specific ones. Locative prepositions or adverbs can be stacked to create a *more* specific phrase – marked in dark blue – but the internal constituent is not unspecified – marked in light blue. Wumpurrarni English exhibits a blend of these structures. There is the same necessary, nonspecific internal constituent and optional outer components, and there is a distinction in specificity of locative classes, especially when comparing the suffixes with the adverbs. Within the class of prepositions, however, there is *NA*

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[47] The Wumpurrarni English phrases come from the dataset, the Warumungu phrases come from Simpson (2002), the Roper River Kriol phrase comes from Sandefur (1979), and the English phrase comes from Huddleston and Pullum (2002).

which is nonspecific – like *langa* in Kriols – while the rest of the prepositions – such as *in*, *ina*, *an*, *ana*, and *fom* – are specific like their English derivations.

Compared to other Kriols, Wumpurrarni English shows two significant divergences in its locative phrase structure. First is its locative suffixes derived from Warumungu. The only other Kriol I am aware of that retains the locative case markers of its source language is Alyawarr English, where some speakers still use the locative *-itwew* suffix from Alyawarr (Dixon, 2017). Further research would be necessary to determine which Kriols have retained case markers from their source languages, and to understand why some Kriols retain these markers while others do not. The second major divergence is its ability to postpose locative adverbs, and even in one utterance a preposition. This feature is due to influence from Warumungu which has postposed locative nominals, and also occurs in other domains such as the postposition of possessive markers (Disbray & Simpson, 2005). Postposition of locative markers has not, to my knowledge, been described in any other Kriol variety.

This chapter has presented a syntactic and semantic description of locative phrases in Wumpurrarni English and provided a clearer understanding of its synchronic and diachronic relationship to Warumungu, English, and other Kriols. This understanding forms the foundation of the investigation in Chapter 4.

Chapter 4: Continua and Coherence

In this chapter I address the second research question: how do morphemes in locative phrases co-vary according to their source language? This investigation relies on the E(nglish), K(riol), and W(arumungu) source language coding outlined in section 2.3.2. First I provide qualitative and quantitative descriptions of the co-variation of locative markers, determiners, and nouns within locative phrases. This affords insight into the degree of lectal coherence in Wumpurrarni English and sheds light on whether there is a continuum and whether the two-target or three-target model is more accurate. Based on these results, I then discuss how schemas may be an apt theory to explain the patterning of morphemes in Wumpurrarni English. Finally, I conclude with a summary of results and a reflection on limitations and future directions.

4.1 Co-variation by Source Language

4.1.1 Descriptive and Impressionistic Analyses

In each locative phrase, speakers may use locative markers deriving from one or more source languages. They mostly use only one marker (78%), often two markers (14%), sometimes no markers (7%), and rarely three markers (1%) (Figure 3.1). This section begins by investigating the co-variation of locative markers themselves, and then analyses how the language derivations of the markers co-vary with nouns and determiners in locative phrases.

Table 4.1 compares the number of locative markers in a phrase with the number of languages those markers derive from. Phrases with one marker or no markers are not shown. The table shows that phrases with two or three markers typically source those markers from two languages, and out of the 63 total phrases which have multiple locative markers only seven are fully coherent in their language derivations.

	Number of language derivations		
Number of markers	*One*	*Two*	*Three*
Two	7	50	*N/A*
Three	0	5	1

Table 4.1: Number of locative markers in a phrase compared to number of language derivations.

This distribution is further investigated in Table 4.2, which shows the frequency of each language combination, again only including phrases with more than one locative marker. Type and order of marker is not taken into account, and phrases with two as opposed to three markers are not distinguished. For example, the bolded phrases in examples 4.1-4.3 are all grouped as KW.

Language source	Count	%
E-only	5	8%
K-only	1	2%
W-only	1	2%
EK	10	16%
KW	41	65%
EW	4	6%
EKW	1	2%
Total:	**63**	**100%**

Table 4.2: Language sources of locative marker combinations.

4.1
           K   W

*na   yu   kam   nyina   **na**   **lap-kina**, mirtinpi-kina.*

now you come sit.IMP ALL lap-ALL knee-ALL

come sit on my lap, on my knee. (SD072:SA2)

4.2
         W   K   W

*dubala sid-dan **jana** **na** **tri-kina**, na   yuwala-kina rigin.*

3DU   sit-down up   ALL tree-ALL ALL tree-ALL   reckon

those two sit up in the tree, in the tree see. (SD072:SA2)

4.3
         W   K

*i   jamp **kantu** **ina** **plein**.*

3SG jump inside ALL plane

it jumped inside the plane. (SD028:SA2)

The single EKW phrase is shown in example 4.4. Phrases like these are uncommon because of the rarity of using three locative markers combined with the rarity of combining all three language derivations.

4.4   E   K   W

*sneik   bait-im   im   na   yu   luk,   **rait   na   fut-kana***.

snake   bite-TR   3SG   now   you   look   right   LOC   foot-LOC

the snake bites him, see, right on his foot. (SD093:SD1)

Thinking about the continuum, it is interesting to note that KW phrases are very common (n = 41), EK phrases are quite rare (10), and EW phrases are very rare (4). This suggests there is indeed a barrier to blending E and W forms, a weaker barrier for E and K forms, and no barrier for K and W forms. This result does not clearly support the three-target continuum model as hypothesised in Figure 1.2, as that model predicts an even amount of blending between all three language sources. It does not clearly support the original two-target model either, however, thus an alternative model will be proposed in section 4.2.1. For the moment, however, I will use the linear two-target model as a graphical approximation of the continuum to investigate how language derivations of locative markers co-vary with other features of the locative phrase. The way that marker usage corresponds to this model is illustrated in Figure 4.1, with W-only at the heaviest end, E-only at the lightest end, K-only in the middle, and blends of K with W or E in between. Bare locative phrases and the rare EW phrases will be discussed separately.
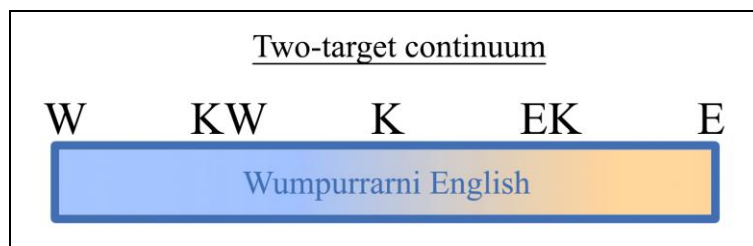

Figure 4.1: An interim linear continuum model for analysis of co-variation.

Figure 4.2 plots the language derivation of locative markers in a phrase against the language derivation of the noun within that phrase.[48] Note that now, all phrases with one or more locative markers are included. A clear pattern emerges: the lighter the locative marker derivation, the

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[48] 'Noun', here, includes proper nouns and pronouns. Five phrases are excluded here as the language derivation of the noun was neither English nor Warumungu, or it could not be confirmed.

more likely the speaker is to select an English noun; the heavier the derivation, the more likely a Warumungu noun. English and Warumungu nouns occur with equal frequency in phrases with only W markers, whereas English nouns occur in over 90% of phrases with only E markers. There does not appear to be a discrete split in usage, either. Instead there is nondiscrete grading between the heaviest and lightest ends. The only outlier is the EK group, which occurs with slightly more Warumungu nouns than the K group. However, this group only has ten tokens, so caution should be taken in interpreting its results. This overall trend supports the existence of a continuum in Wumpurrarni English, rather than diglossia; however further statistical analyses could test this, as it is possible that the W and KW groups do not significantly differ from each other, and the same for the K, EK and E groups.
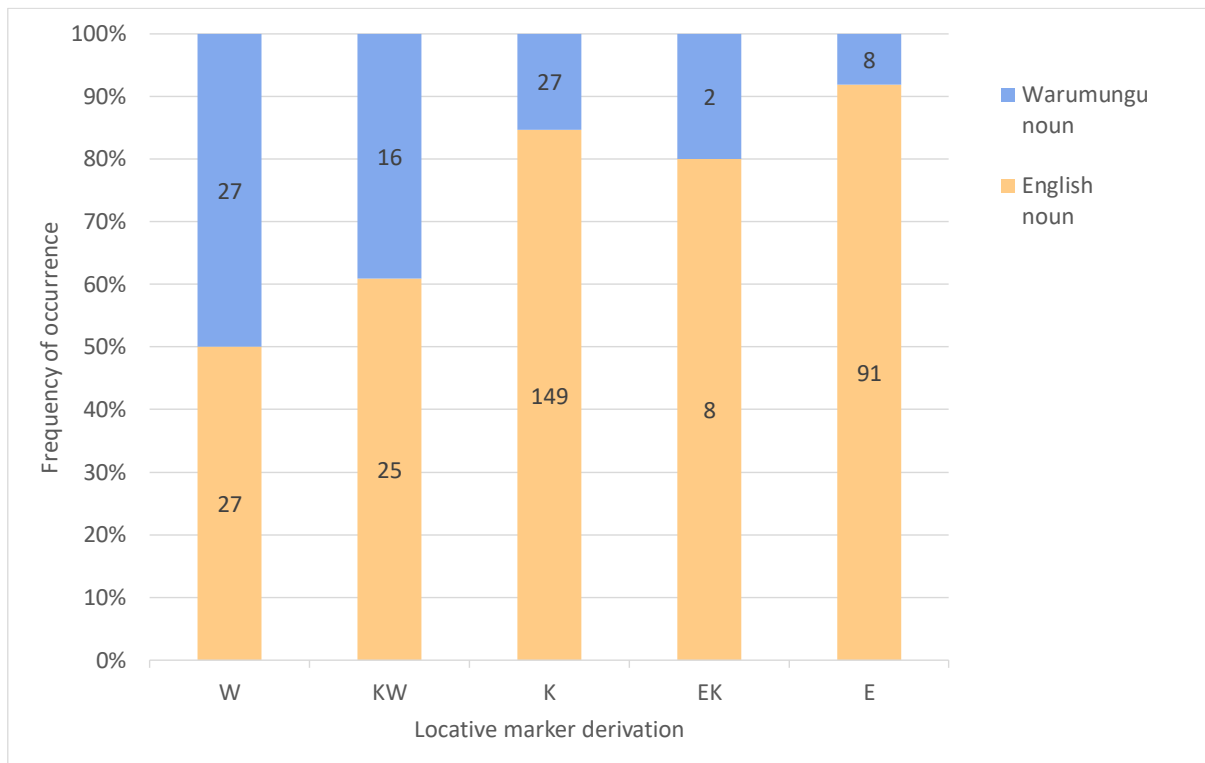

Figure 4.2: Locative marker derivation in relation to use of a Warumungu or English noun.

Surprisingly, the EKW (4.4) and all of the EW (e.g. 4.5 and 4.6) phrases had an English noun. The EKW phrase has a K preposition, and all of the EW phrases have E prepositions, whereas the W markers are all postnominal. Perhaps prepositions have a stronger effect on the choice of noun than other markers.

4.5   *eh   yu   sid-dan   **an   da   floor-kuna**.*
       eh   you   sit-down   on   DET   floor-ALL
       hey, sit down on the floor. (SD021:S04)

4.6   *oh   yu   pud-um   **in   deya   kantu**.*
       oh   you   put-TR   in   there   inside
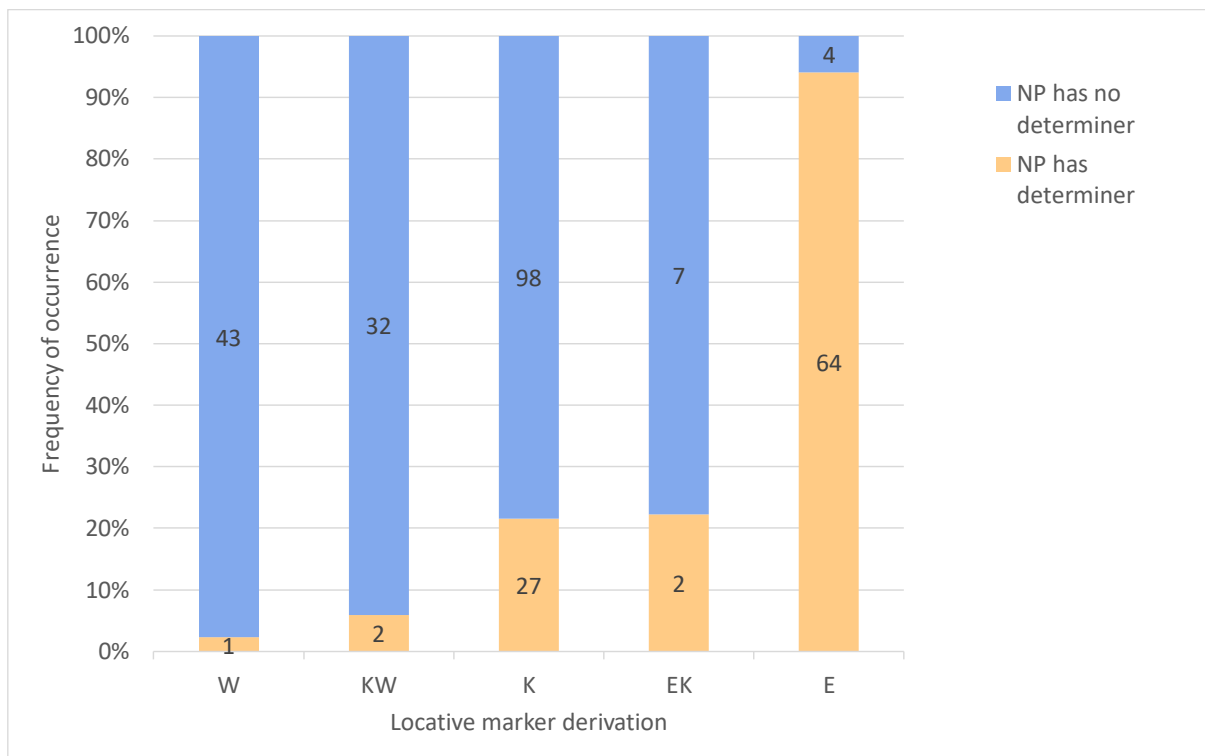   oh, put it inside there. (SD006A:SA2)

Figure 4.3: Locative marker derivation in relation to use of determiner.

Figure 4.3 plots the same locative combinations against the use of a determiner within the phrase. The determiners are most commonly *dat*, *da*, and *dis*, but also words which fill the same slot as these words such as *natha* 'another', *both* 'both', possessive pronouns such as *main/my* 'my', *yo/yos/yo-kayi* 'your', *im-kayi* '3SG-POSS', and possessive NPs such as *jukjuk-s* 'the bird's'. In general the presence of determiners is hypothesised to be characteristic of lighter forms of Wumpurrarni English, although this depends on the type of determiner (Disbray, 2008). Phrases with proper nouns and pronouns, which cannot take determiners, and other expressions which do not typically take determiners in English are excluded from this

analysis.[49] Phrases with *ina* or *ana* have also been excluded because, as suggested in Chapter 3 and by Disbray (2008), these prepositions are potentially a fused *preposition + determiner* form, which would lead to a distortion of the results.

Figure 4.3 reveals a trend analogous to Figure 4.2: the lighter the locative marker derivation, the more likely the speaker is to use a determiner; the heavier the derivation, the less likely they are to use a determiner. The grading of this pattern, however, is different to that of noun use. There appear to be three distinct groups: W and KW phrases almost never have determiners, approximately 20% of K and EK phrases have determiners, and 90% of E phrases have determiners. The large disparity between the K and EK phrases, and the E phrases, further supports the hypothesis that prepositions have the strongest effect on the following NP: the E utterances all have an E preposition (4.7), whereas the EK phrases all have a K preposition and an E adverb (4.8), and the K phrases just have a K preposition.

   4.7   *pud-um   awei   na,   **in   the   box**.*

         put-TR   away   now   in   DET   box

         put it away now, in the box. (SD005:SE3)

   4.8   *ye,   go   **insaid   na   kabiaus**   na.*

         yes   go   inside   ALL   cubby.house   now

         yes, go inside the cubby-house now. (SD057:SA2)

The single W phrase with a determiner used *im-kayi* (4.9), which is a heavier choice than the equivalent *her*. However, the two KW phrases with determiners use *da*, a relatively light determiner. Only one of the EW phrases uses a determiner, which is also *da*, as shown in example 4.5.

   4.9   *yu   pud-im   **im-kayi**   mungku-kana.*

         you   put-TR   3SG-POSS   stomach-ALL

         put it on her belly. (SD021:SB1)

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[49] Examples of such phrases are *in ospital* 'in hospital' (SD009:SE3) or *na priskul* 'at preschool' (SD005:SE6).

Sixty-nine percent of bare locative phrases have an English noun and 20% have a determiner, suggesting that bare locative phrases may be heavier than K phrases but lighter than KW phrases. The four EW phrases all contain an English noun and one phrase has a determiner. These all have an E preposition and a W suffix or postposed adverb. More data would be required to understand how EW phrases are situated among the other locative combinations.

This section has presented some preliminary descriptive and impressionistic analyses of co-variation of the source languages of locative markers, nouns, and determiners in Wumpurrarni English. I now perform some statistical analyses to provide further insight into coherence and the continuum.

4.1.2 Statistical Analyses

This section sets out to test the hypothesis that there are patterns of co-variation between different morphemes within locative phrases by analysing interrelations between the source languages of locative prepositions, locative suffixes, nouns, and determiners within a locative phrase. I do not analyse adverbs as they occur too infrequently. Table 4.3 presents a crosstabulation of the source language of the preposition and the source language of the noun in the phrase. It shows that Warumungu nouns rarely follow E prepositions, instead occurring more commmonly in phrases without prepositions. The opposite distribution is true for English nouns. English and Warumungu nouns occur similarly frequently with K prepositions. The overall effect of this relationship is significant ($p < .001$) and of medium strength ($V = .26$).

		Warumungu noun	**English noun**
E prep	*Observed*	8	87
	Expected	20.5	74.5
K prep	*Observed*	45	183
	Expected	49.1	178.9
No prep[50]	*Observed*	36	54
	Expected	19.4	70.6

Table 4.3: Crosstabulation of language of preposition and language of noun, X^2 (2, $N = 413$) $= 28.25$, $p < .001$, $V = .26$.

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[50] The 'no preposition' group includes phrases which have no locative markers, phrases which only have an adverb, and those which only have a suffix.

Table 4.4 crosstabulates the source language of the noun and whether or not there is a locative suffix, which is always sourced from Warumungu. Almost half of the Warumungu nouns in locative phrases occurred with a suffix, whereas only 15% of English nouns occurred with a suffix. This effect is significant ($p < .001$) and slightly stronger ($V = .33$) than that for the prepositions.

		Warumungu noun	**English noun**
Suffix	*Observed*	43	49
	Expected	19.8	72.2
No suffix	*Observed*	46	275
	Expected	69.2	251.8

Table 4.4: Crosstabulation of presence of suffix and language of noun, X^2 (1, $N = 413$) = 42.53, $p < .001$, $V = .33$.

Table 4.5 crosstabulates prepositions with presence of a determiner.[51] E prepositions almost always preceded a determiner, whereas K prepositions and tended not to precede determiners and phrases without prepositions almost never had determiners. This effect is significant ($p < .001$) and strong ($V = .67$).

		No determiner	**Determiner**
E prep	*Observed*	5	63
	Expected	45.2	22.8
K prep	*Observed*	138	32
	Expected	113.0	57.0
No prep	*Observed*	61	8
	Expected	45.9	23.1

Table 4.5: Crosstabulation of language of preposition and presence of determiner, X^2 (2, $N = 307$) = 137.98, $p < .001$, $V = .67$.

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[51] In the analyses presented here that involve determiners, the same exclusions were applied as described for Figure 4.3: phrases which cannot take a determiner, and phrases which contain *ina* or *ana*, are excluded.

Table 4.6 crosstabulates the occurrence of locative suffixes and determiners. The effect is significant ($p < .001$) and the effect size is medium ($V = .35$), showing that suffixes and determiners have a tendency not to occur in the same phrase.

		No determiner	Determiner
Suffix	*Observed*	74	4
	Expected	51.8	26.2
No suffix	*Observed*	130	99
	Expected	152.2	76.8

Table 4.6: Crosstabulation of presence of suffix and determiner, X^2 (1, $N = 307$) = 36.20, $p <$ .001, $V = .35$.

Completing the statistical investigation between these four variables, there is a weak relationship between presence of determiner and language of noun – X^2 (1, $N = 307$) = 11.02, $p < .01$, $V = .20$ – as English nouns occur more frequently with determiners than without, and Warumungu nouns rarely occur with determiners. There is also a fairly strong relationship between language of preposition and presence of suffix – X^2 (2, $N = 419$) = 93.74, $p < .001$, $V = .47$ – as suffixes almost never co-occur with E prepositions and they occur slightly less commonly than expected with K prepositions if there were no relationship; instead, suffixes tend to occur in phrases with no prepositions at all.

4.2 Discussion

4.2.1 The Continuum

The results presented in this chapter support previous claims that there is a continuum in Wumpurrarni English (e.g. Disbray, 2008; Disbray & Simpson, 2005; Vaughan et al., 2015). This conclusion is based on two findings. First, there are a wide range of ways that locative phrases can be constructed, using forms derived from English, Warumungu or other Kriols. Secondly, while these constructions can be roughly ordered as heavier or lighter than one another, they cannot be split into discrete categories, one which is heavy and one which is light. This nondiscrete variation was supported by the grading of noun and determiner use in relation to locative marker derivation in locative phrases, as shown in Figures 4.2 and 4.3. These two findings are characteristic of other contact languages which exist on continua (e.g. Bell, 1976; Bickerton, 1973; DeCamp, 1971; Grama, 2015). Table 4.7 illustrates a spectrum of some of

these possible constructions, exhibiting a range of locative phrases in an order from heavy to light which has been approximated based on previous literature and the findings in this thesis.

	Construction	LOC	Translation	ID
Heavier ↑	*ngurru-jju*	W	on your nose	(SD005:SE3)
	na yuwala-kina	KW	on the tree	(SD072:SA2)
	na tri-kana	KW	by the tree	(SD062:SB3)
	yuwala	B	on the stick	(SD006B:SC7)
	pram	B	in the pram	(SD067A:SB3)
	na purluju	K	on his head	(SD092:SC7)
↓	*na tri*	K	to the tree	(SD062:SB3)
Lighter	*na dat tri*	K	on the tree	(SD092:SC7)
	in da ka	E	in the car	(SD074:SE1)

Table 4.7: A continuum of locative phrase constructions in Wumpurrarni English.

Table 4.7 maps the variation to a linear continuum, with no mixing of E and W locative markers. These blends were rare, however they did occur. Of the phrases with two markers, KW was the most common combination with 41 occurrences, distantly followed by EK with ten and EW with four occurrences (Table 4.2). The chi-square tests in section 4.1.2 further confirmed that English- and Warumungu-derived forms were very unlikely to co-occur with each other. Kriol-derived locatives co-occurred with both English and Warumungu forms, occurring slightly more often with English nouns than Warumungu nouns, but slightly less often with determiners than without. These findings are encapsulated by Figure 4.4, which presents a modified version of the three-target continuum model in Wumpurrarni English. The two-target model does not account for the occurrence of E and W blends, while the first three-target model does not account for their rarity or for the rarity of E and K blends. This new model is essentially a fusion of the two original models, which more accurately reflects the patterning of the morphemes in the data using distance between vertices as a representation of likelihood for blending: Warumungu and Kriol forms combine frequently, Kriol and English forms combine a moderate amount, and English and Warumungu forms combine very rarely.
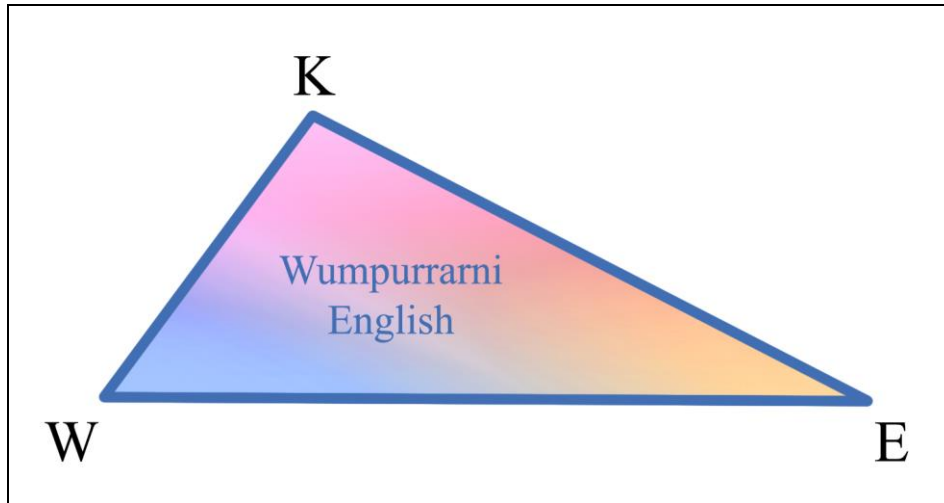
Figure 4.4: A revised model of the continuum in Wumpurrarni English.

However, this study only examined locatives, and it is far from certain that the whole language operates in the same manner. Future research could investigate this patterning in other domains of Wumpurrarni English to seek further support for the continuum and to determine whether it functions in the same way throughout the language. This is especially important in the domain of phonology, given that Bundgaard-Nielsen and Baker (2016) argue that there is no continuum in the phonology of Roper River Kriol.

4.2.2 Lectal Coherence

Shifting focus to the related theory of lectal coherence, the results are varied but overall they suggest there is a moderate amount of coherence within locative phrases in Wumpurrarni English. The strongest results are that:

- E prepositions almost always precede a determiner;
- English nouns overwhelmingly occur without locative suffixes;
- Kriol prepositions predominantly occur without determiners; and
- Warumungu nouns mostly occur with locative suffixes.

All of these constructions are equivalent to how the same expressions would be constructed in the source languages; in other words, these co-variations are evidence of lectal coherence. However, there remain many phrases which do not exhibit much coherence. For example, the locative phrase in example 4.10 contains a preposition derived from Kriol, a determiner derived from English, and a noun and suffix derived from Warumungu.

4.10 *dei   bin   sid-dan-bat   **na   da   wuntta-kana**.*
      they   PST   sit-down-DUR   LOC   DET   windbreak-LOC
      they were sitting at the windbreak. (SD062:SB3)

These results are in line with previous literature; most past research has found low to medium levels of coherence within the communities they studied (e.g. Guy, 2013; Guy & Hinskens, 2016; Oushiro, 2016; Thorburn, 2014). The majority of studies investigate individual coherence, analysing whether participants who use one socially coded variant frequently also use other similarly coded variants equally frequently (Guy, 2013). This thesis, however, investigated phrase-level coherence, analysing the co-variation of morphemes within a phrase regardless of the speaker. Thus, the findings of medium levels of coherence in this study may not correspond to the medium levels of coherence found in the literature. Future research could apply the individual-level methodology to Wumpurrarni English to determine how close this correspondence is. What is not revealed by the results is the directionality of the correlations: does the selection of one morpheme from a particular language lead the speaker to select more morphemes from that language, or does the speaker make an initial choice which has an effect across the whole phrase?

4.2.3 Schemas

One way of understanding the continuum and the degree of coherence in Wumpurrarni English locative phrases is through schemas. In this section I explain how schemas may have influenced the structure of Wumpurrarni English.

Wumpurrarni English, like all contact languages, was developed by a group of speakers fluent in other languages. In this case those languages were mainly Warumungu, English, and other Kriols. Thinking hypothetically about the first generation of children growing up in this contact environment, it is likely that much of their input would have been in coherent utterances in one of these languages. It is unlikely that the majority of their input would have been in inconsistent, morpheme-by-morpheme blends of the languages, especially given research showing that speakers do not construct utterances morpheme-by-morpheme (Bybee, 1998; Erman & Warren, 2000; Tomasello, 2002). There would be many English constructions like *on the tree*, Kriol constructions like *langa tri*, and Warumungu constructions like *yuwala-jja*, but few blended constructions like *langa the yuwala-jja*. With exposure to this input, it is likely that

this generation of speakers would predominantly acquire coherent schemas associated with English [*PREP$_E$ DET N*],[52] Kriol [*PREP$_K$ N*], and Warumungu [*NOM-SUFF*], but rarely totally incoherent schemas, such as [*PREP$_K$ DET N-SUFF*].[53] To repeat Langacker (1987, p. 412): "a speaker learns the patterns he [sic] is exposed to and uses them in preference to unfamiliar ones".

However, as is apparent in the results, Wumpurrarni English is not made up of entirely coherent phrases. This is likely due to several factors, such as multilingualism, codeswitching, creativity, and generations of acquisition, which have all influenced the structure of locative schemas. Speakers have taken parts of coherent schemas and 'cut and pasted' them together, relying on a degree of interlinguistic congruence between the parts (Sebba, 1998): for example, speakers have intuited that nouns in English and nominals in Warumungu are roughly congruent, which is why in Wumpurrarni English they can both co-occur with prepositions, determiners, and suffixes. Some common schemas now represent blends of schemas from the source languages, for example:

- [*PREP$_K$ N-SUFF*], as in *na tri-kana*, which combines the Kriol [*PREP$_K$ N*] and the Warumungu [*NOM-SUFF*];
- [*PREP$_K$ DET N*], as in *na dat tri*, which combines the Kriol [*PREP$_K$ N*] and the English [*DET N*]; or
- [*PREP$_K$ N ADV*], as in *na yard insaid*, which combines the Kriol [*PREP$_K$ N*] and the Warumungu [*NOM NOM$_{LOC}$*].

Other frequent schemas have remained the same as in their source languages, for example:

- [*PREP$_E$ DET N*] from English, as in *in da ka*;
- [*PREP$_K$ N*] from Kriols, as in *na tri*; or
- [*NOM-SUFF*] from Warumungu, as in *mangkaja-kana*.

The overall locative phrase structure presented in Section 3.1.2, and reproduced below, is merely a composite of all the schemas, an abstraction which omits reference to the source languages. However, as shown in section 4.1, the source languages of the parts correlate significantly with each other, suggesting that source language is an important factor

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[52] For clarity, I use N rather than NP in this section, omitting the possible elements of NPs apart from determiners. Further research into Wumpurrarni English schemas would likely reveal that they have a hiearchical structure, rather than the flat structures I present here.

[53] Distinguishing the abstract slots [*PREP$_E$*] from [*PREP$_K$*] assumes the speakers are aware of the language derivations of the locative markers, which may or may not be the case (cf. Vaughan et al., 2015). If they are not, an analysis using more concrete schemas may be favourable, for example with the English-like schemas [*in DET N*], [*an DET N*] compared to the Kriol-like schemas [*na N*], [*langa N*], and so on (Bybee, 1998).

in the construction of Wumpurrarni English locative phrases. Analysing and describing these phrases using schemas, such as those above, is therefore more informative than the generalised phrase structure below.

(adverb) (adverb) (preposition) NP (-suffix) (adverb)

These findings address the second research question, providing support for the existence of a continuum in Wumpurrarni English and developing a more accurate model for it, analysing the degree of coherence between morphemes, and finally discussing how schemas explain the variation and coherence in locative phrases.

4.3 Conclusion

This thesis has provided a detailed understanding of the expression of location in locative phrases in Wumpurrarni English. In Chapter 3 I showed that there are three morphosyntactic classes of locative markers – prepositions, suffixes, and adverbs – and that their semantics are similar to but show small divergences from the source languages: English, Warumungu, and other Kriols. I discussed the historical development of the preposition *na* and the suffix *-kVna*, expanding on the work of Meakins et al. (2020), showing how surface forms and semantic substrate influences from the source languages have diachronically influenced Wumpurrarni English. I also compared the structure of Wumpurrarni English's locative phrases to its source languages, finding that it exhibited features from all but was identical to none. These findings are predominantly based on recordings of unelicited conversations between Wumpurrarni English speakers, which are preferable to elicitations as the speakers are more likely to talk naturally. However this also has a limitation, as the precise semantic expressions of some utterances could not be entirely confirmed. Elicitations, with stimulus images and videos such as those used in Levinson and Wilkins (2006), would therefore complement this study. Future research could also investigate expressions of location which do not occur in locative phrases, such as those using adverbs or directional suffixes.

In this chapter I categorised locative markers according to their source language, and found that the co-variations of these markers supported the hypothesis that Wumpurrarni English is spoken on a continuum. However, the frequent co-occurrence of K and W markers compared to the infrequent co-occurrence of E and K and the rare co-occurrence of E and W suggested

that the continuum is not a linear spectrum from Warumungu to English, which is how it has been previously characterised (Disbray, 2008). Instead, I proposed a three-target continuum (Figure 4.4) which more accurately represents the variation observed in locative phrases. More data and more rigorous statistical analyses could further substantiate or enhance this model. Future research could also investigate the Wumpurrarni English continuum in phrases other than locative phrases, or domains other than morphosyntax, to determine whether this three-target continuum is accurate across the whole language.

I also analysed the co-variations of different parts of the locative phrase – locative prepositions, locative suffixes, determiners, and nouns – to gain insight into the degree of lectal coherence in Wumpurrarni English. The results suggested that there is a moderate level of coherence in relation to the language derivations of the parts: morphemes in Wumpurrarni English show significant tendencies to co-occur with other morphemes from the same source language. There is an interesting theoretical connection between continua and coherence. If the results had shown total coherence – such that the use of one Warumungu, Kriol, or English morpheme in a phrase entailed that the rest of the phrase also derived from that language – then there would be no evidence for a continuum. In fact, there would be little evidence for Wumpurrarni English as a distinct language: instead, the speakers would appear to be codeswitching between the three source languages. Future research could explore this connection and further investigate the relationship between speaking a contact language and codeswitching among that language's sources. Finally, I showed that schemas are a useful theory for understanding Wumpurrarni English's variation and development. Future research could also develop a more systematic schema-based description of the language and further examine the requirements for congruence between parts.

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