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Voice Constructions in Kanakanavu Grammar and Discourse

A dissertation submitted in partial satisfaction
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in
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by

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For A-Kong and Nai-Nai

Acknowledgements

Tavalá'o sua ísi, íkamu tati'ínge,
'Know this, you youngsters,'

mánasi ka'ánu kámu róimi
'so that you will not forget,'

nu 'ési pa kámu nu anúana.
'if you are still there in the future.'

by Angaiana Paepuli
(transcribed and translated based on Tsuchida 2003:15)

The research and writing processes for this dissertation went through an unprecedented time. Because of the global COVID-19 pandemic, I was not able to take my final planned field trip to Namasia, during which many of the descriptive and analytic questions I had would have been clarified. The instability the world has been going through ever since also planted the seeds for the gradually growing psychological pressure in me, which I did not realize was present until the later stages of writing the dissertation. Regardless, I was able to base my analysis on the data that were collected over several field trips taken prior to the pandemic. These field trips were supported by the generous funding from both UCSB and the Taiwan Ministry of Education I was so fortunate to be granted.

This dissertation would not have been possible without the help from three extraordinary speakers/educators/activists from Indigenous Taiwan, who I will always insist on calling *laoshi* (老師): Mr. Kanapaniana Pani (孔岳中老師), Mr. Ka'angaiana 'Angai (翁博學老師), and Mr. Lawsing na Yangah (劉仁善老師). Mr. Kanapaniana was the first person to introduce Kanakanavu to me. Despite being constantly occupied by his tireless efforts in creating pedagogical materials for Kanakanavu, he always makes time for transcribing and translating recordings with me. As the most generous teacher, he never stops educating me on both Kanakanavu structure and the ethical aspects of linguistics research, especially regarding what linguists can do to give back to the communities they work with. This has greatly shaped how I view the value of my work, and I will always remember the humanistic foundations of linguistics because of him. Mr. Ka'angaiana is the person I have learned the most from regarding the amazingly intricate structure of Kanakanavu. He has contributed a large amount of data on which the analysis of this dissertation is based, and without his profound cultural and linguistic knowledge it would have been impossible to analyze Kanakanavu at

the level of detail I was able to achieve. If Kanakanavu ever becomes a dormant language, the revitalization process would be so much more challenging without the legacy he would leave behind. Although Lawsing is from the Matu'uwal community, I have been so lucky to have him as my mentor and friend. As the person I have collaborated the most with on language documentation, he taught me what it means to not only love a language so deeply, but take direct actions to do what one can do for it. If Mr. Ka'angaiana's knowledge would turn out to be vital for the future of Kanakanavu, Lawsing's actions would forever change the destiny of Matu'uwal and anyone who continues to speak it.

Over the process of writing this dissertation, I have come to cherish my identity as a linguist. I am a linguist, and I will always be one regardless of what I do for a living, what I may or may not accomplish later in life, and/or where my passions will take me next. This identity is a blessing, and it's been given to me not by linguistics as a science, but by all the wonderful linguists I have had the privilege to work with. They have taught me so much about what it means to be a linguist, on intellectual, professional, and personal levels.

I am deeply grateful to my supervisor and the chair of my dissertation committee, Marianne Mithun, not only for her belief in me as a scholar, but for her enthusiasm-featuring professionalism, which always reminds me: whatever I do in my life, I do it for my passions. She taught me to value what spontaneous speech can tell us about the nature of human language, and she taught me to appreciate speakers for the incredible gifts they can offer to linguists and the rest of the world. But even more importantly, she taught me to be bold and not be afraid to share my wildest ideas and insights. I still remember the moment I met her (over Skype) for my UCSB admissions interview; that was when I realized I had applied to the right program, and it was only the beginning of my identity as a UCSB linguist.

I wanted to thank Bernard Comrie for teaching me what it means to conduct careful data analyses based on a solid typological understanding of language variation. His helpful criticisms (often graciously packaged in humors) have polished many of the arguments pushed forward in this dissertation, and his confidence in my potential as a junior scholar has motivated me to continue on over and over again, even during the lowest points of my graduate career. I thank Eric Campbell for teaching me how to make language documentation and description a creative platform where collaborations can create so many possibilities for endangered languages and minority communities. I am indebted to him for the wonderful Field Methods course he designed, which inspired my construction of the Kanakanavu verb database, on which many of the important analyses presented in this dissertation are based. Furthermore, I feel so fortunate to be able to learn from Isabelle Bril, whose insights have shaped virtually all aspects of my description of Kanakanavu. I only wish I could have read so many more of her articles before I started my dissertation research, which I will certainly do before my next projects begin.

I would like to thank many faculty members at UCSB Linguistics I have had the honor to learn from. First, I wanted to thank Carol Genetti, without whose valuable work at the Graduate Division I might never have the chance to come to UCSB for my doctoral degree. I also wanted to express my deepest respect and appreciation for Sandy Thompson, who has been one of the most inspiring and heart-warming linguists I am so grateful to know. I have had limited opportunities to learn from Jack Du Bois, but his insights on discourse and grammar have laid a strong foundation for my theoretical perspective on language and will forever influence how I view the nature of grammar and human interaction. Last but not least,

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Many ideas central to the analyses included in this dissertation were developed during my affiliations outside of UCSB Linguistics. I am thankful to Dr. Elizabeth Zeitoun for inviting me for a short visit to Academia Sinica in 2019, where the workshop on verb classification in Formosan languages fundamentally changed how I view Kanakanavu verb structure and how I analyze Formosan voice systems. I am grateful to Dr. Li-May Sung, my life-long mentor, for always welcoming me back at National Taiwan University to share my work and experience, and Dr. Hsiu-Chuan Liao, for the opportunity to give a talk at National Tsing-Hua University and have conversations with linguists working in frameworks rather different than mine. Although my visit turned out to be "virtual", I feel extremely honored to have been a member of the Fairbank Center at Harvard University, where I learned to communicate with non-linguists about what linguistics has in store for other academic fields. This laid the foundation for my efforts to connect linguistics with Taiwan Studies, which were further supported by Dr. Sabine Frühstück from the UCSB Department of East Asian Languages and Cultural Studies, who believed in my potential as an interdisciplinary scholar and trusted me with the resources from UCSB's Center for Taiwan Studies.

I would like to express my gratitude towards all the dearest friends I made during my time in Santa Barbara. I cannot name you individually, but without your company, Santa Barbara would not have been as magical as it has been for all of us. I thank all my family back in Taiwan, especially my parents, who have been not only extremely supportive with whatever I do as a scholar, but patient with the time it took for me to get here. You are the ones who I can never bear to share any of my struggles with, but who I will always be proud to share all my achievements with.

Finally, nothing I do in life is meaningful without Tanya/Ya-Hsin Wang. Life partner of an awkward linguist, she is the most practical anthropologist who takes pleasure in gaining knowledge by exploring friendship, exploring nature — exploring life. Being with her is the most wonderful decision I have ever made, and I will continue to follow her wherever she takes me next.

This study is a crystallization of my research under the guidance generously offered to me by all members of my dissertation committee. I am solely responsible, of course, for any errors and inadequacies, which I intend to correct and improve in future work. I dedicate all that I have learned, and whatever I will get to learn, about Kanakanavu to the four elders who are the cornerstones of this study — the late Cuma Mu'u, Cina Paicu, and two Cina 'Uvas.

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Abstract

Voice Constructions in Kanakanavu Grammar and Discourse

by

Yi-Yang Cheng

This dissertation is a comprehensive analysis of voice constructions in Kanakanavu, a critically endangered Formosan language (Austronesian language of Taiwan) spoken in the Namasia District of Kaohsiung, southern Taiwan. The data considered for the analysis are mainly drawn from a corpus of spontaneous speech produced by contemporary speakers, which are complemented by elicited data and a verb database constructed by the author.

The Kanakanavu voice system has been treated in various previous studies, but there is a general lack of consensus regarding several of its fundamental properties. The language has been analyzed as exhibiting a two-way, three-way or even four-way/Philippine-type voice distinction; it also remains unclear how voice interacts with tense-aspect-mood marking on the one hand, and transitivity and grammatical relations on the other. By investigating the morphosyntactic, semantic and discourse-pragmatic properties of voice, this dissertation (i) establishes a framework for describing and representing Kanakanavu natural discourse data, (ii) analyzes the morphological and syntactic foundations of Kanakanavu voice and (iii) explores the functional-typological implications of Kanakanavu voice constructions both within and beyond the Austronesian language family.

It is argued that Kanakanavu exhibits a binary voice distinction in its verbal-clause mor-

phosyntax. The structural opposition — between what are labelled "agent voice" and "patient voice" — is evidenced in two specific patterns of interaction between voice marking and tense-aspect-mood marking: while agent-voice verbs always involve separate exponents for voice and tense-aspect-mood, patient-voice verbs are consistently marked by voice markers that also serve a tense-aspect-marking or mood-marking function. The finding regarding the number of voice distinctions is in line with those found in some recent analyses of Kanakanavu voice, but it is motivated by typologically informed analyses of verbal tense-aspect-mood marking in the language based on detailed examinations of how different verb forms are used in spontaneous speech.

At the syntactic level, voice alternation in Kanakanavu is argued to be essentially a transitivity-alternation phenomenon, leading to the analysis of the agent-voice construction as the intransitive construction (involving only one core argument), and the patient-voice construction as the transitive construction (involving two core arguments). The analysis is based on the observation from natural discourse that the patient-voice construction is always used for expressing transitive situations, while the agent-voice construction is the default construction for forming (i) basic intransitive clauses and (ii) clauses involving syntactically demoted and discourse-functionally backgrounded patients. The finding suggests that the Kanakanavu verbal clause exhibits ergativity, which is in line with many analyses of Formosan and Philippine languages where voice interacts closely with transitivity. It is, however, further shown that Kanakanavu exhibits differential (pronominal) agent marking in its patient-voice construction. This is a typologically and areally unusual phenomenon within the larger Western Austronesian context, which has been generally overlooked in previous studies on the language despite having been identified early on by Tsuchida (1976).

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1 first person

2 second person

3 third person

A agent-like argument of canonical transitive verb

AF agent/actor focus

ANTICAUS anticausative

AV agent/actor voice

CAUS causative

COMP complementizer

CONT continuous

COS change of state

CTRV contrastive

CV circumstantial voice

DEM demonstrative

DIST distal

DUR durative

EVI evidential

EXCL exclusive

FUT future

GEN genitive

GF goal focus

IF instrumental focus

IMP imperative

INCH inchoative

INCL inclusive

INS instrumental

INT intensifier

INTJ interjection

IPFV imperfective

IV instrumental voice

LF locative focus

LOC locative

LV locative voice

MIMP mild imperative

NEG negation

NMLZ nominalizer/nominalization

NOM nominative

NPIV nonpivot

NRF non-referential

NSA nonsubject actor

OBL oblique

P patient-like argument of canonical transitive verb

PART particle

PF patient focus

PFV perfective

PL plural

POSS possessive

PRF perfect

PROG progressive

PROX proximal/proximate

PSA privileged syntactic argument (PSA)

PST past

PV patient voice

Q question particle/marker

QUOT quotative

RECP reciprocal

RED reduplication

RES resultative

RF referential

RP referential particle

RPRT reportative

SBJV subjunctive

SF special focus

SG singular

SPEC specific

STAT stative

T theme

TOP topic

UD undergoer diathesis

UV undergoer voice

VBLZ verbalizer/verbalizing function

Chapter 1

Introduction

1.1 Research background

One of the most prominent grammatical features that characterize Western Austronesian languages is their typologically unique voice systems, and one geographical area that has played a central role in contributing to the discussion is Taiwan, which is home to 20 or so Indigenous Austronesian languages that exhibit the highest degree of genealogical diversity across the entire language family (P.J. Li 2000, 2006, 2008). In addition to the great variation observed in several lexical and grammatical domains (numeral systems, word order types, auxiliary systems, phoneme inventories, etc.), the Austronesian languages of Taiwan (also known as the **Formosan languages**) also showcase vastly divergent types of voice systems, the scholarship on which encompasses formal, functional, typological and historical research on voice as a grammatical phenomenon, both across and beyond the Austronesian language family (cf. Zeitoun et al. 2015).

Despite the essential role that Formosan languages play in the study of Austronesian voice, they are all spoken by minority ethnic groups, hence subject to the threat of language endangerment due to heavy contact with, and drastic shift to, other major languages spoken on the island, such as Mandarin, Taiwanese Southern Min and Hakka. One of the Formosan languages suffering the most from this dire situation is **Kanakanavu**, which is the native language of the Kanakanavu people living in the Namasia District (那瑪夏區) of Kaohsiung, southern

Taiwan. On the brink of becoming dormant but highly understudied, Kanakanavu has been observed to exhibit several unusual features in its voice system within the larger Austronesian context, but a comprehensive understanding of the formal and functional properties of its voice markers and voice constructions is still pending further investigation due to the lack of robust documentary materials of the language.

The present dissertation — titled *Voice Constructions in Kanakanavu Grammar and Discourse* — takes a usage-based approach in conducting a comprehensive description and analysis of voice constructions in Kanakanavu. Drawing on data from both natural discourse and elicited sentences, this study (i) investigates the morphophonological foundations of voice constructions, (ii) explore the complex interactions among voice constructions, tense-aspect-mood and argument structure, and (iii) provide insights into the formal, functional and distributional properties of voice constructions in the language.

This dissertation contributes to the field of linguistics in several important ways. To begin with, this is the first study on the grammatical structure of Kanakanavu that employs a large amount of data from unscripted, spontaneous speech as the empirical basis for analysis. The corpus (of more than 5 hours of recording) adopted for analysis is the largest documentary database of contemporary Kanakanavu, and the rich naturalistic data that it provides contributes to insights that complement descriptive and analytic results from previous studies, which have focused mainly on elicited data. Moreover, the comprehensive lens through which voice constructions in Kanakanavu are investigated (from morphological, syntactic and discourse perspectives) offers robust descriptive and analytical materials for comparative studies on Formosan languages, which have proven to be crucial for the reconstruction of several structure aspects of Proto Austronesian, including the phonological system (Blust 1999), the case-marking and personal pronoun system (Ross 2006), the voice system (Ross 1995, 2002, 2009) and verb classes (Ross 2015a). Finally, voice constructions in Kanakanavu interact closely with argument marking, and the formal, functional and discourse properties of voice examined in this study provide valuable data for the current typology of symmetrical voice systems on

the one hand (Himmelmann 2005; Foley 2008), and differential argument marking (Malchukov and de Swart 2008; Sinnemäki 2014; Seržant and Witzlack-Makarevich 2018) on the other.

1.2 Western Austronesian voice

Western Austronesian languages[1] are widely known for the typologically unusual voice systems that they display. There is a general distinction between **Philippine-type** and **Indonesian-type** voice systems (Wolff 1996; Arka 2003; Himmelmann 2002, 2005; V. Chen and McDonnell 2019), and the great majority of Formosan languages are often analyzed as varieties of the former,[2] which is also commonly found in Philippine languages and the languages of northern Borneo and northern Sulawesi. Prototypical examples of Philippine-type voice systems often showcase the following features:

1. verbs distinguishing as many as **four voice forms**,
2. obligatory **morphological voice marking** on the verb, and
3. (only) one (lexical) noun phrase serving as the **privileged syntactic argument** (PSA), whose privileged grammatical status is overtly flagged/case-marked.

The Formosan language Matu'uwal is a typical Philippine-type language. The Matu'uwal examples in (1) show the verb root *culuh* 'roast' occurring in four voice constructions, each involving a specific voice form: *cumuluh* in the agent-voice construction (1a), *culuhun* in the patient-voice construction (1b), *culuhan* in the locative-voice construction (1c) and *sicluh* in the circumstantial-voice construction (1d).

[1]"Western Austronesian" is not a genetic/genealogical grouping, but a rough geographic designation, which includes languages spoken in Taiwan, the Philippines, northern Borneo and northern Sulawesi, with Malagasy (spoken in Madagascar) and Chamorro (spoken in Guam) included as well (Himmelmann 2005).

[2]More discussion of Indonesian-type systems will be provided in Section 4.3.1

(1) Matu'uwal [3]

a. c<**um**>uluh cu bunga' **ku** **cuquliq** **haca'** i
<AV>roast OBL.NRF sweet.potato NOM.RF person DEM.DIST LOC
tingqalangan.
tribal.community

'That person roasts sweet potatoes in the tribal community.' (Agent voice)

b. culuh-**un** nku squliq haca' **ku** **bunga'** i tingqalangan.
roast-PV GEN.RF person DEM.DIST NOM.RF sweet.potato LOC tribal.community

'That person roasted the sweet potato(es) in the tribal community.' (Patient voice)

c. culuh-**an** nku squliq haca' cu bunga' **ku**
roast-LV GEN.RF person DEM.DIST OBL.NRF sweet.potato NOM.RF
tinqalangan.
tribal.community

'That person roasted sweet potatoes at the tribal community.' (Locative voice)

d. **si**-cluh nku squliq haca' cu bunga' **ku** **'ulaqi'**/**hapuy**.
CV-roast GEN.RF person DEM.DIST OBL.NRF sweet.potato NOM.RF child/fire

'That person roasted sweet potatoes for the child / with the fire.' (Circumstantial voice)

The four voice constructions as illustrated above are **semantically different** (Himmelmann 2005) in the sense that depending on the voice category, a specific semantic role is mapped onto the **PSA** of the clause, which is represented by the noun phrase that is case-marked by *ku*, analyzed here as the marker for referential common nouns that serve as the

[3]Matu'uwal is more commonly known as Mayrinax Atayal in the Formosan literature (L.M. Huang 1995), although some recent studies have adopted the endonym Matu'uwal to refer to the language (Cheng 2019; Goderich 2020).

PSA (and glossed as a "referential nominative" marker).[4] It is the agent (i.e. the "roaster") in agent voice (1a) but the patient (i.e. the "roastee") in patient voice (1b). In addition, peripheral semantic roles may also be realized as the PSA of the clause: in locative voice, the PSA is the location/source/goal (1c) and in circumstantial voice, it is either the beneficiary or instrument (1d).

The PSA has received numerous labels in the literature (including topic, focus and pivot). The term "PSA" (cf. Van Valin 2005; Riesberg and Primus 2015) is adopted in this study to acknowledge the status of the PSA-marked noun phrase in being syntactically privileged: it commonly exhibits the following syntactic properties, being (i) the only argument that is under the scope of floated quantifiers, (ii) the only argument that can be relativized on, (iii) the argument that may undergo clefting, and (iv) the argument that can be omitted in a control or raising clause, etc. (see, for example, Schachter 1976; Kroeger 1993; Riesberg 2014).[5]

Morphologically speaking, the voice marking on the verb in Philippine-type voice systems is crucially **symmetrical** (Himmelmann 2005): there is not a morphologically basic voice form from which other voice forms are derived. The Matu'uwal data in (1) above, for example, involve the same verb root *culuh* being marked by a specific voice marker: the agent-voice infix <*um*> (1a), the patient-voice suffix -*un* (1b), the locative-voice suffix -*an* (1c) and the circumstantial-voice prefix *si-* (1d). Voice alternation in Matu'uwal is, therefore, crucially distinguished from the active-passive voice alternation in typical nominative-accusative languages such as English in the morphological sense, where the active-voice form (e.g. *cook*) always serves as the basic form from which the passive-voice form (e.g. *be cooked*) is derived.

In addition to marking for the PSA, there are two major argument marking patterns that can be identified across Philippine-type languages (De Guzman 2000). The Matu'uwal pattern

[4]Matu'uwal shows a three-way referential distinction in each case category of the phrase-marking system — proper noun, referential/specific common noun, and non-referential common noun (L.M. Huang 1995, 2001, 2006). The markers *ku* and *nku* are both referential/specific common noun markers. The glossing of non-PSA case markers in the Matu'uwal data here are based on the analysis proposed by Goderich and Cheng (in progress).

[5]Although "subject" is also widely used for such an argument in the Austronesian literature (see, for example, Ross and Teng 2005), it is avoided in this study due to the term often having information-flow implications (C.N. Li 1976; C.N. Li and Thompson 1976; Chafe 1994) in nominative-accusative systems that are not necessarily shared by the PSA.

shows the more common type. As can be seen in (1b-e) above, the agent argument in patient-, locative- and circumstantial-voice constructions consistently receives genitive marking, hence is formally distinguished from the patient argument in the agent-voice construction, with the latter being cast as oblique (1a). The second pattern is famously known to be exhibited by Tagalog. As can be seen in (2) below, when not occurring as the (*ang*-marked) PSA, the agent and patient arguments are both consistently marked by the marker *ng*, both being formally distinguished from true oblique/adjunct arguments that are marked by *sa*:

(2) Tagalog (based on Schachter (1976), cited from Ross (2002: 26))[6]

a. mag-alis ang babae **ng** **bigas** sa sako para sa bata.
AV-take.out SPEC woman NPIV rice LOC sack for LOC child

'The woman will take some rice out of a/the sack for a/the child.' (Agent voice)

b. a-alis-in **ng** **babae** ang bigas sa sako para sa bata.
DUR-take.out-PV GEN woman SPEC rice LOC sack for LOC child

'A/the woman will take the rice out of a/the sack for a/the child.' (Patient voice)

The two types of argument marking patterns differ mainly in how the patient argument is marked when not occurring as the PSA. In the Matu'uwal-type pattern, it is marked as oblique, and in the Tagalog-type pattern, it is formally distinguished from oblique/adjunct constituents, and receives the same marking used for non-PSA agents:

[6]The glossing abbreviation SPEC is used by Ross (2002) to refer to the phrase marker for the PSA in the clause. It represents *specific*, as the PSA across many Philippine and Formosan languages is consistently interpreted as referentially specific. The abbreviation NPIV (non-pivot) is used by Ross (2002) to refer to non-PSA patient arguments.

Table 1.1: Two common types of argument marking patterns in Philippine-type voice

	PSA	Non-PSA agent	Non-PSA patient	OBL
Matu'uwal	NOM	GEN	OBL	OBL
Tagalog	*ang*	*ng*	*ng*	*sa*

Western Austronesian languages exhibit high degrees of diversity and have been analyzed differently regarding how voice interacts with **grammatical relations**, **transitivity** and **syntactic alignment** (see V. Chen and McDonnell 2019 for a detailed review). Some have been analyzed as exhibiting ergativity in argument alignment (Payne 1982; De Guzman 2000; Mithun 1994; Aldridge 2004; Liao 2004; Chang 2011; Mithun 2019, etc.), and others have been analyzed as exhibiting syntactic symmetricality, in addition to morphological symmetricality, whereby voice alternation does not introduce significant impacts on the grammatical status of the arguments involved (Himmelmann 2005; Foley 2008; Riesberg 2014; McDonnell 2016, etc.). Couched in the Minimalist framework, Western Austronesian voice systems have also been analyzed as exhibiting nominative-accusative alignment with topic-agreement morphology (see, for example, V. Chen 2017). An Austronesian language that has yet to be examined in detail with regard to the morphological and syntactic properties of its voice system is **Kanakanavu**, and this dissertation aims to provide a comprehensive analysis in this regard.

1.3 Previous research on Kanakanavu

Kanakanavu is a severely endangered language spoken in the Namasia District of Kaohsiung, southern Taiwan (see Figure 1 below). The language has been undergoing drastic shifts to other languages used in the Namasia area, and there are currently fewer than 10 first-language speakers left (cf. D.T. Liu et al. 2015). The great majority of the community members are fluent speakers of Mandarin, (the most widely spoken language of Taiwan, which is also used in the nation-wide education system), and/or Bunun (a dominant Indigenous Austronesian language

spoken in the Namasia District).

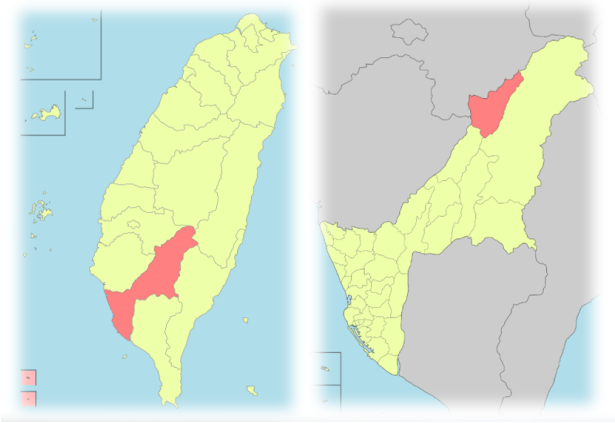

Figure 1.1: Kaohsiung City (left); Namasia District (right)

The earliest systematic descriptions of Kanakanavu in the Formosan literature can be traced back to the 60s and 70s,[7] when the focus had been to pin down the phonological (especially segmental) system of the language (Yan 1964; M.M.Y. Sung 1966). After the seminal work of Tsuchida (1976), who not only furthered understanding of the phonological system, but laid out a strong descriptive foundation for several core aspects of the grammar, subsequent works have shifted more to the morphosyntactic aspects of the language, including pronouns and verb inflectional paradigms (Mei 1982), verbal voice markers (Chang 2006), verb serialization structure (C. Wu 2006) and negation (Lan 2012). Since the government recognition of Kanakanavu as an independent Indigenous group in Taiwan on June 26, 2014, there has been a bloom of research on various aspects of its grammar. The topics include interrogative constructions (Deng 2014), quantifiers (S.-C. Chang 2014), the voice system (H.-C. Liu 2014; Wild 2018), the expression of benefaction and malefaction (Yang 2015), the expression of modality (Cheng and L.-M. Sung 2015; Cheng 2018a), the expression of reported speech and evidentiality (Pan 2015), aspectual distinctions in the verb system (D.T. Liu 2014), the noun-verb distinction and its implications (Teng and Zeitoun 2016; Zeitoun and Teng 2016), lexical noun phrase markers (Cheng 2018b), and a thread of research exploring the nature of word-level prosodic

[7]The work by Ogawa and Asai (1935), however, should be considered the first documentary and descriptive materials of the language, along with materials of other indigenous languages of Taiwan. It is written in Japanese, containing 7 recorded texts and sketches of the phonological system and morphological affixes of Kanakanavu.

prominence (H. Chen 2016; S. Chen 2016; Cheng 2018c, 2020).

The place of Kanakanavu in the Austronesian language family and its genealogical relationship to other Formosan languages are currently under debate. Its inclusion under the Tsouic subgroup had prevailed for some time due to the reconstruction of Proto Tsouic phonology by Tsuchida (1976), in which Kanakanavu and Hla'alua (Pan 2012), (the latter also known as Saaroa in the literature) form "Southern Tsou", to which Tsou (or "Northern Tsou") is a sister language. Tsouic is proposed to be one of the nine primary branches of Proto Austronesian in Blust (1999), as can be seen in Figure 2 below, but its unity has been questioned by Chang (2006), who imposed a closer scrutiny onto the great disparities between the grammatical structure of Tsou and those of Kanakanavu and Hla'alua. Consequently, subsequent comparative and/or reconstruction-oriented studies on Formosan languages have tended to break up the close link between Tsou on the one hand, and Kanakanavu and Hla'alua on the other. Although Kanakanavu is still undoubtedly a Formosan language, different treatments of its status have ensued in comparative studies. It has been taken as an independent branch of Proto Austronesian (see e.g. Ross 2015b), as forming a subgroup with Hla'alua (Ross 2002, 2009), or showing a close, but more complex genealogical relationship with Hla'alua and other Formosan languages (Zeitoun and Teng 2016).[8] In any case, it is now generally agreed that the Austronesian language most closely related to Kanakanavu is Hla'alua, but further relationship with other Formosan languages is still pending investigation. As will be demonstrated below, relevant discussion that will provide key evidence centers around the architecture of the Kanakanavu voice system, for which this dissertation seeks to provide a thorough treatment.

Although an array of topics have been covered on the structure of Kanakanavu in the literature, the voice system has generally been included in the grammar sketch section in studies focusing on other aspects of the language. In studies where properties of the voice system are specifically examined, however, a variety of structural analysis has been offered,

[8]See also Ross (2012) and Blust and V. Chen (2017) for detailed overviews of the role of Formosan languages in Austronesian higher-order subgrouping hypotheses, and V. Chen et al. (2022), in which the Tsouic subgroup is maintained.

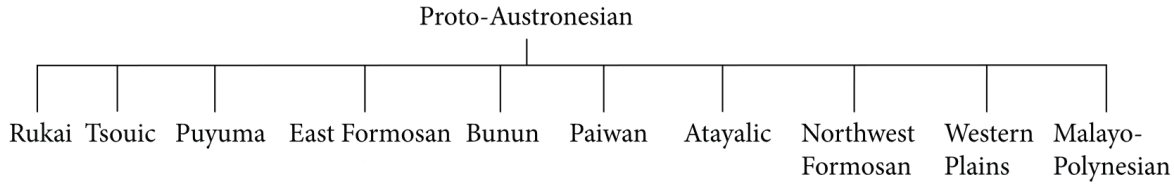

Figure 1.2: Austronesian higher-order subgrouping according to Blust (1999) (cited from Chen et al. 2022)

with little consensus appearing to have been reached. The discussion that follows in this section will provide an overview of the findings that have emerged from linguistics research on Kanakanavu voice so far.

1.3.1 Morphological properties of Kanakanavu voice

Previous studies on the Kanakanavu voice system have seen considerable variation in the extent to which the typical Philippine-type four-way voice distinction is manifested. The largest inventory of voice markers is found in Wu's (2006) analysis, which shows a four-way voice/focus distinction,[9] illustrated in the elicited examples in (3) below. Here, the verbs share a common root, but they are affixed with different voice markers: agent voice *um-* (3a), patient voice *-~~u~~n* (3b), locative voice *-an* (analyzed as varying with *-a*) (3c) and instrumental voice *se-* (3d).[10] The verb forms, as presented and analyzed by Wu, are therefore morphologically symmetrical, with none appearing as the morphologically basic form.

[9]Studies on Formosan languages may vary in whether "focus" or "voice" is employed as a general label. Earlier studies have tended to use the former, and later ones, the latter (see, for example, Ross and Teng 2005 for the history of the two terms in the description of Philippine-type languages). There has also been variation in whether "actor" or "agent" is employed for labelling the actor-/agent-voice construction. In this section, the original labels used by the studies being reviewed are kept in interlinear glosses, while the term "voice" will mainly be used in the discussion.

[10]While no explicit argument is made, Wu's data imply that the stem is analyzed as having *~~u~~su'u* 'put' as its underlying form, which undergoes reduction and is realized as *~~u~~su* (3b), *su* (3c) and *su'~~u~~* (3d) when affixed with different voice markers. The patient-voice marker, whose citation form is given as *-~~u~~n* (C. Wu 2006: 112), is also represented in a reduced form *-n* (3b). According to the sketch of Kanakanavu morphophonology in Chapter 2, the stem is analyzed as reducing to *~~u~~su'* in patient voice, and undergoing vowel coalescence when the prefixes *ni-* or *si-* (instead of *se-*) are attached to it: *~~u~~sú'un* /~~u~~su'-~~u~~n/ (patient voice), *nisú'an* /ni-~~u~~su'-an/ (prefixed with *ni-*), *sésu'u* /si-~~u~~su'~~u~~/ (prefixed with *si-*).

(3) Four-way voice/focus distinction in Wu's (2006 analysis)

a. **um-~~usu'u~~** cuma paizi (na) takuacapa.
AF-put father wine LOC table
'Father (will) put wine on the table.' (Agent voice)

b. **~~usu~~-n** cuma paizi (na) takuacapa.
put-PF father wine LOC table
'Father (will) put wine on the table.' (Patient voice)

c. **ni-su-an**=cu cuma paizi (na) takuacapa.
PRF-put-LF=COS father wine LOC table
'Father (will) put wine on the table.' (Locative voice)

d. **se-su'u** paizi nonoman isi (na) takuacapa.
IF-put wine thing this LOC table
'I use the thing (container) to put wine in on the table.' (Instrumental voice)

The inventory of Kanakanavu voice markers proposed by Wu is summarized in Table 1.2 below. Each of the three voice categories — agent voice, locative voice and benefactive/instrumental voice — contains one voice marker, whereas patient voice contains three, each associated with an aspectual interpretation: neutral *-ai*, perfective *ni-* and imperfective (*p-*)…*-~~u~~n*. No aspectual distinctions, however, are posited outside patient voice.[11]

[11]The *M-* morpheme is used here to represent variants of the infix <*um*>, including *um-*, *mu-*, and *m-*. The marker *ni-* has two allomorphs: prefix *ni-* and infix <*in*>.

Table 1.2: Kanakanavu voice/focus markers based on C. Wu (2006)

AF	PF	LF	B/IF
	-ai (neutral)		
M-	*ni-* (perfective)	*-a(n)*	*se-*
	(p-)...-un (imperfective)		

The Kanakanavu system as described by Wu is reminiscent of the typical set of Philippine-type voice markers in Formosan languages; they commonly reflect (i) the four voice markers – *<*um*>, *-*en*, *-*an* and **Si-*/*Sa-*, and (ii) the perfective marker *<*in*>,[12] all of which can be reconstructed in Proto Austronesian (Wolff 1973; Ross 2009; Blust 2013). The voice marker *-ai*, however, does not reflect the reconstructed Proto Austronesian system, although Wu does not provide any data illustrating its usage. Only one other Formosan language — Puyuma — has been described as involving a similar morpheme — *-ay* — as a voice marker in declarative sentences (Teng 2008).

Wu (2006) is currently the only study to posit such a large system in Kanakanavu. To begin with, the two markers — Locative-voice *-a(n)* and Benefactive/Instrumental-voice *se-* — have not been widely described as serving voice-marking functions. In the earliest descriptions of the Kanakanavu voice system in the Formosan literature, the morpheme *se-* is not listed. Tsuchida (1976) characterizes the system as involving four categories: actor focus, goal focus , location focus and special focus. Mei (1982), on the other hand, proposes a slightly different four-category system: actor focus, object focus 1, object focus 2 and time/location focus. As can be seen below, although Tsuchida and Mei's characterizations of the system involve different labelling of the affixes (especially in terms of how Wu's (2006) three patient-Focus affixes *ni-*,

[12]It is generally recognized that reflexes of *<*in*> across Formosan languages fall under two categories: (i) as a perfective marker when occurring with other voice markers, and (ii) as a (perfective) Patient-voice marker when attached to a verb stem by itself. (This functional pattern is also reconstructed in Proto Austronesian by Ross 2002.) The glossing for this specific marker is therefore commonly varied depending on the co-occurring morphemes. When occurring on its own with a verb stem, it is generally glossed as the patient-voice marker; when occurring with other voice markers, it is glossed as the perfective marker. This is what many previous studies on Kanakanavu have employed for the *ni-* morpheme.

-~~u~~n and *-ai* are treated) they both exclude the prefix *se-*:

Table 1.3: Kanakanavu voice-marker inventory: comparison of Wu (2006), Tsuchida (1976) and Mei (1982)

	M-	*ni-/-~~u~~n*	*-ai*	*-a(n)*	*se-*
C. Wu (2006)	Agent Focus	Patient Focus		Locative Focus	Ben./Ins. Focus
Tsuchida (1976)	Actor Focus	Goal Focus	Special Focus	Location Focus	-
Mei (1982)	Actor Focus	Object Focus 1	Object Focus 2	Time/Loc. Focus	-

Explicit arguments against the four-way voice distinction can be found in more recent studies. In H.-C. Liu (2014), Kanakanavu is described as only showing a three-way voice distinction, including agent voice, patient voice and instrumental voice. The putative locative-voice suffix *-a* (corresponding to C. Wu's (2006) *-a(n)*) is found to only serve nominalization functions. As exemplified below, *-a* frequently gives rise to a locative interpretation when co-occurring with the prefix *ta-*, glossed by H.-C. Liu (2014) as 'place':[13]

(4) Kanakanavu *-a* as a nominalizer (H.-C. Liu 2014: 48)

a. ta-k~~u~~un-**a**=musu tammi sua to'onaa iisi.
place-eat-NMLZ=2SG.GEN sweet.potato NOM place this
'This place is where you eat sweet potatoes.'

b. cak~~u~~ran ia ta-pinarupu-**a**=maku.
river TOP place-go.fishing-NMLZ=1SG.GEN
'The river is where I go fishing.'

Employing different types of evidence, Teng and Zeitoun (2016) and Wild (2018) further argue that both *-a(n)* and *se-* should be analyzed as nominalizers, and that they should not be included

[13]Although H.-C. Liu (2014) does not explicitly state this, the examples in (4) appear to involve two types of nominalization. (4a) seems to be a case of clausal nominalization, with *tak~~uu~~na=musu tammi* 'where you eat sweet potatoes' serving as the predicate nominal of the sentence; on the other hand, (4b) appears to involve lexical nominalization, with *tapinarupua=maku* 'where I go fishing / my fishing place' occupying the argument slot of the sentence.

in the verbal voice system in Kanakanavu. Wild (2018), for example, observes that forms occurring with *-a(n)* or *si-* (corresponding to Wu's *se-*) never occur in the predicate slot of the verbal clause. Instead, they are found to be nominal(ized) forms, both in elicited and in textual data.[14] As can be seen below, both Teng and Zeitoun (2016) and Wild (2018) propose a binary voice distinction in the Kanakanavu verbal clause, in contrast to the three-way distinction proposed by H.-C. Liu (2014). Importantly, however, although Teng and Zeitoun (2016) and H.-C. Liu (2014) differ in the number of voice categories in Kanakanavu, neither study includes the suffix *-ai* in the overall system. Wild (2018), on the other hand, includes *-ai* as an Undergoer-voice marker (in the form of *-ei*) along with *-ʉn*, but excludes *ni-*. She treats *-ai* as encoding both Undergoer voice and the *terminative aspect*, contrasting with *-ʉn*, which is analyzed as the neutral Undergoer-voice marker.

Table 1.4: Kanakanavu voice-marker inventory: comparison of H. Liu (2014), Teng and Zeitoun (2016) and Wild (2018)

	M-	*ni-*	*-ʉn*	*-ai*	*-a(n)*	*se-*
H. Liu (2014)	Agent Voice	Patient Voice		-	(NMLZ)	Instrumental Voice
Teng and Zeitoun (2016)	Actor Voice	Undergoer Voice		-	(NMLZ)	(NMLZ)
Wild (2018)	Actor Voice	-	Undergoer Voice		(NMLZ)	(NMLZ)

As demonstrated above, the binary actor-/undergoer-voice distinction, as proposed by Teng and Zeitoun (2016) and Wild (2018), seems to have emerged as a plausible scenario in Kanakanavu. However, whether the *-ai* suffix is included in the overall voice system is still an unsolved issue. It is therefore unclear whether Kanakanavu qualifies as a Philippine-type language in showing "at least two formally and semantically different undergoer voices", based on Himmelmann's (2005) definition.

[14]The argument is pushed forward by Teng and Zeitoun (2016) by conducting rigorous syntactic tests for the noun-verb distinction in Kanakanavu. More detailed discussion in this regard is given in Chapter 3 of this dissertation.

1.3.2 Syntactic properties of Kanakanavu voice

On the level of syntax, past studies have not agreed on whether the argument marking system shows defining characteristics of Philippine-type languages. Several studies have employed the phrase marker *sua* — commonly glossed as the nominative marker — as a diagnostic for the PSA in different clause types (e.g. H.-C. Liu 2014; Cheng and L.-M. Sung 2015; Teng and Zeitoun 2016). However, it has also been explicitly stated in C. Wu (2006) that Kanakanavu does not show any case markers for lexical noun phrases, with *na* being an optional marker for locative phrases. Furthermore, the marker *sua* has been argued to not be analyzable as a case marker. Employing the label **referential particle**, Wild (2018) argues that *sua* has no case marking function as it can precede any nominal element regardless of its syntactic function. This is illustrated with the usage of *sua* in the actor-voice construction, where it may mark the agent (5a), or the patient (5b) noun phrase. The possibility of *sua* marking both PSA and non-PSA arguments is also observed by Tsuchida (1976), who treats the form as compatible with both PSA-marking and oblique-marking functions. The latter is used generally for non-PSA arguments.

(5) Kanakanavu *sua* marking both PSA and non-PSA arguments in Actor-voice construction[15]

a. r<um>ariu'u kani **sua** nanak~~u~~.
<AV>fish.with.net RPRT RP woman

'The woman went fishing (with a net).' (Wild 2018:124)

b. mucaan kan cu mu-avici **sua** tarisi …
go(AV) RPRT COS AV-take.with RP rope

'They took the rope with them (…)' (Wild 2018:125)

Drawing on data from spontaneous speech, Cheng (2018b) further shows that the marker *sua* is only grammatically optional in the sentence, and that it marks different argument types

[15]The form *kani* is glossed as a reportative marker in Wild (2018).

regardless of voice, as summarized in Figure 1.3. In Cheng's (2018b) corpus, 160 instances of *sua* are found in the actor-voice construction, whereas 23 are found in the undergoer-voice construction. Although *sua* is indeed preferred for marking the theme in actor voice and the semantic patient in undergoer voice, it is still found to mark a variety of arguments across the two voice categories, including patient and oblique arguments in actor voice and the agent argument in undergoer voice.

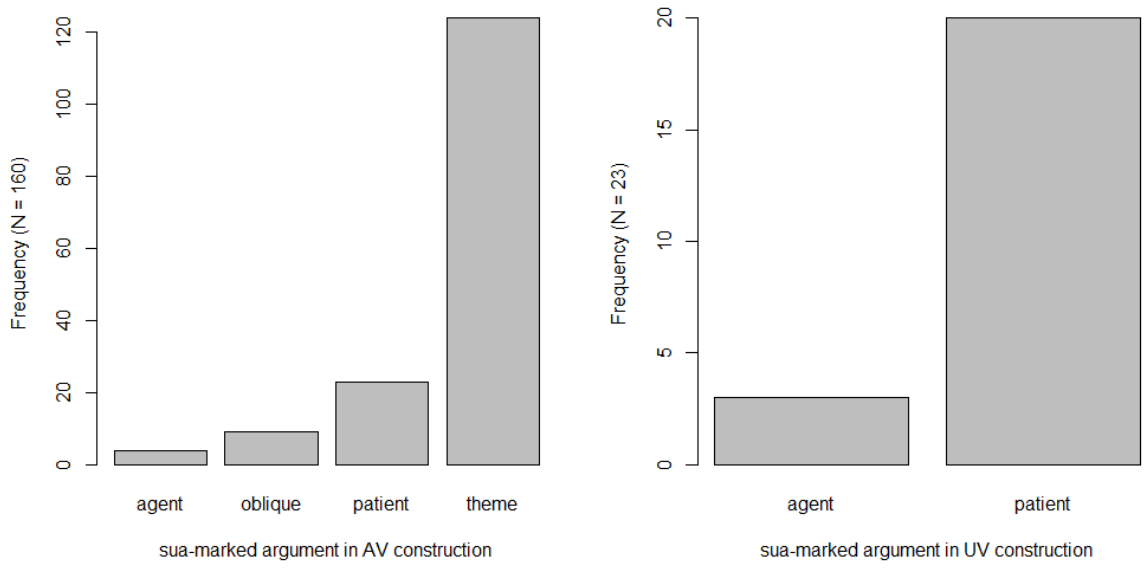

Figure 1.3: Argument types marked by *sua* across voice constructions in Kanakanavu discourse Cheng (2018b)

As seen in Table 1.4 above, a binary voice distinction in Kanakanavu — between actor voice and undergoer voice — is argued by Wild (2018). Conducting a thorough semantic analysis, she further shows that both constructions can be used for expressing highly transitive events (such as SHOOT, BITE and PUT), where the patient argument is characterized as being highly affected and/or fully individuated:

(6) Voice alternation and semantically transitive events in Kanakanavu (Wild 2018: 216)

a. tia mu-pana'~~u~~ (sua) taniar~~u~~ sua saronei
will.be AV-shoot (RP) sun (RP) male

'The man will shoot the sun.' Agent voice

b. tee cu pana-'~~un~~ =kei sua taniar~~u~~
will.be COS shoot-UV =A.3.UD RP sun

'They were going to shoot the sun.' Patient/Undergoer voice

The observation motivates Wild (2018) to arrive at the conclusion that Kanakanavu voice is syntactically **symmetrical**, since there exist two voice constructions that are equally transitive. However, Wild's conclusion is based entirely on transitivity as a semantic notion (Hopper and Thompson 1980; Tsunoda 1985): both constructions are grammatical options for expressing events that involve an agent acting on a highly affected and individuated patient. The conclusion, which is not extensively argued, does not result from a close examination of the syntactic and discourse properties of arguments when occurring across the two voice constructions, which are required for a syntactic analysis of Austronesian voice (Ross 2002; Foley 2008; Arka 2017).

Focusing on natural discourse data, H.-C. Liu (2014) offers a very different picture. Although he demonstrates that Kanakanavu may not qualify as a prototypical discourse ergative language (Cooreman et al. 1984), he does observe that the patient in undergoer-voice clauses is higher in topicality (in the sense of Givón 1983) when compared to that in actor-voice clauses. While he does not make any clear conclusion regarding whether the actor-voice construction can be analyzed as lower in transitivity than the undergoer-voice construction, the findings have built a foundation for any further investigations into the discourse properties that may distinguish the two voice constructions.

Finally, there have been disagreements in previous studies regarding how many case distinctions are made in the Kanakanavu pronominal paradigm. Tsuchida (1976), for example,

proposes a global binary distinction between independent and enclitic/suffixal pronouns, with the latter showing further distinctions among nominative, agentive, genitive, and oblique pronouns. Cheng and L.-M. Sung (2015: 23) propose a global binary distinction between bound and free pronouns, with the former showing a nominative vs. genitive case distinction, and the latter showing a nominative vs. oblique case distinction. Teng and Zeitoun (2016: 142) propose a three-way global distinction between nominative, oblique and genitive pronouns, with the nominative category showing a further free vs. bound distinction, and the remaining two categories consisting only of bound pronouns. Despite the different analyses, the special genitive marking of the agent argument in the undergoer-voice construction, which is reminiscent of the argument marking pattern in Matu'uwal (as seen in Table 1.1 above), is consistently observed. The agent argument in actor voice is realized with a nominative pronoun (7a), but that in undergoer voice is realized with a genitive pronoun (7b). Both pronouns are also formally bound, and occur as second-position clitics. In addition, the oblique case has been described as used for other argument types, including the patient argument in actor voice (7c) and locative arguments (7d):

(7) Kanakanavu second-position pronominal clitics (adapted from Cheng and Sung 2015:24)

a. k<um>a-k~~uun~~=**ku** tammi.
<AV>RED-eat=1SG.NOM sweet.potato
'I eat sweet potatoes.'

b. ni-k~~uun~~=**maku** sua tammi.
UV-eat=1SG.GEN NOM sweet.potato
'I ate the sweet potato.'

c. rov~~uvu~~ kaangvang Pani/**kasua**.
visit all P./2SGOBL
'Everyone is visiting Pani/you.'

d. ni-mova Pani cunuku na Mu'u/**'ikua**.
PFV-AV.give P. mochi OBL P./1SG.OBL
'Pani gave mochi to Mu'u/me.'

The argument marking pattern in the pronominal domain is, however, complicated by the usage of the undergoer-voice *-ai* suffix. Tsuchida (1976) is the first to identify the idiosyncrasies involved with the suffix, which he labels as "special focus". First, instead of the genitive pronoun as seen with the usage of undergoer-voice *ni-* in (7) above, the agent argument of an *-ai*-marked clause is obligatorily expressed by, oddly, an oblique pronoun:

(8) *-ai*-marked undergoer-voice verb and obligatory oblique-marked agent pronoun
piapacál-**ai** ʔinía sua tutúi na ta-u-caním-a
kill-SF 3.OBL NOM pig LOC place-draw-water
'The pig was killed by him at the place to draw water.' (based on Tsuchida 1976:50)

Second, it is noted that although verbs marked by undergoer-voice *ni-* (labeled by Tsuchida as "goal focus") can be used as nominal expressions, as seen below, this is not the case for verbs marked by *-ai*, which only occurs as the main predicate of the clause.

(9) *ni*-marked undergoer-voice verb occurring as a clausal argument
tutúi íisua sua **ni**-piapacái máku.
pig that NOM GF.PRF-kill 1SG.GEN
'The (one that) was killed by me is that pig.' (based on Tsuchida 1976:51)

Furthermore, the aspectual distinctions in undergoer-voice are neutralized when the negative preverbal auxiliary *kúu* occurs in the clause, with *-ai* being the only possible voice marker. The oblique marking of the agent argument, however, is nowhere to be seen when the clause is headed by this auxiliary:

(10) *-ai*-marked undergoer-voice verb in clause headed by the auxiliary *kúu*

kúu kani **kiá** ku-ak~~u~~ná-**i**.

never is-said 3SG.GEN bite-succeed-SF

'He never succeeded in biting it.' (based on Tuschida 1976:50)

In this regard, the argument marking system in Kanakanavu appears to exhibit a split phenomenon. Whereas the lexical noun phrase domain shows deviation from what is commonly observed in Philippine-type languages, the pronominal domain shows the expected genitive marking of the agent participant in Undergoer voice. On the other hand, the usage of the *-ai* suffix, which has not been fully explored in the literature, presents an unusual phenomenon of obligatory oblique marking of the agent in affirmative sentences.[16] Although Tsuchida (1976) has observed that *-ai* appears to only occur in narratives, and that its "function … is not clear" (ibid. 49), recent studies have not provided a full account of its properties. Teng and Zeitoun (2016: 173) claim that the suffix is used in "non-indicative" sentences only. Wild (2018: 181–186), on the other hand, provides data showing its usage in declarative sentences, but does not offer any explanation for the unusual case marking of the agent.

1.4 Data and methodology

The corpus from which data are drawn for this dissertation research consists of more than five hours of recordings, constituted by 37 audio or audio-visual clips. The data were collected over a total of four field trips to Namasia, Kaohsiung, where the author made recordings of unscripted, spontaneous speech produced by five fluent speakers of Kanakanavu. The recorded data cover a wide range of speech genres, including personal recounts, casual conversations, procedural narrations of traditional ceremonies or festivals, folk stories, migration stories, ceremonial/religious speech and a traditional song. As can be seen in Table 1.5 below, each

[16] In reconstructing the case-marking and personal pronominal systems of Proto Austronesian, Ross (2006: 552) also notices that the oblique marking of the agent in the usage of *-ai* is rather unusual.

recording may involve one or two speakers, the identities of whom are represented by the following speaker labels/indexes: UKP, UKN, MKN, PKP and AKN. The recordings range in length from less than a minute (1001-UKP-Elders_working_in_the_past) to almost half an hour (1031-AKN-Moving_of_the_Kanakanavu_people). Other metadata information is also included in the table: including the year the data was collected, the media type of the data (audio or audio-visual) and the genre to which the content corresponds.

Table 1.5: List of recordings of spoken Kanakanavu collected by the author over the summers of 2016-2019

File name	Speaker No.	Length	Year	Media type	Genre
KNV-1001-UKP-Elders_working_in_the_past	2	00'54"	2016	audio	personal recounts
KNV-1002-UKN-When_I_was_little	1	04'10"	2016	audio	personal recounts
KNV-1003-UKP-UKN-Life_here_in_Namasia	2	02'22"	2016	audio	conversation
KNV-1004-UKP-UKN-Peoples_of_Namasia	2	05'50"	2016	audio	conversation
KNV-1005-UKP-UKN-Kanaiara_rituals	2	05'30"	2016	audio	ceremonial procedures
KNV-1006-UKP-UKN-Song_Mu'iara_Usu	2	06'00"	2016	audio	traditional song
KNV-1007-MKN-Pomelo_picking_story	1	04'20"	2016	audio	folk story
KNV-1008-PKP-Pomelo_picking_story	1	04'18"	2016	audio	folk story
KNV-1009-MKN-Snake_crisis	1	07'53"	2016	audio	personal recounts
KNV-1010-PKP-Cooking_at_Kanaiara	1	05'50"	2016	audio	ceremonial procedures
KNV-1011-MKN-Boar_hunting	1	06'55"	2016	audio	personal recounts
KNV-1012-PKP-Traditional_clothing	1	05'50"	2016	audio	ceremonial procedures
KNV-1013-MKN-PKP-Fish_catching	2	06'20"	2016	audio	personal recounts
KNV-1014-MKN-PKP-Good_old_days	2	04'39"	2016	audio	personal recounts
KNV-1015-AKN-White_flower_story	1	13'17"	2016	audio	folk story
KNV-1016-AKN-Shooting_the_sun_story	1	14'17"	2017	audio	folk story
KNV-1017-AKN-Origin_of_sunrise_story	1	09'30"	2017	audio	folk story
KNV-1018-AKN-The_pangolin_and_the_fox	1	14'05"	2017	audio	folk story
KNV-1019-AKN-Listening_to_the_elders_talk	1	04'25"	2017	audio	personal recounts
KNV-1020-AKN-The_story_of_the_two_brothers	1	21'49"	2018	audio-visual	folk story
KNV-1021-AKN-The_fishing_wizard	1	06'16"	2018	audio-visual	folk story
KNV-1022-MKN-PKP-With_my_brother_in_the_past	2	13'19"	2018	audio-visual	personal recounts
KNV-1023-PKN-MKN-Metamorphosis_Tamu	2	04'17"	2018	audio-visual	personal recounts
KNV-1024-MKN-Tamu_encounters	1	03'36"	2018	audio-visual	personal recounts
KNV-1025-PKN-MKN-Moving_of_the_Kanakanavu_ people	2	04'02"	2018	audio-visual	migration retelling
KNV-1026-AKN-The_origin_of_Namasia	1	27'19"	2018	audio-visual	folk story
KNV-1027-MKN-Demonstration_of_the_katatamu_prayer	1	02'03"	2018	audio-visual	ceremonial speech
KNV-1028-MKN-How_I_learned_the_katatamu_prayer	1	02'12"	2018	audio-visual	personal recounts
KNV-1029-MKN-PKP-Hunting_traditions_and_taboos	2	06'30"	2018	audio-visual	personal recounts
KNV-1030-MKN-Setting_up_traps_in_the_past	1	02'06"	2018	audio-visual	personal recounts
KNV-1031-AKN-Moving_of_the_Kanakanavu_people	1	27'50"	2019	audio-visual	migration retelling
KNV-1032-AKN-Moving_of_the_Kanakanavu_people_cont	1	13'42"	2019	audio-visual	migration retelling
KNV-1033-AKN-Melon_metamorphosis_story	1	10'03"	2019	audio-visual	traditional story
KNV-1034-AKN-Tamu_metamorphosis_story	1	08'58"	2019	audio-visual	traditional story
KNV-1035-AKN-The_man_with_a_long_penis	1	12'27"	2019	audio-visual	traditional story
KNV-1036-AKN-The_origin_of_Mikong	1	15'00"	2019	audio-visual	traditional story
KNV-1037-AKN-Prayers_for_Yiyang	1	03'00"	2019	audio-visual	ceremonial speech
		5h 10'54"			

In addition to recordings of Kanakanavu speech from the extant speakers, the field trips also included transcription/translation sessions with each of two prominent Kanakanavu language activists — Mr. Ka'angaiana 'Angai (翁博學) and Mr. Kanapaniana Pani (孔岳中) — both of whom are actively engaged in on-going language preservation and revitaliza-

tion activities within the Kanakanavu community. Mr. Kaángaiana has been the full-time Kanakanavu language teacher participating in the Indigenous Language Master-apprentice Program (族語師徒制). Launched in 2018, the program aims to train full-time Kanakanavu adult students to speak Kanakanavu, a government-funded effort to revitalize the language. Mr. Kanapaniana works for the Council of Indigenous Peoples (原住民族委員會) in designing official pedagogical materials in Kanakanavu, and for the Taiwan Indigenous Television (原住民族電視台) in creating Kanakanavu-language-based television news broadcast.

Both Mr. Ka'angaiana and Mr. Kanapaniana are fluent speakers of Kanakanavu and have contributed significantly in assisting the transcription and translation of collected recordings. The transcription work involves (i) segmenting the recorded speech into Intonation Units (IUs) (Chafe 1994) under a framework of discourse transcription developed in the UCSB Linguistics Department (Du Bois et al. 1993), and (ii) employing a writing system adapted from the official Kanakanavu writing system standardized by Mr. Kanapaniana to transcribe the speech content. The work is entirely done on ELAN, an annotation tool for audio and video recordings created by the Max Planck Institute for Psycholinguistics ELAN (Version 6.0) (2020), which allows the creation of recording-based annotations on multiple layers, or *tiers*. The transcription work interface is illustrated in Figure 1.4 below, where five annotation tiers were created for each of the two speakers who contributed to the recording KKV-1029-MKN-PKP-Hunting_traditions_and_taboos. The first tier (PKP-iu, MKN-iu) contains transcriptions of the recorded speech in Intonation Units, and the second tier (PKP-cl and MKN-cl) contains combined Intonation Units that represent a semantically coherent sentence. The third and fourth tiers (PKP-cl-ft-chi, MKN-cl-ft-chi, PKP-cl-ft-eng and MKN-cl-ft-eng) contain the free translations of the sentences from the second tier into Chinese and English, respectively. Finally, a fifth tier (Tokenized-PKP and Tokenized-MKN) was created automatically from tokenizing the first tier, whereby each word included in an IU is created as an independently segmented annotation. The tokenized tier may be further annotated and exported for linguistics analysis purposes.

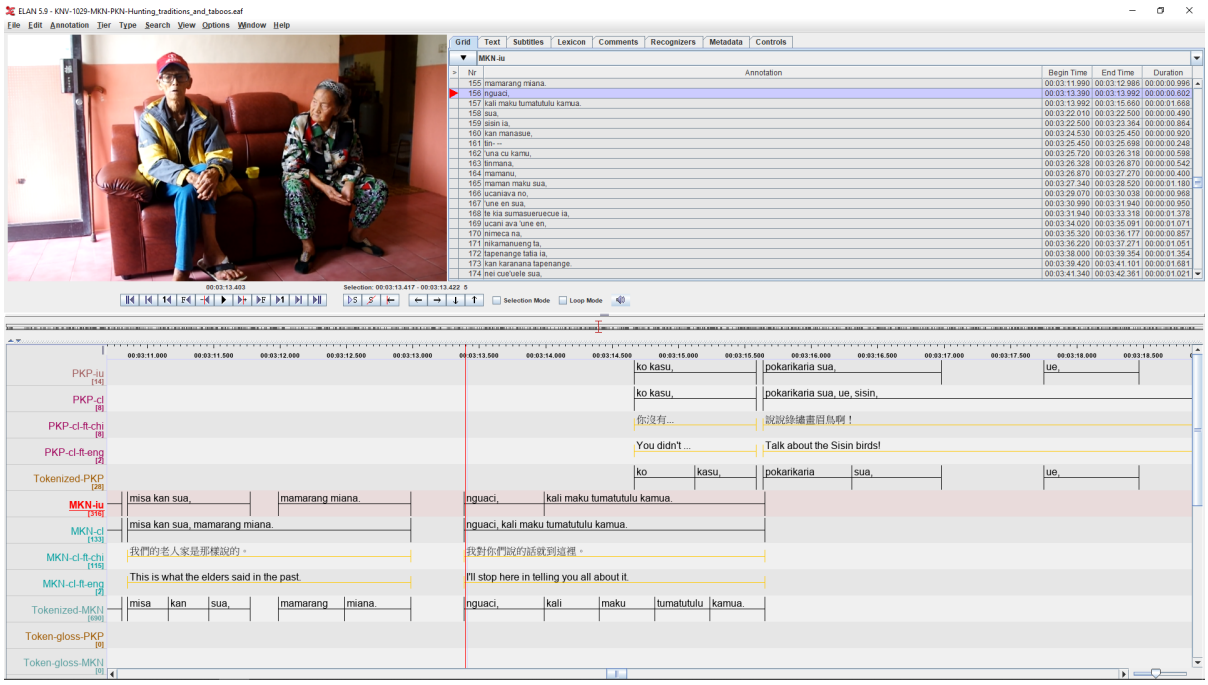

Figure 1.4: Transcription work interface on ELAN

This dissertation also draws on a database of Kanakanavu verbs, which has been constructed with reference to (i) the author's own field notes taken from fieldwork transcription/translation sessions, (ii) previous documentary materials of the language Tsuchida (2003), and (iii) entries in the online Kanakanavu dictionary created by Mr. Kanapaniana, currently maintained by the Indigenous Languages Research and Development Foundation.[17] The verb database currently contains full or partial structural information about 429 Kanakanavu verbs/verb forms, including surface form transcription, various aspects of the meaning and internal structure of each verb, the location of stress (prosodic prominence) and the source of data from which the information was drawn.

To tackle the remaining issues surrounding voice in Kanakanavu, a usage-based approach to linguistic structure (J.L. Bybee 2010; J.L. Bybee and Beckner 2015) is adopted, which is a nonreductive, non-minimalist approach to linguistic representation (Langacker 1987; Kay 1997) and seeks explanations of grammar in language-external (including discourse-functional, cognitive and interactional) factors. To address the analytical challenges of identifying voice

[17]The dictionary is available to the public and can be accessed at: https://e-dictionary.ilrdf.org.tw/

1	Case	Check	SR	UR	Verb_gloss_	Verb_glo	Voice	Mood_asp	Verb_class	Stem	Stem_gloss	Verb_syll	UR_mora	Prominenc	Reference
18	17		mucun	m-u-cunu	burn, catch	燒, 著火	AV	IND_PFV	ZU1	u-cunu	burn_unac	2	3	final	Li (2004:1501)
19	18		mocun	m-u-a-cunu	burn, catch	燒, 著火	AV	IND_IPFV	ZU1	u-cunu	burn_unac	2	4	penult	fieldnotes
20	19		nimucun	ni-m-u-cunu	burn, catch	燒, 著火	AV	IND_PERF	ZU1	u-cunu	burn_unac	3	4	penult	fieldnotes
21	20	v	ucune	u-cunu-ai	burn, catch	燒, 著火	PV	IND_PFV	ZU1	u-cunu	burn_unac	3	4	penult	fieldnotes
22	21	v	ucunun	u-cunu-xn	burn, catch	燒, 著火	PV	IND_IPFV	ZU1	u-cunu	burn_unac	3	4	penult	fieldnotes
23	22	v	niucun	ni-u-cunu	burn, catch	燒, 著火	PV	IND_PERF	ZU1	u-cunu	burn_unac	2	4	penult?	fieldnotes
24	23		cumacunu	c<um>a-cunu	burn, set on	燒	AV	IND_IPFV	ZU1	cunu	burn_erg	4	4	penult	Dictionary
25	24		cunun	cunu-un	burn, set on	燒	PV	IND_IPFV	ZU1	cunu	burn_erg	2	3	penult	fieldnotes
26	25		tummana	t<um>imana	hear, listen	聽(到)	AV	IND_PFV	ZU1	timana	hear, lister	3	4	antepen	fieldnotes
27	26		tumatimana	t<um>a-timana	hear, listen	聽(到)	AV	IND_IPFV	ZU1	timana	hear, lister	5	5	penult	fieldnotes
28	27	v	tinmana	t<in>ummana	hear, listen	聽(到)	AV	IND_PERF	ZU1	timana	hear, lister	3	4	antepen	fieldnotes
29	28	v	timane	timana-ai	hear, listen	聽(到)	PV	IND_PFV	ZU1	timana	hear, lister	3	4	penult	fieldnotes
30	29		timanxn	timana-xn	hear, listen	聽(到)	PV	IND_IPFV	ZU1	timana	hear, lister	3	4	final	fieldnotes
31	30	v	tinmana	t<in>imana	hear, listen	聽(到)	PV	IND_PERF	ZU1	timana	hear, lister	3	4	antepen	1029-48
32	31		tumutulu	t<um>utulu	tell	告訴	AV	IND_PFV	ZU1	tutul<u>	tell	4	4	antepen	fieldnotes
33	32		tumatutulu	t<um>a-tutulu	tell	告訴	AV	IND_IPFV	ZU1	tutul<u>	tell	5	5	antepen	fieldnotes
34	33		tinmutulu	t<in>umutulu	tell	告訴	AV	IND_PERF	ZU1	tutul<u>	tell	4	5	antepen	fieldnotes
35	34	v	tutuloe	tutulu-ai	tell	告訴	PV	IND_PFV	ZU1	tutul<u>	tell	4	4	final?	fieldnotes
36	35	v	tutulun	tutulu-xn	tell	告訴	PV	IND_IPFV	ZU1	tutul<u>	tell	3	4	final?	fieldnotes
37	36		tinutulu	t<in>utulu	tell	告訴	PV	IND_PERF	ZU1	tutul<u>	tell	4	4	antepen	fieldnotes
38	37		mala	m-ala	take (away)	拿(走)	AV	IND_PFV	ZU2	ala	take	2	2	penult	fieldnotes
39	38		umala	um-ala	take (away)	拿(走)	AV	IND_IPFV	ZU2	ala	take	3	4	penult	fieldnotes
40	39		nimala	ni-m-ala	take (away)	拿(走)	AV	IND_PERF	ZU2	ala	take	3	3	penult	fieldnotes
41	40		niala	ni-ala	take (away)	拿(走)	PV	IND_PFV	ZU2	ala	take	3	3	penult	1011-977
42	41		alxn	ala-xn	take (away)	拿(走)	PV	IND_IPFV	ZU2	ala	take	2	3	final	fieldnotes
43	42		alai	ala-ai	take (away)	拿(走)	PV	IND_PERF	ZU2	ala	take	2	3	final	fieldnotes
44	43		mavici	m-avici	bring	攜帶	AV	IND_PFV	ZU2	avici	bring	3	3	penult	1036-119
45	44		umavici	um-avici	bring	攜帶	AV	IND_IPFV	ZU2	avici	bring	4	5	antepen	1033-184, T (2003:34/38)
46	45	v	nimavici	ni-m-avici	bring	攜帶	AV	IND_PERF	ZU2	avici	bring	4	4	penult	1033-35
47	46		nevici	ni-avici	bring	攜帶	PV	IND_PFV	ZU2	avici	bring	3	4	antepen	1031-08:04
48	47		avicin	avici-in	bring	攜帶	PV	IND_IPFV	ZU2	avici	bring	3	4	penult	1036-361
49	48		avicen	avici-xn	bring	攜帶	PV	IND_PERF	ZU2	avici	bring	3	4	final	1009-243, 1013-169
50	49		mukusa	m-u-kusa	go (away fr	去	AV	IND_PFV	ZU2	u-kusa	go (away f	3	3	penult	fieldnotes

Figure 1.5: The Kanakanavu Verb Database

categories in Kanakanavu, this dissertation is in line with usage-based theories of language in treating constructions as the basic unit of form-meaning correspondence (Fillmore et al. 1988; Goldberg 1995, 2006; Croft 2001), thereby considering voice categories as manifest in voice constructions that can be identified at different levels of structural organization in the language.

1.5 Overview of the dissertation

This dissertation is divided into three main chapters. Chapter 2 — **Kanakanavu Phonology and Morphophonology Revisited** — provides an overview of the segmental and suprasegmental (prosodic) structures of Kanakanavu and how they interact with morphological structures. In this chapter, a framework is proposed in which Kanakanavu word forms are described in both their underlying and surface structures. The framework accommodates the pervasive

free variation in how words are pronounced by contemporary speakers. It also allows for word-prosodic prominence, a phenomenon that has not been fully explored in the language, to receive a unifying account. The framework establishes a descriptive basis for discussing the morphosyntax of voice in Kanakanavu in the two chapters that follow.

Chapter 3 — **Voice, TAM and Verb Classes in Kanakanavu** — examines the morphological properties of voice and aims to answer the research question: How many voice categories are distinguished in Kanakanavu? The chapter begins by discussing an approach to the noun-verb distinction in the language by examining the potential of a word to undergo mood alternation. It is demonstrated that only verbs may undergo mood alternation, and that mood and tense-aspect marking provides evidence for a binary distinction between what are referred to as agent-voice and patient-voice constructions in this study. After a detailed discussion of morphological root types and derivation of stems, it is shown that every stem has an agent-voice form, but not all have patient-voice forms. In addition, agent-voice and patient-voice verbs exhibit distinct patterns of morphological voice marking, which interacts with tense-aspect-mood. Agent-voice verbs may or may not be overtly marked for voice, and they also differ in whether or how the imperfective aspect is marked, depending on the specific morphological verb class to which they belong. On the other hand, patient-voice verbs are always marked for voice, whereby voice markers are portmanteau morphemes that also indicate tense-aspect-mood. Patient-voice verbs also differ in whether a dedicated perfect verb form exist, which largely depends on whether the verb semantics can be characterized as dynamic or stative.

Chapter 4 — **Voice, transitivity and ergativity in Kanakanavu** — turns to the syntactic properties of voice and aims to determine the extent to which the Kanakanavu voice system can be analyzed as syntactically symmetrical. By focusing on the coding and behavioral properties of different argument roles that occur across the two voice constructions, this chapter presents strong evidence suggesting that voice alternation has implications for transitivity. The agent-voice construction is analyzed as the intransitive construction with extended antipassive

functions, whereas the patient-voice construction is analyzed as the transitive construction with (less productive) extended applicative functions. In addition, voice alternation is shown to be sensitive to discourse-pragmatic, semantic-ontological and grammatical factors. The analysis sheds light on the rich transitivity-related functions that are served by voice constructions in Kanakanavu. It leads to the conclusion that the Kanakanavu voice system is not only characterized by an ergative argument alignment, but it also exhibits differential agent marking in the pronominal domain, a phenomenon that has been more commonly found in ergative systems.

The conclusion of the dissertation is provided in Chapter 5, which draws attention to the contributions of this dissertation, especially those regarding the suffix *-ai* as an unusual indicative voice suffix under the Formosan context.

Chapter 2

Kanakanavu phonology and morphophonology revisited

2.1 Introduction

Kanakanavu phonology exhibits a rather complex picture regarding (i) how underlying vowels are realized and (ii) how prosodic prominence is assigned. These two aspects, nevertheless, have not received unified accounts in recent studies on the language; The goal of this chapter, therefore, is to present new analyses in these regards in order to provide a descriptive and analytical foundation for exploring the morphology and morphosyntax of voice in the rest of the dissertation.

The earliest description of Kanakanavu phonology can be traced back to Ogawa and Asai (1935), which is a collection of data from, and grammar sketches of, 12 Formosan languages. Ever since then, however, there has been considerable variation in how Kanakanavu words are transcribed. The verb that has been glossed with the meaning 'eat' and involves the infix <um> (an agent-voice marker), for example, has been transcribed in numerous ways, including:

(11) Transcription variation involving the verb *k~~u~~mú~~n~~* 'eat (agent voice)'

a. k<um>áunu (Ogawa and Asai 1935: 725)

b. k<um>áun~~u~~ (Tsuchida 2003: 3)

c. k<~~u~~m>~~u~~un (H.-C. Liu 2014: 34)

d. k<~~u~~m>a~~u~~n (Zeitoun and Teng 2016: 174)

e. k<um>~~u~~n (Wild 2018: 195)

f. k<~~u~~m>un~~u~~ (L.-M. Sung 2018: 81)

The examples above illustrate, to begin with, disagreements among previous studies in terms of (i) whether the verb root is transcribed as involving a vowel sequence, and, if yes, (ii) what is the quality of each vowel. The vowel sequences that have been proposed include: /au/ (11a), /a~~u~~/ (11b) and and /~~uu~~/ (11c).[1] The transcriptions also differ in whether the infix is transcribed with /u/ (<um>) or /~~u~~/ (<~~u~~m>) involved and whether a word-final vowel (/u/ or /~~u~~/) is present. In additional, although the transcriptions taken from Ogawa and Asai (1935) and Tsuchida (1976) above include diacritics to indicate word-prosodic prominence (generally referred to as word stress, see Tsuchida 1976; H. Chen 2016; S. Chen 2016), no diacritics are included for the transcription of this specific word in the other three more recent studies.

It has been noted in the literature that Kanakanavu underwent drastic changes after it was documented by Ogawa and Asai (1935), which completely restructured the vowel system (M.M.Y. Sung 1966; H. Chen 2016). H. Chen (2016), for example, notes that the mid vowel /e/ may vary with /ai/ or /ia/ vowel sequences synchronically (12), or corresponds to earlier transcriptions that include those sequences (13).[2] These are taken as evidence by her for on-going or complete processes of monophthongization, which contribute to the emergence of /e/ as a new vowel phoneme in the language.

[1]The symbol <~~u~~> is used here to represent the high central vowel /~~ɨ~~/ in a unified way for ease of reference. Tsuchida uses <e> to represent the vowel. See Section 2.2.2 below for the Kanakanavu vowel inventory proposed in this study and for the conventions adopted for transcribing vowels in the rest of this dissertation.

[2]The earlier transcriptions are directly cited from H. Chen (2016), who, however, does not provide references from which the earlier transcriptions are drawn.

(12) /e/ varying with /ai/ or /ia/ sequences

a. sarone ~ saronai ‘man’ (H. Chen 2016: 73)

b. masaŋai ~ masaŋe ‘tired’ (H. Chen 2016: 74)

c. tapianaŋai ~ tapenaŋe ‘bird’ (H. Chen 2016: 74)

(13) /e/ corresponding to /ai/ or /ia/ sequences in earlier transcriptions

a. tsenana ‘year’ (transcribed earlier as tsainana) (H. Chen 2016: 76)

b. vakure ‘Japanese yam’ (transcribed earlier as vakurai) (H. Chen 2016: 76)

c. meranau ‘long time’ (transcribed earlier as miaranau) (H. Chen 2016: 76)

Similarly, the mid vowel /o/ varies with /au/ or /ua/ sequences synchronically (14), or correspond to those sequences in transcriptions from previous studies (15). Again, these are taken by H. Chen (2016) as indication that monophthongization created the contemporary /o/ vowel phoneme in the language.[3]

(14) /o/ varying with /au/ or /ua/ sequences

a. muatsa ~ mo:tsa ‘go’ (H. Chen 2016: 75)

b. muakusa ~ mo:kusa ‘go toward’ (H. Chen 2016: 75)

c. sauni ~ so:ni ‘now’ (H. Chen 2016: 75)

(15) /o/ corresponding to /au/ or /ua/ sequences in earlier transcriptions

a. voʔin ‘eye’ (transcribed earlier as vuaʔin) (H. Chen 2016: 77)

b. sioru ‘scooper’ (transcribed earlier as siauru) (H. Chen 2016: 77)

c. musukom ‘painful’ (transcribed earlier as musukuam) (H. Chen 2016: 77)

[3]The forms cited from H. Chen (2016) in (14) are transcribed with the [o] vowel lengthened, although vowel length is not systematically explored. Data considered by the author of this dissertation do not indicate surface vowel length. However, as shown in the discussion that follows in this chapter, underlying vowel sequences do play significant roles in Kanakanavu phonology and morphophonology.

While the proposed historical changes contribute to understanding of the rise of synchronic Kanakanavu phonology, it still begs the question of how and whether vowel sequences should be represented when transcribing contemporary word forms. In addition, as suggested by the transcription variation exemplified in (11) above, recent studies also differ in terms of whether vowel sequences consist of same-quality vowels, and if yes, whether they should be represented in the transcription. Finally, it is unclear what role prosodic prominence plays: while it is generally transcribed in earlier studies, recent studies generally do not include it.

While this chapter does not aim to present a comprehensive overview of Kanakanavu phonology and morphophonology, it proposes a solution to the descriptive challenges presented by Kanakanavu as introduced above by always distinguishing the underlying representation of a word form from its surface representation. In particular, vowels and vowel sequences that can be established based on synchronic evidence are represented underlyingly; they may correspond to different phonetic structures in the surface representation and/or interact with word-prosodic prominence in different ways. Since the present study does not find phonetic vowel length contrasts in Kanakanavu, underlying vowel sequences are posited to map onto either single vowels or vowel-glide/glide-vowel sequences in surface representation.

Section 2.2 first provides an overview of the consonant and vowel inventories in contemporary Kanakanavu, along with discussion of the transcription system adopted in this dissertation. Section 2.3 then introduces two types of synchronic evidence for establishing underlying vowels in Kanakanavu: **morphophonological alternations** and **assignment of word-prosodic prominence**. Complex interactions between the two that are pertinent to data representation and interpretation in the rest of the dissertation are further discussed in two sections that follow. Section 2.4 provides descriptions of several morphophonological processes that interact with word-prosodic prominence, while Section 2.5 examines how prosodic prominence may shift across different morphophonological and discourse contexts.

2.2 The phoneme inventory

2.2.1 Consonants

There have been several different proposals for the consonant inventory in Kanakanavu. Previous studies have proposed between 11 and 15 consonants (see H. Chen 2016: 9–11 for a comparison of the different proposals). This study is in line with Ogawa and Asai (1935) in positing 15 consonants. As can be seen in Table 2.1 below, the inventory includes 5 plosives, 3 nasals, 1 flap, 3 fricatives, and 3 approximants.[4]

Table 2.1: Kanakanavu consonant inventory

Labial/labiodental	**Dental/alveolar**	**Palatal**	**Velar**	**Glottal**
p	t	k		ʔ <’>
	ʦ <c>			
m	n		ŋ <ng>	
	ɾ <l>			
v	s			h
	ɹ <r>	j <i>	w <u>	

The main differences between the proposed inventory and smaller inventories proposed by previous studies concern status of (i) the glottal fricative /h/ <h>, (ii) the dental/alveolar approximant /ɹ/ <r> and (iii) two glide consonants — /j/ <i> and /w/ <u>. The glottal fricative /h/ occurs sporadically in terms of the number of word types in which it is found, but it is included in the inventory because some of the forms in which it occurs have rather high token frequencies in the corpus. One context in which it occurs is loanwords from Taiwanese, Japanese or Bunun (16). /h/ also freely varies with /s/ in some words (17). The forms showing

[4]According to Maddieson’s (2013) typological survey on WALS, the most typical consonant inventory across the world’s languages is in the low twenties (mean = 22.7, mode = 22, median = 21). The consonant inventory proposed for Kanakanavu here falls under Maddieson’s (2013) *moderately small* (15-18 consonants) category.

/s/~/h/ variation are all high frequency words which include /s/ in their citation forms. In unscripted connected speech, speakers sometimes pronounce them with /s/ leniting to /h/. The variation is intra-speaker, meaning that it can be observed in the speech of the same speakers at different times.

(16) Loanwords with /h/

a. hókia 'rich person/people' (Taiwanese, cf. Tsuchida 2003: 6)

b. haró 'Haro' (Japanese, name)

c. hangasía INTERJECTION (Bunun, probably from *hangsia* 'surprise')

d. hái DISCOURSE MARKER (probably from Bunun topic marker *hai*)

(17) Words with /s/ ~ /h/ free variation

a. sua ~ hua / sa ~ ha CONTRASTIVE

b. ísi ~ íhi PROXIMATE DEMONSTRATIVE

c. nési ~ néhi PROXIMATE LOCATIVE DEMONSTRATIVE

d. kusái ~ kuhái SPECULATIVE

e. tanása ~ tanáha 'home'

f. mósa /m-u-a-kusa/ ~ móha 'go (agent voice imperfective)'

g. makâsi /maka-asi/ ~ makâhi 'like this'

h. makásua /maka-asua/ ~ makáhua 'like that'

i. misé ~ mihé QUOTATIVE

Words that show /s/~/h/ variation will henceforth be represented with /s/ in the underlying representation. Depending on the speaker's pronunciation it may be represented with either [s] or [h] in the surface representation.

The contrast between flap /ɾ/ and approximant /ɹ/ is losing ground, the two showing signs of merger as /ɾ/,[5] which interact with speaker gender. The word *mamárang* /ma-ma-rangʉ/ 'elder(s), ancestor(s)', for example, consists of the root /rangʉ/ combining first with the stative prefix *ma-*, then with the reduplicated syllable *ma-* indicating plurality.[6] Female speakers show no variation when pronouncing this word, producing only [mamálang]. (This is also the case for all other roots that contain the dental approximant /r/ for the female speakers.) Male speakers, on the other hand, show intra-speaker variation regarding pronunciation of the word; it is sometimes pronounced as [mamálang], and sometimes as [mamárang].

(18) Phonetic realization of the word *mamárang* /ma-ma-rangʉ/ 'elder(s), ancestor(s)' across four speakers

a. UKP (female): mamálang

b. PKP (female): mamálang

c. MKN (male): mamálang~mamárang

d. AKN (male): mamálang~mamárang

The palatal and velar approximants /j/ and /w/ are included in the consonant inventory because they contrast with high vowels /i/ and /u/, respectively, but only in word-final position. Evidence for the contrast comes from prosodic prominence assignment, which will be discussed in more detail in Section 2.3.2. All the forms in (19) involve prominence being assigned to the penultimate underlying vowel, which excludes /j/ and /w/. Following the official Kanakanavu orthography, the two approximants will simply be represented as <i> and <u>, respectively, throughout the dissertation.

[5]The official orthographic system used for Kanakanavu pedagogy also collapses the two as <r> (standing for flap /ɾ/, cf. L.-M. Sung 2018: 9). This dissertation, however, employs orthographic <l> to represent the flap /ɾ/ and orthographic <r> to represent the dental/alveolar approximant /r/, as the contrast is still sometimes maintained in natural speech.

[6]See Section 2.3.1 below for more discussion on reduplication.

(19) Approximants /j/ and /w/ contrasting with high vowels /i/ and /u/, respectively

a. mar~~ú~~ngcai [mar~~i~~ngt͡saj] /mar~~u~~̲ngcaj/ ‘tall’

b. macái [macaj] /mac~~a~~̲i/ ‘die’

c. k~~ú~~no [k~~i~~no] /k~~uu~~n-aw/ ‘eat (patient voice imperative)’

d. cáu [t͡saw] /c~~a~~̲u/ ‘person, human’

Palatalization is productive for two dental/alveolar obstruents when they occur before the high front vowel /i/: affricate /c/ and fricative /s/ palatalize to /t͡ɕ/ and /ɕ/, respectively. Because of its productiveness and predictability, palatalization will not be orthographically represented in the surface forms of examples in this dissertation. (This is in line with the current official transcription system.) If needed, a separate phonetic representation will be given, as in (20c) and (20f) below.

(20) (Lack of) palatalization of dental/alveolar obstruents /c/ and /s/

a. cúma [t͡suma] /cuma/ ‘father’

b. cáni [t͡sani] /cani/ ‘song’

c. cína [t͡ɕina] /cina/ ‘mother’ (c → t͡ɕ)

d. sua [sua] /sua/ CONTRASTIVE

e. saronái [saronai] /saronai/ ‘man’

f. si [ɕi] /si/ ‘because’ (s → ɕ)

2.2.2 Vowels

Kanakanavu shows a relatively large vowel inventory compared to most Formosan languages. As can be seen in Table 2.2 below, the vowel inventory proposed in this study includes three high vowels — /i/, /ɨ/ (<~~u~~>) and /u/ — two mid vowels e and o, and a low central vowel /a/ (<a>).

Table 2.2: Kanakanavu vowel inventory

	Front	**Central**	**Back**
High	i	ɨ <ʉ>	u
Mid	e		o
Low		a	

Kanakanavu shows two specific morphophonological processes that affect how individual vowels are realized phonetically. They are often triggered by neighboring vowels, including regressive feature spreading of the /ʉ/ vowel and mutual influence of /a/ and /u/ vowels.

A case of **regressive assimilation** is found for the high vowel /u/, which is subject to fronting to /ʉ/ when immediately preceding a syllable containing /ʉ/. This can be seen in (21), for example, where the affixes <*um*>, *u-* and *musu-* are realized phonetically as <*ʉm*>, *ʉ-* and *musʉ-*.[7] This can also be considered a process whereby /ʉ/ spreads its features leftward to a /u/ in the immediately preceding syllable.

(21) ʉ-spreading (u → ʉ / _ CʉC)

a. cʉmʉ́ʼʉla /c<um>ʉʼʉla/ ‘see (agent voice)’

b. ʼʉmʉ́can /ʼ<um>ʉcanʉ/ ‘rain (agent voice)’

c. mʉtʉ́a /m-u-tʉa/ ‘find’ (successful /ʉ/ spreading)

d. musʉ́tʉa [musʉtɯa] /musu-tʉa/ ‘anticipate, expect correctly’

The spreading is blocked by any intervening non-/u/ vowel. This can be seen in (22), where the imperfective forms of the two verbs *cʉmʉ́ʼʉla* ‘see (agent voice)’ and *ʼʉmʉ́canʉ* ‘rain (agent voice)’ involve C*a*-reduplication, where an additional /a/ vowel intervenes between the /u/ in the infix <um> and the first /ʉ/ in the root. (See Section 2.4.5 below for discussion of

[7] See Section 2.3 below for more discussion on affixation.

C*a*-reduplication.) Here, the infix is phonetically realized as <um> (22b, d), as opposed to the assimilated <ʉm> (22a, b).

(22) ʉ-spreading blocked by intervening vowels

a. cʉ̲mʉ́'ʉla /c<u̲m>ʉ̲'ʉla/ 'see (agent voice)' (/ʉ/ spreading applied)

b. cumacʉ'ʉ́la /c<u̲m>a-cʉ̲'ʉla/ 'see (agent voice imperfective)' (ʉ spreading blocked by /a/)

c. 'ʉ̲mʉ́canʉ/'<u̲m>ʉcanʉ/ 'rain (agent voice)' (/ʉ/ spreading applied)

d. 'u̲mo'ʉ̲cánʉ/'<u̲m>a-'ʉ̲canʉ/ 'rain (agent voice imperfective)' (ʉ spreading blocked by /a/)

On the other hand, the low central vowel /a/ and high back vowel /u/ are found to exert influence on each other in different ways. A morphologically sensitive assimilation process, is found for /a/: it raises to [o] when occurring after a front (labial or dental/alveolar) consonant and directly before a /'u/ or /'ʉ/ syllable, with a morpheme boundary in between (i.e. a → o / C_{front} _ + 'u/'ʉ). This can be seen in (23), where the syllables /ma/ (23a-c) and /pa/ (23c) are phonetically realized as [mo] and [po], respectively, as a result of influence from the immediately following /'u/ or /'ʉ/ syllables.

(23) (a → o / C_{front} _ + 'u/'ʉ)

a. 'umó'uma /'uma̲-'u̲ma/ 'farmland'

b. 'umo̲'ukúku /'<um>a̲-'u̲kuuku/ 'moan (as an animal)'

c. 'umo̲'ʉcánʉ /'<um>a̲-'ʉ̲canʉ/ 'rain (agent voice imperfective)'

d. masi'upo̲'upángʉ /masi-'upa̲-'u̲pangʉ/ 'do carelessly'

The raising does not occur when no morpheme boundary intervenes between a /C_{front}*a*/ syllable and a /'u/ syllable (24a-c), or when the /a/ preceding the /'u/ syllable does not occur after a front consonant (24d).

(24) (Absence of) a-raising

a. ma'únu /m-a̲'u̲nu/ 'carry (with forehead)' (no morpheme boundary between /a/ and /'u/)

b. maka'ualu̶ /ma-ka̲'u̲alu̶/ 'admonish (agent voice)' (no morpheme boundary between /a/ and /'u/)

c. paka'ualu̶n /pa-ka̲'u̲alu̶-u̶n/ 'admonish (patient voice imperfective)' (no morpheme boundary between /a/ and /'u/)
a ka'umó'uma /ka̲a̲-'uma~'uma/ 'cultivate (land)' (/a/ not occurring after C_{front})

/mu/ in initial position optionally lowers to [mo] when the immediately following syllable contains the low central vowel /a/. This is also an optional and form-specific process, with word forms in question showing free variation:

(25) u-lowering (u → o / m _ Ca)

a. mucanúmu ~ mocanúmu /mu-canumu/ 'fetch water'

b. mu'alavang ~ mo'alavang /mu-'alavangu̶/ 'go/move indoors'

c. mucacán ~ mocacán /mu-cacanu̶/ 'walk'

d. mulán ~ molán /mu-lanu̶/ 'help'

Different from consonants, vowels exhibit rather complex interactions with morphophonological alternations and word-prosodic prominence. The rest of this chapter examines the synchronic aspects of these interactions, focusing on those that inform a data-representation scheme that provides a descriptive foundation for exploring the morphology and morphosyntax of voice in the two chapters that follow.

2.3 Synchronic evidence for underlying vowel sequences

As discussed in Section 2.1 above, this chapter aims to systematize how Kanakanavu word forms are transcribed, whereby a distinction between underlying and surface representations is always made. Most of the disparities between the two levels of representation lie in whether and how vowel sequences are represented. In this dissertation, underlying vowels and vowel sequences are consistently represented regardless of how they correspond to surface segments, as long as there is **synchronic evidence** for positing them, which is drawn from: (i) **morphophonological alternations** and/or (ii) **assignment of word-prosodic prominence**.

Crucially, underlying representations established accordingly may or may not match transcriptions provided by earlier studies. The forms in (26) below, for instance, are all transcribed as involving vowel sequences in Tsuchida (1976). Although they all involve mid vowels, which are plausibly derived from historical vowel sequences according to H. Chen (2016), there is arguably no synchronic evidence that motivates positing more complex underlying structures: the forms do not undergo morphophonological alternations that may suggest underlying vowel sequences, and no synchronic variation is observed.

(26) Forms consisting of vowel sequences in earlier documentation transcribed without vowel sequences in this study alternations

a. ké /ke/ 3GEN (transcribed as *kiai* by Tsuchida 1976)

b. kó /ko/ NEG.PFV (transcribed as *kuu* by Tsuchida 1976)

c. ’ési /’esi/ EXIST (transcribed as *’aisi* by Tsuchida 1976)

This section offers overviews of the two types of synchronic evidence. Complex interactions between the two that are relevant for exploring the morphology and morphosyntax of voice are discussed in the two sections (Section 2.4 and Section 2.5) that follow.

2.3.1 Morphophonological alternations

Suffixation and **prefixation** are productive morphological processes that may provide synchronic evidence for establishing underlying vowels in Kanakanavu. This is due to the nature of suffixes and prefixes in Kanakanavu always involving vowels occurring next to morpheme boundaries. As exemplified in Table 2.3 below, all Kanakanavu suffixes are monosyllabic; they also always begin with a vowel:

Table 2.3: Examples of Kanakanavu suffixes

Form	Syllable structure	Gloss
-a	V	AGENT VOICE IMPERATIVE
-~~u~~n	VN	PATIENT VOICE IMPERFECTIVE
-ai	VG	PATIENT VOICE PERFECTIVE
-au	VG	PATIENT VOICE IMPERATIVE

An example of suffixation providing evidence for establishing underlying vowel sequences is drawn from the varying behaviors of the imperative suffix *-a*. As seen in Table 2.4, the suffix may attach to stems ending in either consonants or non-/a/ vowels. When attaching to consonant-ending stems, the suffix is straightforwardly evidenced in the surface representation, since it forms a CV syllable with the stem-final consonant. When attaching to stems ending in a non-/a/ vowel, such as /i/, the stem-final vowel undergoes glide formation,[8] but the the suffix is still evidenced in the surface as [a], forming a GV syllable with the stem-final vowel. In this case, both the stem-final /i/ and the suffix /a/ are posited in the underlying representation, leading to an underlying /ia/ vowel sequence.

[8]Glide formation is a process subsumed under hiatus resolution, which will be discussed in more detail in Section 2.4.1 below.

Table 2.4: *-a* IMP combining with consonant-final and non-/a/-vowel-final stems as evidence for underlying /Ca/ and /Va/ sequences, respectively

Suffixed form	**SR**	**UR**	**Gloss**	**Stem**
po'ucípa	[po'ucipa]	/pa-'ucip-a̲/	'cook (IMP)'	(po'ucíp- /pa-'ucip-/ 'call')
kumúna	[kumuna]	/kumuun-a̲/	'eat (AV.IMP)'	(kumún /kumuun/ 'eat (AV)')
pokalía	[pokaɾja]	/poo-kali-a̲/	'call (IMP)'	(pókali /pookali/ 'call')
pocilía	[pociɾja]	/poocili-a̲/	'steam (IMP)'	(pócili /poocili/ 'steam')

On the other hand, Kanakanavu prefixes always end with a vowel and may range from being monosyllabic to being maximally trisyllabic:

Table 2.5: Examples of Kanakanavu prefixes

Form	**Syllable structure**	**Gloss**
i-	V	ANTICAUSATIVE
ni-	CV	PRFECT / PATIENT VOICE PERFECT
puu-	CVV	'utter'
ala-	VCV	'become'
'apa-	CVCV	CAUSATIVE
'alupa-	CVCVCV	RECIPROCAL

An example of prefixation providing evidence for establishing underlying vowel sequences can be seen in the varying behaviors of the perfect marker *ni-* (Table 2.6).[9] The prefix may attach to stems beginning with either consonants or non-/i/ vowels. When attaching to consonant-initial stems, the prefix is evidenced in the surface forms, since it constitutes a CV syllable on its own. When attaching to stems beginning with non-/i/ vowels (such as /a/), the prefix is realized as [nj] in the surface form, but the glide consonant [j] can be attributed to an

[9]For discussion of the analysis of *ni-* as a perfect marker in Kanakanavu, see Chapter 3.

underlying /i/ present in the prefix, which is evidenced in forms involving the prefix attaching to consonant-initial stems. This, therefore, leads to underlying /ia/ sequences posited for forms involving *ni-* attaching to /a/-initial stems.

Table 2.6: *ni-* PRF combining with consonant-initial and non-/i/-initial stems as evidence for underlying /iC/ and /iV/ sequences, respectively

Prefixed form	**SR**	**UR**	**Gloss**	**Stem**
nipokáli	[nipokaɾi]	/ni̱-pookali/	'call (PRF)'	(pókali /pookali/ 'call')
nikumún	[nikumun]	/ni̱-kumuun/	'eat (AV.PRF)'	(kumún /kumuun/ 'eat (AV)')
nialanái	[njaɾanaj]	/ni̱-alanai/	'come from (PRF)'	(alanai /alanai/ 'come from')
nialáka ∼ neláka	[njaɾaka] ∼ [neɾaka]	/ni̱-ala-aka/	'worsen (PRF)'	(aláka /ala-aka/ 'worsen')

2.3.2 Word-prosodic prominence assignment

Prosodic prominence pertains to acoustic prominence at the suprasegmental level. It is a universal property of open-class content words in Kanakanavu: every content word shows at least one and at most one syllable that is prosodically prominent.[10] Word-prosodic prominence in Kanakanavu may be realized on the **penultimate**, **final** or **antepenultimate** surface syllable of a word. The three prominence locations can be exemplified by the three verb forms in (27), all of which share the common verb stem *ukusa* 'go'. The syllables exhibiting prosodic prominence are indicated with an acute accent, which occurs on the penultimate syllable in (27a), the final syllable in (27b) and the antepenultimate syllable in (27c):

(27) Word-prosodic prominence positions exemplified by verbs sharing the stem *ukusa* 'go'

a. mukúsa 'go (agent voice)'

[10]Under Hyman's (2009) framework, word-level prosodic prominence in Kanakanavu would be characterized as privative and culminative.

b. ukusu̍n ‘go (patient voice imperfective)’

c. mókusa ‘go (agent voice imperfective)’

A survey of 241 Kanakanavu verb forms in isolation, as can be seen in Figure 2.1 below, shows that the most common prominence position in Kanakanavu is the penultimate syllable (~57%, n = 139), followed by the antepenultimate and final syllables, the latter two being roughly equally less common (~% n = 52, and ~% n = 50, respectively) than the former.[11]

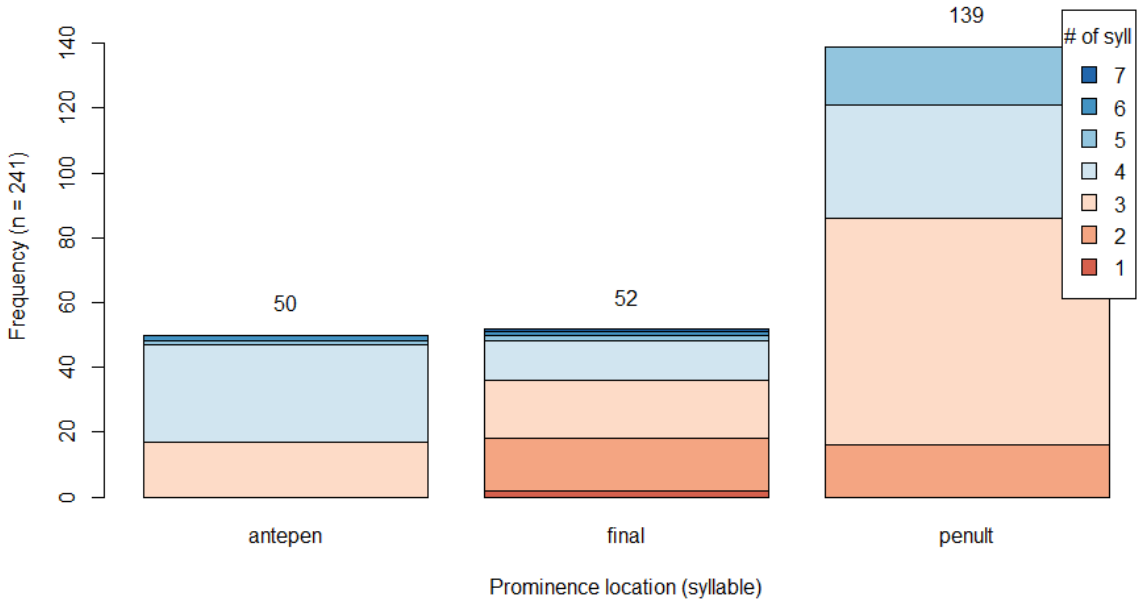

Figure 2.1: Relative Frequency of Kanakanavu prominence positions (across 241 verbs)

Prosodically prominent syllables are most saliently characterized by a high pitch that accompanies vowel production. The vowels on a prosodically prominent syllable also appear to be longer and show higher intensity when they are *not* in the penultimate syllable of a word. This can be illustrated by the spectrograms of the three verb forms from (27), as seen in figures 2.2 to 2.4 below. Across all three figures, the most prominent syllables are each characterized by a high pitch target (blue dotted lines), regardless of the position in which

[11] S. Chen (2016) also reports that the penultimate syllable is the most common location for word prominence (or “stress” in her term).

they occur (penultimate in Figure 2.2, final in Figure 2.3, and antepenultimate in Figure 2.4). Prominent syllables in both final (Figure 2.3) and antepenultimate (Figure 2.4) positions are significantly longer than the other syllables occurring in the same word; they are characterized by an intensity peak (yellow dotted lines) as well. Notice that penultimate prominence only shows a high pitch target; in the word form *mukúsa* 'go (agent voice)' (Figure 2.2), at least, it is the final syllable that is characterized by highest length and intensity.

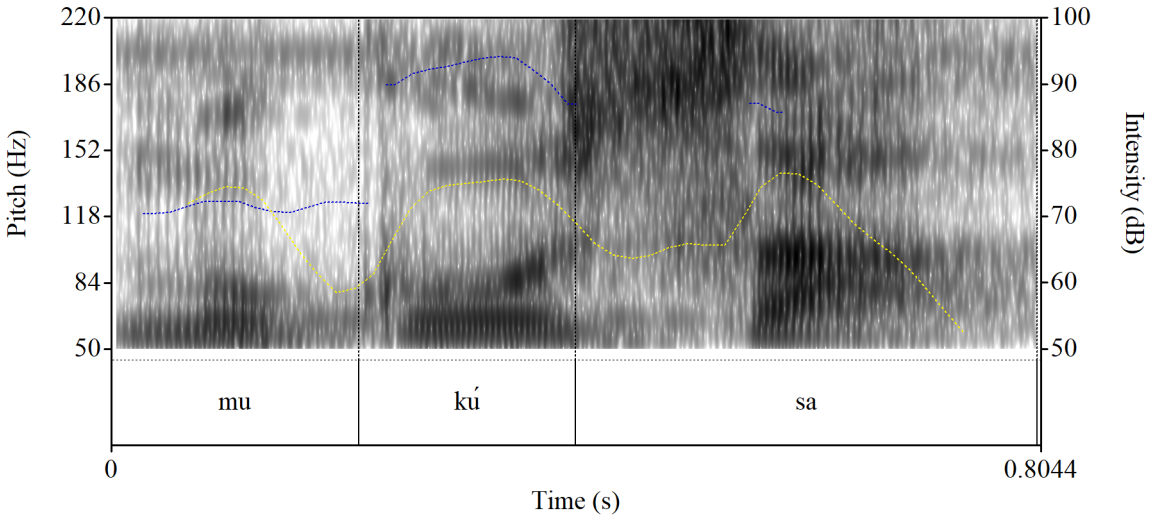

Figure 2.2: Spectrogram of mukúsa 'go (agent voice)' showing prominence on the penultimate syllable

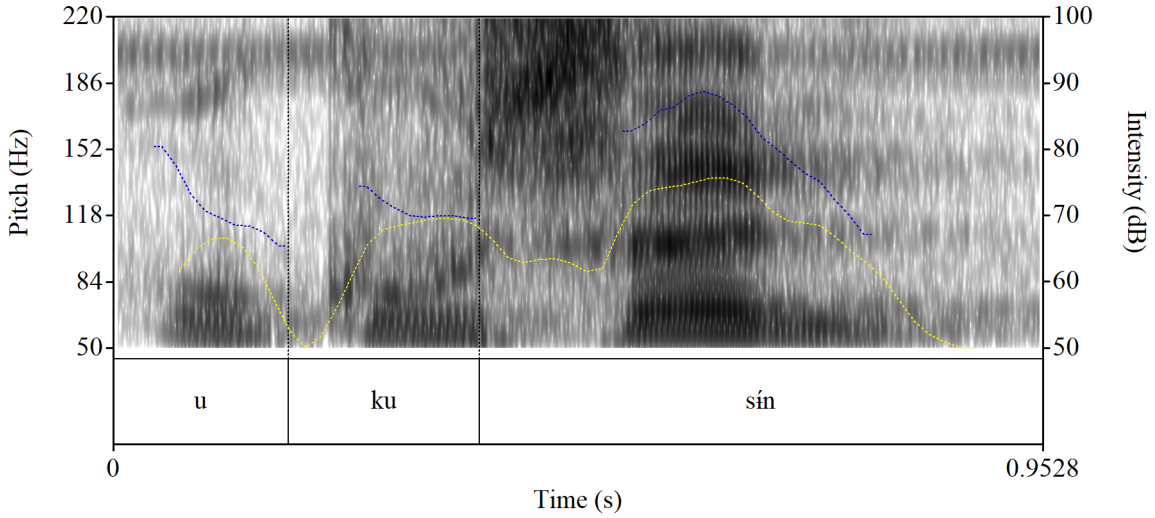

Figure 2.3: Spectrogram of ukusɨ́n ‘go (patient voice imperfective)’ showing prominence on the final syllable

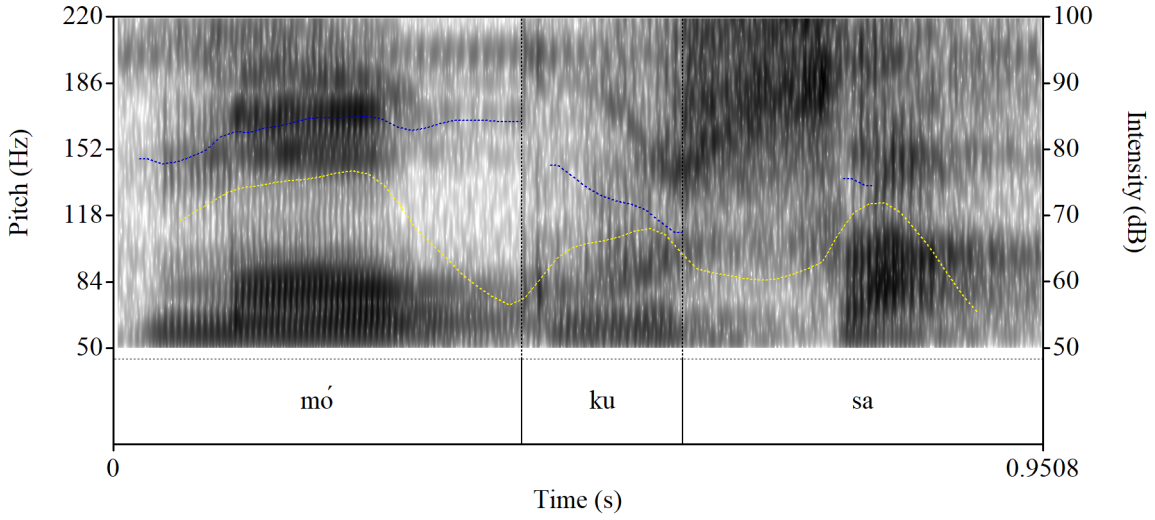

Figure 2.4: Spectrogram of mókusa ‘go (agent voice imperfective)’ showing prominence on the antepenultimate syllable

Phonologically speaking, the three word-prosodic prominence positions observed for content words are derived from two productive assignment rules, both being sensitive to the number of vowels in the underlying structure of a word:[12]

1. Prominence is assigned to the **antepenultimate** underlying vowel in a word which

- (i) contains *exactly four underlying vowels*, and
- (ii) does *not* involve suffixation;

2. *otherwise* it is assigned to the **penultimate** underlying vowel.

The assignment of prominence onto the **antepenultimate underlying vowel** can be illustrated by four-vowel words with simple CV syllable structures in (28). Morphologically speaking, such forms can be morphologically simplex (28a-b), or derived from 2-vowel (28c-d) or 3-vowel (28e-f) stems. Because all the forms in (28) are characterized by simple CV syllables, no disparities are posited between the underlying and surface representations; in each case, prominence is assigned to the underlying antepenultimate vowel and surfaces in the antepenultimate syllable.

(28) Antepenultimate prominence assignment

a.	vutúkulu	/vutukulu/	‘fish’	
b.	’angírisi	/’angi̲risi/	‘fat, lard’	
c.	musúpara	/musunderlineu-para/	‘ascend, climb up’	(stem = para ‘climb’)
d.	talákusa	/talunderlinea-kusa/	‘look over (at)’	(stem = kusa ‘toward’)
e.	cumákʉpʉ	/c<um>underlineakʉpʉ/	‘stab (agent voice)’	(stem = cakʉpʉ ’stab’)
f.	rumá’isi	/r<um>underlinea’isi/	‘bite (agent voice)’	(stem = ra’isi ‘bite’)

[12]The two rules proposed here can account for a wider range of data than what is proposed by H. Chen (2016) and Cheng (2020). See, however, Section 2.5 for how the two rules may be overridden by morpheme-specific factors, leading to deviations from the patterns predicted by the rules presented in this section.

The assignment of prominence onto the **penultimate underlying vowel** can be illustrated by disyllabic and trisyllabic words with CV syllables, as in (29). Again, because simple CV syllable structures are consistently involved, no differences are posited between the underlying and surface representations. In each case, the underlying penultimate vowel surfaces in the penultimate syllable along with the assigned prominence.

(29) Penultimate prominence assignment (in non-suffixed forms containing 2 or 3 underlying vowels)

a.	mánu	/munderlineanu/	'child'	
b.	mála	/m-underlineala/	'take'	
c.	tanása	/tanunderlineasa/	'house'	
d.	mukúsa	/m-u-kunderlineusa/	'go (agent voice)'	(stem = kusa 'toward')

The two rules proposed above based on word forms consisting of simple CV syllables provide several types of evidence for establishing underlying vowel sequences in word forms with more complex morphophonological structures. First, there are words with trisyllabic surface forms that necessitate underlying sequences of two vowels of the same quality to be posited after the initial consonant. As can be seen in (30) below, the posited vowel sequences may be contained within a prefix (30a), a root (30b-c) or across morpheme boundaries (30d):

(30) Antepenultimate surface prominence from antepenultimate prominence assignment (in non-suffixed forms containing 4 underlying vowels)

a.	pókali	/poo̲-kali/	'invite'	(stem = kali 'speech')
b.	pócili	/poo̲cili/	'steam'	
c.	mácaca	/maa̲caca/	'laugh'	
d.	nívatu	/ni-i̲vatu/	'come (PRF)'	(stem = ivatu 'come')

The underlying vowel sequences posited for the examples above explain the antepenultimate prominence in the surface forms: they lead to exactly four underlying vowels in all the word

forms. This creates the condition for prominence to be assigned to the antepenultimate underlying vowel, which then undergoes coalescence with the preceding vowel, the two surfacing as the single antepenultimate surface vowel along with the assigned prominence.[13]

In addition, many word forms that bear final prominence are attributed to underlying vowel sequences led to by suffixes attaching to vowel-ending stems. This can be illustrated by word forms involving the imperative suffix *-a* attaching to stems ending in vowels. The final /ia/ and /aa/ vowel sequences resulting from the suffixation may surface as a final glide-vowel sequence [ja] or a final single [a] vowel along with the assigned prominence. Notice that the posited final /aa/ sequence creates the condition for prominence to be assigned to the penultimate underlying vowel, regardless of whether exactly four underlying vowels result from the suffixation or not.[14]

(31) Final surface prominence from penultimate prominence assignment (in suffixed forms)

a.	pokalía [pokaɾja]	/pookali̲-a/	'invite (IMP)'	(stem = pókali 'invite')
b.	pocilía [poʦilja]	/poocili̲-a/	'steam (IMP)'	(stem = pócili 'steam')
c.	mukusá	/m-u-kusa̲-a/	'go (IMP)'	(stem = mukúsa 'go')
d.	pu'á [puʔa]	/pu'a̲-a/	'buy (IMP)'	(stem = pú'a 'buy')

A list of roots are posited to involve underlying CVVCV structure, which interacts with the two prominence assignment rules. The analysis explains the seemingly invariable nature of prosodic prominence exemplified by the TAM-unmarked and imperfective verb forms derived from such roots. This can be exemplified by verb forms derived from the root for 'dig', posited as *kooru* in this study. The agent-voice verb form derived from the root has been transcribed as *k<um>auru* in previous studies (e.g. P.J. Li 2004: 1504), but according to the collected synchronic data and based on the descriptive framework outlined above, it is

[13]Vowel coalescence is also a process subsumed under hiatus resolution, which will be discussed in more detail along with glide formation in Section 2.4.1 below

[14]Recall that antepenultimate prominence assignment only applies when (i) there are exactly four underlying vowels and (ii) no suffixation is involved. Suffixation always triggers the penultimate prominence assignment rule.

transcribed as *kumóru* and posited underlyingly as /k<um>ooru/. Although Li's transcription may suggest an underlying /au/ sequence, the verb does not show any [o]~[aw] free variation synchronically, at least according to the speakers that the author has worked with. There is evidence, however, from prominence assignment that makes it necessary to still posit a two-vowel sequence underlyingly. This is suggested by the seemingly invariant penultimate prominence in the two surface forms listed below. The form in (32a) consists of four underlying vowels, where no suffixation is involved. This creates an environment for the antepenultimate prominence-assigning rule. In contrast, the form in (32b) (which is marked in the imperfective via reduplication) is subject to the default penultimate prominence-assigning rule. Since prominence is assigned to either of the two underlying vowels in the posited /oo/ sequence despite application of different rules, it surfaces in the same penultimate position.

(32) Prominence assignment as evidence for underlying /oo/ vowel sequence

a. kumóru
   k<um>o̲oru
   <AV>dig

   'dig (agent voice)'

b. kumakóru
   k<um>a-koo̲ru
   <AV>IPFV-dig

   'dig (agent voice imperfective)'

Notably, the above examples point to the importance of combining morphophonological and prosodic evidence in establishing underlying vowel sequences. Although positing the root underlyingly as /koru/ may be motivated when only the form unmarked for aspect is considered (33a), doing so would predict the non-existing form **kumákoru* with prominence surfacing on the antepenultimate syllable:

(33) Prominence assignment and non-existing form **kumákoru*

a. kumóru

k<um>o̲ru

<AV>dig

'dig (agent voice)'

b. *kumákoru

k<um>a̲-koru

<AV>IPFV-dig

'dig (agent voice imperfective)'

2.4 Morphophonological processes

2.4.1 Hiatus resolution

While the present study does not find phonetic vowel length contrasts in Kanakanavu, single vowels on the surface are commonly derived from underlying vowel sequences that can be posited based on the two types of synchronic evidence introduced above. This section outlines two hiatus resolution strategies found in the derivation of surface vowels from underlying vowel sequences — **vowel coalescence** and glide formation. Importantly, many underlying vowel sequences only optionally undergo vowel coalescence or glide formation, with high degrees of lexical variation observed. The hiatus resolution strategies discussed here, therefore, capture the phonological processes that apply to underlying vowel sequences when the processes do occur. Why some word forms do not involve hiatus resolution strategies despite having underlying vowel sequences is a topic for future research.

2.4.1.1 Underlying sequences of same-quality vowels

An underlying sequence of two vowels of the same quality surfaces as one single coalesced vowel. Such underlying vowel sequences may result from concatenation of morphemes. In (34a), an underlying /ii/ sequence results from cliticization of the third-person possessor pronoun =*in* onto a stem ending in /i/. In (34b), the same /ii/ sequence results from the sequence of two prefixes (perfect marker *ni-* and motion marker *i-*) attaching to the stem.

(34) Vowel coalescence: surface [i] from underlying /ii/

a. karín
   kari̲=in
   speech=3.POSS
   'her/his/their speech'

b. nívatu
   ni-i̲-vatu
   PRF-motion-come
   'come (perfective)'

The underlying /aa/ sequences in (35) are attributed to the imperative suffix *-a* attaching to stems ending in /a/:

(35) Vowel coalescence: surface [a] from underlying /aa/

a. pu'á
   pu'a̲-a
   buy-IMP
   'buy (imperative)'

b. mimá
m-ima-a
AV-drink-IMP
'drink (agent voice imperative)'

Many underlying sequences of same-quality vowels are found in roots with (C)VVCV structure. The underlying CVVCV structure of the root *kuucu* 'pinch', for example, contributes to the surface penultimate prominence in the verb *masikúcu* /masi-kuucu/ 'pinch', despite the root corresponding to a CVCV sequence in the surface form (36a). Surface penultimate prominence is also found in verbs involving the same prefix *masi-* 'do/speak' attaching to roots with underlying CVCVCV structure, such as *ti'ingi* 'small' in (36b). When the prefix *masi-* 'do/speak' attaches to roots with CVCV structure, a four-vowel underlying structure results, leading the prominence to be assigned to the antepenultimate underlying vowel, surfacing in the antepenultimate syllable.

(36) Prominence positions and word forms involving the prefix *masi-*

a. masikúcu
masi-kuucu
do-pinch
'pinch'

b. masiti'íngi
masi-ti'ingi
speak-small
'Speak quietly'

c. masík~~u~~na

masi̱-k~~u~~na

speak-arrive

'speak to the point'

A list of roots posited with underlying (C)VVCV structure in this study is provided in (37) below, where the VV sequence is posited to involve same-quality vowels. Notice that some correspond to earlier transcriptions involving sequences of different-quality vowels. Synchronically, however, there is no morphophonological evidence for positing the underlying structure, although many of such discrepancies can be explained by the historical processes of monophthongization proposed by H. Chen (2016).

(37) Roots with CVVCV structure

a. k~~uu~~n~~u~~ 'eat' (transcribed as *k~~uu~~n~~u~~* in Tsuchida 2003: 50)

b. kooru 'dig' (transcribed as *kooru* in P.J. Li 2004: 1504)]

c. teeni 'throw' (transcribed as *taini* in Tsuchida 2003: 38)

d. tiini 'hang'

e. paapa 'follow'

f. caas~~u~~ 'long'

2.4.1.2 Underlying sequences of different-quality vowels (/ia/, /ai/, /ua/, /au/)

Underlying sequences of two different vowels may undergo vowel coalescence or glide formation, which typically results in free variation. To begin with, underlying /ia/ and /ai/ sequences may undergo coalescence to surface as [e]; they may also undergo glide formation to surface as [ja] and [aj], respectively. For example, the first syllable of the word *mepacái~miapacái* 'kill (agent voice)' (with [me] varying with [mja]) is attributed to an underlying /ia/ sequence: [me]

results from /ia/ coalescing as [e], whereas [mja] results from /i/ undergoing glide formation, leading to synchronic [me]~[mja] free variation (38a). A similar situation is found for the verb *niála* 'take (patient voice perfect)', in which only glide formation is observed (38b).

(38) Vowel coalescence or glide formation: [e] ~ [ja] from underlying /ia/

a. mepacái ~ miapacái [mjapatsaj] /mia-pacai/ 'kill (agent voice)' (mia- CAUS + pacai 'die')

b. niála [njaɾa] /ni-ala/ 'take (patient voice perfect)' (ni- PV.PRF + ala 'take')

In (39), the final syllables of the words involved — [e]~[aj] in *rumínge~rumíngai* 'lay hunting traps (agent voice)' (39a) and [aj] in *macái* 'die' (39b) — are attributed to underlying /ai/. Again, the free variation in (39a) is a result of either hiatus resolution strategy involved.

(39) Vowel coalescence or glide formation: [e] ~ [aj] from underlying /ai/ or /aj/

a. rumínge ~ r<um>íngai [rumingaj] /rumingai/ 'lay hunting traps (agent voice)' (<um> AV + ringai 'trap')

b. macái [matsaj] /macai/ 'die'

In the same vein, underlying /ua/ or /au/ sequences may coalesce as [o] or surface as [wa] and [aw], respectively, also resulting in synchronic free variation in some words. Underlying /ua/ giving rise to surface [o] and/or [wa] can be seen in *mókusa* /m-u-a-kusa/ 'go (agent voice)' and *móca* /m-u-aca/ 'walk' (40); underlying /au/ giving rise to surface [o] and/or [aw] can be seen in (41).

(40) Vowel coalescence or glide formation: [o] ~ [wa] from underlying /ua/

a. mókusa 'go (agent voice imperfective)' /m-u-a-kusa/ (m- AV + u- 'motion' + a- IPFV + kusa 'toward')

b. móca [motsa] ~ muáca [mwatsa] 'walk' /m-u-aca/ (m- AV + u- 'motion' + aca 'walk')

(41) Vowel coalescence or glide formation: [o] ~ [aw] from underlying /au/ or /aw/ (both to be represented orthographically as <au> in the next two chapters)

a. tumatinó~tumatináu /t<um>a-tinau/ ‘make hunting trap (agent voice imperfective)’

b. miaranáu /miaranau/ ‘long time’

2.4.1.3 Underlying sequences of different-quality vowels (/iu/, /ui/, /iʉ/, /aʉ/, /ʉa/)

The two high vowels /i/ and /u/ may form /iu/ or /ui/ sequences. Underlying /iu/ sequences, which never occur in final position, surface as [ju] (42a-c). Underlying /ui/ sequences, on the other hand, have a variety of surface realizations: [i] (42d), [e] (42e), [we] (42f) or [uj] (42g), depending on the specific form in which the sequence occurs.

(42) Vowel coalescence or glide formation: surface realizations of underlying /iu/ and /ui/ sequences

a. atiúma [at\underline{{ju}ma] ‘receive catching’ (/iu/ → [ju])

b. lumiú’u [lumju’u] ‘(go) fish(ing)’ (/iu/ → [ju])

c. niulupáca /ni-ulu-paca/ [njulupaca] ‘use (patient voice perfect)’ (/iu/ → [ju])

d. vantukín /vanituku=in/ ‘their/her/his money’ (final /ui/ → [i])

e. vutukulén /vutukulu=in/ ‘their/her/his fish’ (final /ui/ → [e])

f. cuculuén [cuculwen] /cuculu=in/ ‘if (it’s) true’ (final /ui/ → [we])

g. takúisi [takujsi] ‘goat’ (non-final /ui/ → [uj])

The high central vowel /ʉ/ never precedes either of the other two high vowels /i/ or /u/. It may, however, follow them. Underlying /iʉ/ sequences, when occurring in non-final position, coalesce to surface as [e] (43a-c). Final /iʉ/ sequences, in contrast, surface as coalesced [i] (43d-f). The latter involves an assimilation process specific to the suffix *-ʉn*, which will be further discussed in sections 2.4.3 and 2.5.3 below.

(43) Vowel coalescence: [e] from non-final /iʉ/ and [i] from final /iʉ/

a. nésʉ'ʉ /ni-ʉsʉ'ʉ/ 'place (patient voice perfect)'

b. némʉkʉ /ni-ʉmʉkʉ/ 'plant (patient voice perfect)'

c. nékʉrʉ /ni-ʉkʉrʉ/ 'keep, make stay (patient voice perfect)'

d. tinín /tiini-ʉn/ 'hang (patient voice imperfective)'

e. pokarín /puu-kali-ʉn/ 'invite, call (at) (patient voice imperfective)'

f. itakicín /i-takici-ʉn/ 'throw oneself onto (patient voice imperfective)'

Synchronically, no words are found to show surface [aʉ] sequences. Underlying /aʉ/ sequences are evidenced when the suffix *-ʉn* attaches to stems ending in /a/, where /aʉ/ surfaces as [ʉ], as in (44a-b). The same underlying sequence is found when prefixes ending in /a/, such as *ma-*, attach to stems beginning with /ʉ/, the two also surfacing as [ʉ], as in (44c).

(44) [ʉ] from underlying /aʉ/

a. cʉ'ʉlʉ́n /cʉ'ʉla-ʉn/ 'see (patient voice imperfective)'

b. timanʉ́n /timana-ʉn/ 'listen (patient voice imperfective)'

c. mʉ́tʉa [mʉ́tɯɪa] /ma-ʉtʉa/ 'find (agent voice)'

There is one root that is posited as involving an underlying /ʉa/ sequence — *ʉtʉa* 'find', as already shown in (44c) above. The underlying /ʉ/ vowel undergoes glide formation to become [ɯɪ], leading the /ʉa/ sequence to surface as [ɯɪa] (to be represented simply as <ʉa> in the next two chapters).

2.4.1.4 Underlying sequences of three or more vowels

Sometimes sequences of more than two vowels need to be posited in the underlying representations. Some examples of underlying three-vowel sequences can be seen in (45), where

different degrees of morphological complexity can be found.[15]

(45) Underlying three-vowel sequences and surface realizations

a. r<u>ó</u>imi [rojmi] /r<u>oo</u>imi/ 'forget'

b. p<u>u</u><u>é</u>'i [pweʔi] /p<u>u</u>-<u>ai</u>'i/'return'

c. p<u>uá</u>ka [pwaka] /p<u>uu</u>-<u>a</u>ka/ 'speak ill (of)'

2.4.2 High-vowel deletion

Kanakanavu shows complex processes whereby underlying high vowels are deleted. There is one process in which vowels are deleted in final position (**apocope**), and two in which non-final vowels are deleted (**syncope**). Each process is sensitive to the specific number of underlying vowels a word consists of.[16]

2.4.2.1 Apocope

Apocope is observed in open-class words that (i) involve at least 3 vowels underlyingly, and (ii) end with an underlying NV_{high} syllable (i.e. an open syllable consisting of a nasal onset and a high vowel). Apocope is an optional phonological process: word forms that satisfy the two criteria identified above commonly exhibit free variation between apocopated and non-apocopated forms. This can be illustrated, for example, by the verb *k~~u~~mú~~nu~~* /k<um>~~uunu~~ 'eat (agent voice)', which varies freely with *kumún*. Here, the verb satisfies the criteria for apocope application: it contains four underlying vowels and ends in a /n~~u~~/ syllable. The final /~~u~~/ is optionally deleted, leading to the synchronic free variation. Some forms, such as (46a), however, are never subject to apocope, despite satisfying the formal criteria. Examples of apocope applied to words with three different types of final underlying NV_{high} syllables can be seen below:

[15]The reader may also refer to Tsuchida (2003: 12–13) for other examples of sequences of three or more vowels.
[16]See Goderich (2020) p. 72 for similar rhythmic effects in phonological reduction in Atayal dialects

(46) Apocope in final /mV$_{high}$/ syllables

a. ~~unumu~~ /u-num$\underline{u}$/ ‘six (nonhuman)’ (u- ‘nonhuman’ + ~~numu~~ ‘six’)

b. ’alám~~u~~ ~ ’alám /’alam$\underline{u}$/ ‘meat’

c. tekirími ~ tekirím /tekirim$\underline{i}$/ ‘search, look for’

d. róimi ~ róim /rooim$\underline{i}$/ ‘forget’

e. canúmu ~ canúm /canum$\underline{u}$/ ‘water’

f. malí’umu ~ malí’um /mali-’um$\underline{u}$/ ‘cast hunting spell’ (mali- ‘take’ + ’umu ‘spell’)

(47) Apocope in final /nV$_{high}$/ syllables

a. sián~~u~~ ~ sián /sian$\underline{u}$/ PROXIMATE LOCATIVE DEMONSTRATIVE

b. cak~~u~~rán~~u~~ ~ cak~~u~~rán /cak~~u~~rán$\underline{u}$ ‘river’

c. káni ~ kán /kan$\underline{i}$/ EVIDENTIAL

d. ’akúni ~ ’akún /’akun$\underline{i}$/ PROHIBITIVE

e. alakukún~alakukúnu /ala-kukun$\underline{u}$/ ‘converge’ (ala- ‘become’ + kukunu ‘together’)

f. mamán /ma~man$\underline{u}$/ ‘children’ (ma~ RED + manu ‘child’)

(48) Apocope in final /ngV$_{high}$/ syllables

a. maráng~~u~~ ~ maráng /marang$\underline{u}$/ ‘old’

b. ’~~u~~k~~u~~cang~~u~~ ~ ’~~u~~k~~u~~cang /’~~u~~k~~u~~cang$\underline{u}$/ ‘stove’

c. ti’íngi ~ ti’íng /ti’ing$\underline{i}$/ ‘small, little’

d. navúngu~ navúng /navung$\underline{u}$/ ‘head’

2.4.2.2 Syncope

Two types of productive syncope are observed in the speech of contemporary speakers; both are sensitive to the the number of vowels present in the underlying structure. Different from apocope, however, syncope is obligatorily applied.[17]

For words where exactly 4 vowels are involved in the underlying structure, the second vowel is deleted if (i) it is a *high vowel* and (ii) it occurs between a *nasal* and a *homorganic consonant*. Evidence for this first type of syncope comes from morphophonological alternations. The verb *súmma'ʉ* 'play (agent voice)', for example, is posited underlyingly as /s<um>ima'ʉ/, containing four underlying vowels; it involves the high vowel /i/ undergoing deletion due to its second position in the word (49a). Evidence for its underlying structure is straightforwardly drawn from comparison with the imperfective form of the verb *sumasimá'ʉ* /s<um>a-sima'ʉ/ 'play (agent voice, imperfective)', which involves C*a*-reduplication and reveals the verb root structure /sima'ʉ/. Other examples of words subject to this type of syncope can be seen in (49b-d), where the morphophonological evidence is listed at the end of each example.

(49) Syncope in morphologically complex word forms involving four underlying vowels

a. súmma'ʉ /s<um>i̲ma'ʉ/ 'play (agent voice)' (cf. sumasimá'ʉ /s<um>a-si̲ma'ʉ/ 'play (agent voice, imperfective)')

b. túmmana /t<um>i̲mana/ 'listen (agent voice)' (cf. tumatimána /t<um>a-ti̲mana/ 'listen (agent voice, imperfective)')

c. nímpara /ni-m-u̲-para/ 'climb (agent voice perfect)' (cf. mupára /m-u̲-para/ 'climb (agent voice)')

d. tínmangi /t<in><u̲m>angi/ 'cry (agent voice perfect)' (cf. tumángi /t<u̲m>angi 'cry (agent voice)')

[17]Kanakanavu has also undergone various other complex vowel reduction processes, as documented by Tsuchida (2003: 8–10). Since many of these processes are no longer productive in contemporary Kanakanavu, the discussion that follows will only present those that are productively applied across morphophonological alternations.

The other type of syncope concerns words where at least 5 underlying vowels are involved. Here, the high vowel in the second syllable is obligatorily deleted if it occurs between two stops, whether they are nasal or not:

(50) Syncope in word forms involving five or more underlying vowels

a. cinm~~u~~'~~ú~~la /c<in><u̲m>~~u~~'~~u~~la/ 'see (agent voice perfect)' (cf. c~~u~~m~~ú~~'~~u~~la /c<u̲m>~~u~~'~~u~~la/ 'see (agent voice))

b. nimpaná'~~u~~ /ni-mu̲-pana'~~u~~/ 'shoot (agent voice perfect)' (cf. mupána'~~u~~ /m-u̲-pana'~~u~~/ 'shoot (agent voice)')

If the consonant preceding the high vowel in question is the fricative /s/, then syncope applies optionally, with free variation observed (51). Some words also contain final NV_{high} syllables, and may be subject to both syncope and apocope (51c, e).

(51) Syncope in word forms involving five or more underlying vowels (cases showing free variation)

a. mustakíci ~ musutakíci /musu̲-takici/ 'be attached (from above)'

b. mustav~~uru~~ ~ musutav~~ú~~r~~u~~ /musu̲-tav~~uru~~/ 'submerge (in water)'

c. mustén ~ musutén /musu̲-taini/ 'remain'

d. mustánp~~u~~ ~ musutan~~ú~~p~~u~~ /musu̲-tan~~u~~p~~u~~/ 'be enough'

e. maspat~~ú~~n ~ mas~~u~~patú~~n~~ /ma-su̲pat~~u-un~~/ 'forty'

2.4.3 Echo vowels

There is one type of stem-final vowels that deserves special attention in Kanakanavu — **echo vowels**. Historically, echo vowels (or what Tsuchida (1976: 206) calls supporting vowels) were a Kanakanavu innovation, whereby words ending with consonants received a high vowel — /i/, /u/ or /~~u~~/ — at the end, to avoid final closed CVC/CVN syllables. Echo vowels are

phonologically predictable from the vowel in the immediately preceding syllable (see Tsuchida 1976: 206–208). The echo vowel was simply copied if the preceding vowel was /i/ (reflecting *i, 52a-b), /u/ (reflecting *u, 52c-d) or /ʉ/ (reflecting *e, 52e-f). If the preceding vowel was /a/ (reflecting *a), then it was /ʉ/ (52g-h). The examples below all contain final vowels that can be established as historically added according to the above rules. Comparisons with Proto Austronesian forms taken from Blust and Trussel (2013) are also provided.

(52) Examples of final echo vowels

a. po'ocipi̲ /pa-'ucipi/ 'cook' < PAN *qudip 'life, alive'

b. mapá'ici̲ 'sour' < PAN *paqiC 'hotness of taste, spiciness, bitterness'

c. civú'u̲ 'bamboo shoot' < PAN *Cubuq

d. 'umánupu̲ /'<um>anupu/ 'hunt (with dogs)' < PAN *qaNup 'hunt wild game'

e. cakú̵sʉ̲ 'cypress' < PAN *dakeS 'camphor laurel'

f. tʉrú̵vʉ̵sʉ̲ 'Sp. Zelkova Formosana' < PAN *teRebeS 'Zelkova Formosana'

g. mupána'ʉ̲ /mu-pana'ʉ̲/ 'shoot' < PAN *panaq 'throw something at a target, shoot with bow and arrow'

h. usú̵patʉ̲ /u-sʉpatʉ̵/ 'four (nonhuman)' < PAN *Sepat 'four'

Echo vowels exhibit one important morphophonological feature: they are realized in unsuffixed words (53a, c, e) but obligatorily drop when a suffix is attached (53b, d, f). In this dissertation, stems containing echo vowels are represented as vowel-ending underlyingly when no suffixes are involved (53a, c, d), but as consonant-ending underlyingly (with the echo vowel deleted) in suffixed forms (53b, d, e).[18]

[18]Alternatively, stems containing final echo vowels may be analyzed as involving **stem alternation**, with stem forms alternating between being (echo-)vowel final (in non-suffixed forms) and being consonant final (in suffixed forms). In addition, echo vowels may also be analyzed as being inserted to unsuffixed stems that end in consonants underlyingly. The insertion, however, necessarily precedes prominence assignment.

(53) Echo vowel deletion in suffixed words

a. po'ucípi /pa-'ucipi̲/ 'cook'

b. po'ucípa /pa-'ucip-a/ 'cook (agent voice imperative)' (final /i/ deletes when suffixed)

c. kumóru /k<um>ooru̲/ 'dig'

d. kumóra /k<um>oor-a/ 'dig (agent voice imperative)' (final /u/ deletes when suffixed)

e. mupána'ʉ̶ /mu-pana'ʉ̲/ 'shoot'

f. mupaná'a /mu-pana'-a/ 'shoot (agent voice imperative)' (final /ʉ̶/ deletes when suffixed)

The suffix *-ʉ̶n* assimilates with the stem-final vowel /i/ or /u/ to become *-in* or *-un*. If the stem-final /i/ or /u/ is an echo vowel, then the echo vowel exerts its influence onto the /ʉ̶/ vowel in the suffix before deleting. The following rule ordering (54) is therefore required for the correct phonological derivation of words containing a stem ending in an echo vowel and suffixed with *-ʉ̶n*. Here, assimilation necessarily applies before echo vowel deletion in order for the correct verb forms *po'ucípin* 'cook (patient voice imperfective)' (pa'ucipi + -ʉ̶n) and *kórun* 'dig (patient voice imperfective)' (kooru + -ʉ̶n) to be derived:

(54) Rule ordering in the derivation of *po'ucipin* from *pa'ucipi + -ʉ̶n*

1. pa'ucipi + -ʉ̶n (input)
2. pa'ucipi + -in (assimilation)
3. pa'ucip + -in (echo vowel deletion)
4. po'ucipin (output)

(55) Rule ordering in the derivation of *koorun* from *kooru* + -~~*ʉn*~~

1. kooru + -~~ʉn~~ (input)
2. kooru + -un (assimilation)
3. kaur + -un (echo vowel deletion)
4. koorun (output)

Notice, however, that not all stem-final vowels that are identical to the vowel in the preceding syllable are echo vowels. (56) below includes some examples of stem-final vowels that are identical to the vowel in the preceding syllable, but do not undergo deletion when a suffix is attached. Here, the stem-final vowels undergo coalescence with the suffix-initial vowels, following the patterns outlined in Section 2.4.1 above, suggesting that the former are not echo vowels.

(56) Stem-final non-echo vowels appearing to be echo vowels

a. tiini̱ 'hang' + -~~ʉn~~ → tinín /tiini̱-in/ 'hang (patient voice imperfective)'

b. alivali̱ 'take turns, reply' + -~~ʉn~~ → alivalín /ali-vali̱-in/ 'take turns, reply (patient voice imperfective)'

c. ali'ulu̱ 'take first' + -~~ʉn~~ → ali'ulún /ali-'uru̱-un/ 'take first (patient voice imperfective)'

d. tutulu̱ 'tell' + -~~ʉn~~ → tutulún /tutulu̱-un/ 'tell (patient voice imperfective)'

If an echo vowel occurs after a nasal consonant, it is optionally dropped in unsuffixed forms. This is subsumed under the general apocope process as discussed in Section 2.4.2.1 above, whereby word-final high vowels occurring after a nasal consonant are optionally dropped. Words containing a final echo vowel occurring after a nasal, therefore, commonly exhibit free variation in unsuffixed forms (57a, c, e), but obligatorily delete the echo vowel in suffixed forms (57b, d, f).

(57) Stem-final high vowels occurring after a nasal dropping when a suffix is attached

a. kumúnu̲ ~ kumún /k<um>~~uun~~u̲/ ‘eat (agent voice)’ (final /~~u~~/ optionally deletes when not suffixed)

b. kumúna /k<um>~~uun~~-a/ ‘eat (agent voice imperative)’ (final /~~u~~/ obligatorily deletes when suffixed)

c. mi~~tuv~~úngu̲ ~ mi~~tuv~~úng /m-i-~~tuvuung~~u̲/ ‘hide (agent voice)’ (final /~~u~~/ optionally deletes when not suffixed)

d. mi~~tuv~~úng*a* /m-i-~~tuvuung~~-a/ ‘hide (agent voice imperative)’ (final /~~u~~/ obligatorily deletes when suffixed)

e. pusu’ánu̲ ~ pusu’án /pusu-u’anu̲/ ‘carry (on shoulder) (agent voice)’ (final /~~u~~/ optionally deletes when not suffixed)

f. pusu’ána /pusu-u’an-a/ ‘carry (on shoulder) (agent voice imperative)’ (final /~~u~~/ obligatorily deletes when suffixed)

2.4.4 Morpheme-specific segmental processes

There are unique phonological processes that apply when specific affixes are involved, which need to be discussed on a case-by-case basis. First, phonological reduction is found for the prefixes *’apa-* CAUSATIVE and *’alupa-* RECIPROCAL, which reduce to *’ap-* and *’alup-*, respectively when attaching to a stem beginning with a vowel, as in (58a) and (58c):

(58) (Lack of) reduction of prefixes *’apa-* and *’alupa-*

a. ’apa- + inganai ‘fly’ → ’apinganái /’ap-inganai/ ‘make fly, shoot (an arrow)’ (reduction)

b. ’apa- + k~~uunu~~ ‘eat’ → ’apakún ‘feed, make eat’ (no reduction)

c. ’alupa- + ala ‘take’ → ’arupála ‘take each other (as spouses), marry’ (reduction)

d. ’alupa- + cu’ula ‘see’ → ’alupacu’ula ‘see each other, meet (up)’ (no reduction)

The two suffixes *-ai* /-aj/ PATIENT VOICE PERFECTIVE and *-au* /-aw/ PATIENT VOICE IMPERATIVE also undergo phonological reduction, reducing to *-i* /-j/ and *-u* /-w/, respectively, when attaching to *some* stems ending with the low central vowel /a/. Compare (59) with (60): the former shows that reduction of *-ai* and *-au* is triggered by the stems *cu’ula* ‘see’ and *timana* ‘listen’, whereas the latter show that no reduction is observed when different stems — *ala* ‘take’ and *atiuma* ‘receive’ — are involved, even though all four stems end with /a/.[19]

(59) Reduction of suffixes *-ai* and *-au* when attached to stems ending with /a/

a. cu’ula + -ai → cu’úle /cu’ula-i/ ‘see (patient voice perfective)’

b. cu’ula + -au → cu’úlo /cu’ula-u/ ‘see (patient voice imperative)’

c. timana + -ai → timáne /timana-i/ ‘listen (patient voice perfective / subjunctive)’

d. timana + -au → timáno /timana-u/ ‘listen (patient voice imperative)’

(60) No reduction of suffixes *-ai* and *-au* when attached to stems ending with /a/

a. ala + -ai → alái ~ alé /ala-ai/ ‘take (patient voice perfective)’

b. ala + -au → aló /ala-au/ ‘take (patient voice imperative)’

c. atiuma + -ai → atiumái /atiuma-ai/ ‘receive (patient voice perfective / subjunctive)’

d. atiuma + -au → atiumó /atiuma-au/ ‘receive (patient voice imperative)’

(61) below shows that no reduction is observed for the suffix *-un*, regardless of the type of /a/-ending stem involved. This supports the stem-sensitivity of the phonological alternations found for *-ai* and *-au*, which is not observed for other suffixes such as *-un*.

[19]It is still unclear why some stems trigger the reduction but others do not. The stem *atiuma*, however, may be established as historically complex; for example, it is transcribed by Tsuchida (2003: 76) as *a-tiuma*.

(61) No reduction of suffix -*ʉn* when attached to stems ending with /a/

a. cʉ'ʉla + -ʉn → cʉ'ʉlʉ́n /cʉ'ʉla + -ʉn/ 'see (patient voice imperfective)'

b. timana + -ʉn → timanʉ́n /timana + -ʉn/ 'listen (patient voice imperfective)'

c. ala + -ʉn → alʉ́n /ala-ʉn/ 'take (patient voice imperfective)'

d. atiuma + -ʉn → atiumʉ́n /atiuma + -ʉn/ 'receive (patient voice imperfective)'

The initial /ʉ/ vowel of suffix -*ʉn*, in contrast, undergoes assimilation when the stem-final vowel is /i/ or /u/. As can be seen in (62) below, -*ʉn* is realized as -*in* (62a, c) or -*un* (62b, d), assimilating to the stem-final /i/ or /u/ vowel. The stem-final vowel may undergo coalescence with the assimilated /i/ or /u/ in the suffix (62a-b). It may also undergo deletion after exerting influence onto the suffix (62c-d). (Such deleted vowels are echo vowels, as discussed in Section 2.4.3 above.)

(62) Assimilation of suffix -*ʉn* to stem-final /i/ or /u/

a. tiini 'hang' + -ʉn → tinín /tiini-in/ 'hang (patient voice imperfective)'

b. tutulu 'tell' + -ʉn → tutulún /tutulu-un/ 'tell (patient voice imperfective)'

c. po'ocípi /pa-'ucipi/ 'cook' + -ʉn → po'ocípin /pa-'ucip-in/ 'cook (patient voice imperfective)'

d. kooru 'dig' + -ʉn → kórun /koor-un/ 'dig (patient voice imperfective)'

Finally, the two (homophonous) prefixes *ni-* PRFECT and *ni-* PATIENT VOICE PERFECT are found to show an allomorph — infix <*in*> — depending on the initial consonant of the stem to which they attach.[20] They are realized as infix <*in*> when the stem-initial consonant is a dental/alveolar obstruent (63), and as prefix *ni-* elsewhere (64). Again, if the stem begins with a vowel, prefixation of *ni-* creates vowel sequences, which then trigger hiatus resolution (64d-e).

[20]The two affixes are functionally distinct, but both show allomorphic alternation with infix <*in*>.)

(63) Prefix *ni-* realized as infix <*in*> when attached to stems beginning with dental/alveolar obstruents

a. ni- + cʉ'ʉla 'see' → cinʉ́'ʉla 'see (patient voice perfect)' (*ni-*~<*in*>alternation)

b. ni- + timana 'listen' → tínmana 'listen (patient voice perfect)' (*ni-*~<*in*>alternation)

c. ni- + sikʉpʉ 'pile (up)' → siníkʉpʉ 'pile (up) (patient voice perfect)' (*ni-*~<*in*>alternation)

(64) Prefix *ni-* attaching to stems not beginning with dental/alveolar obstruents

a. ni- + puringai 'catch with hunting trap' → nipuringái 'catch with hunting trap (patient voice perfect)' (no alternation)

b. ni- + liu'u 'fish (with net)' → niliú'u' 'fish (with net) (patient voice perfect)' (no alternation)

c. ni- + kʉʉnʉ 'eat' → nikʉ́n 'eat (patient voice perfect)' (no alternation)

d. ni- + ivatu 'come' → nívatu /ni-i-vatu/ 'come (agent voice perfect)'

e. ni- + a'unu 'carry (with forehead)' → niá'unu [nja'unu] /ni-a'unu/ 'carry (with forehead) (patient voice perfect)'

The infix form <*in*> shows a behavior similar to that of the only other infix in Kanakanavu — agent voice marker <*um*>: both occur after the first consonant of the stem into which they are inserted. The latter marker, however, does not undergo form alternation when attached to stems beginning with different consonants, although it may be phonetically realized as <*ʉm*> due to feature spreading of an /ʉ/ vowel in the immediately following syllable (65c), as has been discussed in Section 2.2.2 above.

(65) Infix <*um*> realized as <*ʉm*> due to /ʉ/-spreading

a. <um> + kʉʉnʉ 'eat' → kumʉ́n 'eat (agent voice)'

b. <um> + timana ‘listen’ → túmmana ‘listen (agent voice)’

c. <um> + cu’ula ‘see’ → cumú’ula ‘see (agent voice)’

2.4.5 Reduplication

There are three types of productive reduplication in Kanakanavu: CV, CVCV and C*a*-reduplication.[21] Reduplication in Kanakanavu is always leftward, meaning that the reduplicant always serves as some kind of prefix attached to the stem. The only difference between reduplicants and prefixes is that the structure of the former is entirely dependent on the phonological structure of the stem.

CV and CVCV reduplications involve the first syllable and the first two syllables of the stem, respectively, to be copied and attached to the left of the stem. Table 2.7 below exemplifies different types of CV and CVCV reduplication in Kanakanavu. Often, a given stem may be subject to either CV or CVCV reduplication for the same function (e.g. pluralization of *mánu* ‘child’). Some words resulting from reduplication may be further subject to vowel deletion (e.g. apocope in *mamán* ‘children’, syncope in *capcapúku* ‘miscanthus (pl.)’, and both apocope and syncope in *mánman* ‘children’).

Table 2.7: Examples of CV and CVCV reduplication

Stem	**CV reduplication**	**CVCV reduplication**
mánu ‘child’	mamán /ma~manu/ ‘children’	mánman /manu~manu/ ‘children’
capúku ‘miscanthus’	-	capcapúku /capu-capuku/ ‘miscanthus (pl.)’

C*a*-reduplication (Blust 1998) can be considered a subtype of CV reduplication, whereby instead of directly copying the vowel in the first syllable of the stem, the vowel is simply

[21] One interesting case of *nonproductive* reduplication — fossilized reduplication — will be discussed in Section 2.5.3 below.

replaced with the low central vowel /a/. Examples of C*a*-reduplication can be seen in Table 2.8 below. Notice that in many cases, a stem having undergone C*a*-reduplication may be further extended with other affixes (such as the infix <um>), obscuring the underlying structure of the resulting word having undergone C*a*-reduplication.

Table 2.8: Examples of C*a*-reduplication

Stem	**C*a*-reduplication**
líma ‘five (cardinal)’	lalíma /la~líma/ ‘five (human)’
nú~~mu~~ ‘six (cardinal)’	nanú~~mu~~ /na$_{\text{número}}$~/ ‘six (human)’
kumú~~n~~ ‘eat (agent voice)’	kumakú~~n~~ /k<um>a$_{\text{kuu}}$~n/ ‘eat (agent voice imperfective)’
cumú’~~u~~la ‘see (agent voice)’	cumacu’ú~~la~~ /c<um>a$_{\text{cu'u}}$~la/ ‘see (agent voice imperfective)’

2.5 Prominence shifts

2.5.1 Prominence assignment interacting with underlying vowel sequences

The realization of word-prosodic prominence interacts with how underlying vowel sequences are realized on the surface level. As has been introduced in Section 2.4.1 above, underlying vowel sequences may be subject to either of the two hiatus resolution strategies: vowel coalescence or glide formation. If an underlying vowel that gets assigned prominence is part of a two-vowel sequence, then the assigned prominence may surface in any of the final three syllables of a word, depending on which prominence assignment rule is applied. In (66a, b), prominence is assigned onto the penultimate underlying vowel (second /a/ in /macai/ and /i/ in /tatia/), which then surfaces in the final syllable. In (66c, d), prominence is assigned onto the antepenultimate underlying vowel (second /u/ in /puu-aka/ and first /a/ in /m-u-a-vua/), which then surfaces in the penultimate syllable. In (66e, f), prominence is also assigned onto

the antepenultimate underlying vowel (first /a/ in /m-ia-cara/ and first /a/ in /m-u-a-kusa/), which also surfaces in the antepenultimate syllable.

(66) Vowels belonging to vowel sequences being assigned prominence and surfacing in different positions[22]

a.	macái	/macai/	'die'	Final prominence
b.	tatía	/tatia/	'big'	Final prominence
c.	puáka	/puu-aka/	'scold'	Penultimate prominence
d.	móvua	/mu-a-vua/	'give (agent voice imperfective)'	Penultimate prominence
e.	mécara	/mia-cara/	'take care of (agent voice)'	Antepenultimate prominence
f.	mókusa	/m-u-a-kusa/	'go (agent voice imperfective)'	Antepenultimate prominence

Note that the examples above may give the (false) impression that prominence assignment in Kanakanavu is weight sensitive. This is because the variable prominence positions may at first sight be explained by resorting to syllable weight, since (i) an underlyingly heavy (CVV) syllable always attracts prominence, to penultimate (66d), final (66a) or antepenultimate syllables (66e-f), and (ii) the penultimate heavy syllable wins out in attracting prominence when both syllables are heavy (66c-d). However, this is merely a coincidence created by the specific underlying vowel-sequence configurations in (66). As can be seen in (67) below, there are also words where underlying vowel sequences (which would have constituted heavy syllables) are not assigned prominence. In (67a-b), the word-final 2-vowel sequences do not receive prominence because the antepenultimate prominence assignment rule is applied (since both words contain four underlying vowels and neither involve suffixation). In (67c-d), the initial 2-vowel sequences do not "attract" prominence because the penultimate prominence assignment rule is applied. Thus, while these vowel sequences are subject to hiatus resolution, they are arguably *not* involved in determining prominence assignment, which is still predicted

[22]The morphemes involved in the complex forms here are: *puu-* 'utter' + *aka* 'bad in (65c), *mu-* AV + *a-* IPFV + *vua* 'give' in (65d), *mia-* CAUS + cara 'depend' in (65e) and *m-* AV + *u-* 'motion + *a-* IPFV +kusa in (65f).

by the two general prominence-assignment rules that take, strictly speaking, the number of underlying vowels into consideration.

(67) Variation of prominence position in words containing underlying vowel sequences

a.	nimácai	/ni-m<u>a</u>cai/	'die (perfect)'	Penultimate prominence
b.	matátʉa [ma.tá.tɯɻa]	/mat<u>a</u>-tʉa/	'arrive'	Penultimate prominence
c.	mepacái	/m-ia-pac<u>a</u>i/	'kill'	Final prominence
d.	miaranáu	/m-i-aran<u>a</u>u/	'long (in time)'	Penultimate prominence

Some words containing underlying vowel sequences may also give the impression that prominence is invariable. This can be seen in the verbs containing the stems *k~~ʉʉnʉ~~* 'eat' and *kooru* 'dig' in (68) and (69), respectively. If only surface realizations are considered, the verbs derived from the two stems may appear to defy the general rules of prominence assignment in always showing penultimate prominence:

(68) (Seemingly) invariable prominence in verb forms derived from *k~~ʉʉnʉ~~* 'eat'

a.	k~~ʉ~~mʉ́n~~ʉ~~	/k<um>~~<u>ʉ</u>~~nʉ/	'eat (agent voice)'
b.	kumak~~ʉ~~́n~~ʉ~~	/k<um>a-k~~ʉ<u>ʉ</u>~~nʉ/	'eat (agent voice imperfective)'
c.	nik~~ʉ~~mʉ́n~~ʉ~~	/ni-k<um>~~ʉ<u>ʉ</u>~~nʉ/	'eat (agent voice perfect)'

(69) (Seemingly) invariable prominence in verb forms derived from *kooru* 'dig'

a.	kumóru	/k<um><u>o</u>oru/	'dig (agent voice)'
b.	kumakóru	/k<um>a-ko<u>o</u>ru/	'dig (agent voice imperfective)'
c.	nikumóru	/ni-k<um>o<u>o</u>ru/	'dig (agent voice perfect)'

This is, however, due to the specific underlying configuration of the verb stems being /CVVCV/. On the one hand, if the verb form ends up with exactly four underlying vowels due to infixation (68a, 69a), then prominence is assigned to the antepenultimate underlying

vowel (i.e. first /ʉ/ in /kʉʉnʉ/ and first /o/ in /kooru/). If the derivation leads to five underlying vowels instead (68b-c, 69b-c), then prominence is assigned to the penultimate vowel (i.e. the second /ʉ/ in /kʉʉnʉ/ and the second /o/ in /kooru/). Both the underlying antepenultimate and penultimate vowels undergo coalescence and surface in the penultimate syllable (/ʉʉ/ → [ʉ] and /oo/ → [o]). Prominence, then, surfaces in the penultimate syllable regardless of which underlying syllable it is assigned to. This further illustrates how prominence is deeply interconnected with the underlying vowel configuration of word forms in Kanakanavu, and is crucially *not* weight sensitive, different from what has been suggested in some other Formosan languages such as Bunun (H.J. Huang 2008) and Paiwan (C.-M. Chen 2009).

2.5.2 Prominence assignment interacting with apocope and syncope

Word-prosodic prominence assignment also interacts closely with the processes of apocope and syncope. Crucially, the prominence realization in apocopated and syncopated word forms suggests that prominence assignment is applied **before** either process is applied.

As has been demonstrated in Section 2.4.2.1 above, apocope is an optional phonological process that applies in word forms that end with an NV_{high} syllable. As can be seen in (70) below, words ending with an NV_{high} syllable exhibit free variation between non-apocopated and apocopated forms, both segmentally (with or without the stem-final high vowel) and suprasegmentally (with prominence realized on the penultimate or antepenultimate syllable). This is attributed to deletion of the final vowel in the apocopated form *after* prominence has been assigned, as prominence can be argued to stay on the original syllable it is realized on.

(70) Prominence "shifts" in apocopated words

a.	navúngu ~ navúng	/navungu̲/	'head' (penultimate ~ final prominence)
b.	tekirími ~ tekirím	/te-kirimi̲/	'search, look for' (penultimate ~ final prominence)
c.	cakʉ́ranʉ ~ cakʉ́ran	/cakʉ́ranʉ̲/	'river' (antepenultimate ~ penultimate prominence)
d.	umápʉnʉ ~ umápʉn	/um-apʉnʉ̲/	'pick (fruit) (agent voice imperfective)' (antepenultimate

The apocopated word forms in (70a-b) suggest that, in order to correctly derive the final prominence, prominence assignment is necessarily ordered *before* apocope (71). If prominence assignment is applied *after* apocope, then incorrect derivation of penultimate prominence would be predicted (72):

(71) Derivation of (shifted) final prominence in (some) apocopated forms

1. navungu (input)
2. navúngu (prominence assignment)
3. navúng (apocope)
4. navúng (output)

(72) (Incorrect) derivation of penultimate prominence in (some) apocopated forms

1. navungu (input)
2. navung (apocope)
3. návung (prominence assignment)
4. *návung (output)

On the other hand, syncope may or may not affect a vowel that has been assigned prominence. As demonstrated in Section 2.4.2.2 above, syncope affects the second high vowel of underlyingly four-vowel and five vowel words, given that they are surrounded by the conditioning consonants. In four-vowel words, prominence is invariably assigned to the antepenultimate vowel, which is also the (second) vowel targeted by syncope. In this case, however, the prominence always shifts one syllable to the *left*. Since the words in question all involve four vowels underlyingly, the resulting forms (with one vowel/syllable deleted) always end up characterized by prominence falling on the surface antepenultimate syllable:

(73) Syncopated words involving four underlying vowels characterized by antepenultimate prominence

b.	nánnakʉ	/na-nʉ̲nakʉ/	‘women’
b.	nímpara	/ni-m-u̲-para/	‘climb (agent voice perfect)’
c.	mánman	/manu̲-manu/	‘children’

To correctly derive antepenultimate prominence in such syncopated forms, prominence assignment is necessarily ordered *before* syncope. Furthermore, syncope should be specified to affect segmental elements only, leaving the already assigned prominence *stranded* after vowel deletion, which can then be reassigned/shifted to the preceding syllable (74). If prominence assignment is ordered *after* syncope, then non-existing forms with penultimate prominence would be derived (75).

(74) Derivation of (shifted) antepenultimate prominence in syncopated forms

1. s<um>imaʼʉ (input)
2. sumímaʼʉ (prominence assignment)
3. sum´aʼʉ (second high vowel syncope, prominence stranded)
4. súmmaʼʉ (prominence shift)
5. súmmaʼʉ (output)

(75) (Incorrect) derivation of penultimate prominence in syncopated forms

1. s<um>ima'ʉ (input)

2. summa'ʉ (second high vowel syncope)

3. summá'ʉ (prominence assignment)

4. *summá'ʉ (output)

There are two monomorphemic words that can be posited as involving four underlying vowels, which are subject to syncope, as in (76).

(76) Syncopated morphologically simplex word forms involving four underlying vowels

a. vántuku /vanutuku/ 'money' (transcribed by Tsuchida as *vanituku*)

b. cúngkucu /cungukucu/ 'bridge' (transcribed by Tsuchida as *cungukucu*)

While evidence from earlier documentary materials help suggest that these forms were diachronically derived from four-vowel forms (suggested by Tsuchida's (2003) documentation), this is also supported by prominence assignment. If no separate underlying representations (with four-vowel structures) are posited, for example, for *vántuku* 'money', then incorrect prominence positions would be predicted by the prominence assignment rules introduced above. The correct derivation based on a four-vowel underlying representation can be seen in (77), contrasting an incorrect one based on a three-vowel underlying representation in (78)

(77) Derivation of (shifted) antepenultimate prominence in syncopated forms

1. vanutuku (input)
2. vanútuku (prominence assignment)
3. van´tuku (second high vowel syncope, prominence stranded)
4. vántuku (prominence shift)
5. vántuku (output)

(78) (Incorrect) derivation of penultimate prominence in syncopated forms (syncopated form posited as input)

1. vantuku (input)
2. vantúku (prominence assignment)
3. *vantúku (output)

In the same vein, syncopated words with five underlying vowels, as in (79), also require syncope to apply *after* prominence assignment. Otherwise, incorrect antepenultimate prominence would be derived.

(79) Syncopated words involving five underlying vowels

a. cinmʉ'ʉ́la /c<in><u̲m>ʉ'ʉla/ 'see (agent voice perfect)' (<um> AV + cʉ'ʉla 'see')

b. nimpaná'ʉ /ni-mu̲-pana'ʉ/ 'shoot (agent voice perfect)' (ni- PRF + mu- AV + pana'ʉ 'shoot')

(80) Derivation of penultimate prominence in syncopated forms

1. c<in><um>ʉ’ʉla (input)
2. cinumʉ’ʉ́la (prominence assignment)
3. cinmʉ’ʉ́la (second high vowel syncope)
4. cinmʉ’ʉ́la (output)

(81) (Incorrect) derivation of penultimate prominence in syncopated forms

1. c<in><um>ʉ’ʉla (input)
2. cinmʉ’ʉla (second high vowel syncope)
3. cinmʉ́’ʉla (prominence assignment)
4. *cinmʉ́’ʉla (output)

2.5.3 Prominence-specified morphemes

This chapter has demonstrated how prominence assignment in Kanakanavu strictly follows rules that (i) are sensitive to the underlying vowel configuration of words, and (ii) interact closely with hiatus resolution and vowel deletion processes. This subsection examines further patterns of prominence variation that cannot be predicted by the assignment rules discussed so far. Regardless, they can be accounted for once form-specific phenomena are taken into consideration. The discussion below examines three types of prominence-specified morphemes: (i) trisyllabic stems characterized by invariable antepenultimate prominence, (ii) words involving CVCV reduplication characterized by invariable antepenultimate prominence, and (iii) prominence-attracting suffixes.

To begin with, a small number of stems are found to involve invariable antepenultimate prominence when no suffixation is involved. They are exemplified by the noun stem *savuana* 'medicine' and the verb stem *tu'usu* 'contact' in (82) and (83), respectively. As can be seen here, regardless of the number of syllables involved in words containing the stems, prominence always falls on the antepenultimate syllable (82a-c, 83a-c), unless suffixation is involved (82d, 83c-d). In the latter case, the default prominence assignment rules resume and prominence falls on the final syllable.

(82) Derived forms involving the stem savuana 'medicine' characterized by invariable antepenultimate prominence

a. savúana 'medicine'

b. kasavúana /kaa-savuana/ 'undergo medication'

c. 'apasavúana /'apa-savuana/ 'treat (medically)'

d. savuanén /savuana=in/ 'their/her/his medicine'

(83) Derived forms involving the stem tu'usu 'contact' characterized by invariable antepenultimate prominence

a. matú'usu /ma-tu'usu/ 'encounter'

b. malitú'usu /m-ali-tu'usu/ 'touch (agent voice)'

c. musutú'usu /musu-tu'usu/ 'come into contact with'

d. alitu'usé /ali-tu'usu-ai/ 'touch (patient voice perfective)'

There are a set of morphemes that involve full CVCV reduplication, which, like the two stems exemplified above, always form words with antepenultimate prominence, regardless of the underlying vowel configuration. Full CVCV reduplication is a synchronic productive process whereby (some) disyllabic nouns are pluralized (84a-b). Some disyllabic nouns are required to undergo CVCV reduplication when combining with other prefixes to form verbs

(84c-f). Verbs also productively undergo CVCV reduplication to convey iterativity (85). Those that involve disyllabic roots (85b) are invariably characterized by antepenultimate prominence.

(84) Words involving (full) CVCV reduplication characterized by invariable antepenultimate prominence

a. manúmanu /manu~manu/ ‘children’

b. ’umó’uma /’uma~’uma/ ‘farmlands’

c. kamanúmanu /kaa-manu~manu/ ‘give birth, have children’

d. ka’umó’uma /kaa-’uma~’uma’/ ‘plow, cultivate farmland’

e. pokaríkari /puu-kari~kari/ ‘speak’

f. makaríkari /maa-kari~kari/ ‘discuss’

(85) Variation in prominence position depending on whether full or partial CVCV reduplication is involved

a. mukusókusa /m-u-kusa~kusa/ ‘keep going’ (from mukúsa /m-u-kusa/ ‘go (agent voice)’)

b. tekirikirím /te-kiri~kirimi/ ‘keep searching’ (from tekirím /te-kirimi/ ‘search’)

Kanakanavu further exhibits a set of morphemes where the form is characterized by reduplication, but no non-reduplicated forms exist. These are referred to as *fossilized reduplicated forms* in this study (corresponding to what Tsuchida (2003) calls “R-bases”), and they also involve invariable antepenultimate prominence when combining with other morphemes to form words. Interestingly, some of these forms show evidence of having been subject to phonological processes such as apocope and syncope (86e) or vowel coalescence (86f). Some fossilized reduplicated forms may occur as independent words (86a-c, e-f), but some are bound morphemes (86d). Regardless, many can further combine with other morphemes to form larger

morphological units, in which case prominence still falls invariably on the antepenultimate syllable (87a-d), unless suffixation or cliticization is involved (87e-f).

(86) Fossilized reduplicated forms characterized by invariable antepenultimate prominence

a. ’aná’ana ‘cosmos, universe’

b. nikínikí ‘armpit’

c. virávira ‘cockscomb’

d. ’urú’uru ‘do something first’ (bound morpheme)

e. mánman ‘chili pepper’ /manu-manu/

f. isîsi ‘hearsay’ /isi-isi/

(87) Variation in prominence position for words involving fossilized reduplication depending on whether suffixation is involved

a. mo’urú’uru /mu-’uru’uru/ ‘go/move first/ahead’ (antepenultimate prominence)

b. mati’urú’uru /mati-‘uru’uru/ ’do/make first/ahead’ (antepenultimate prominence)

c. kaisîsi /kaa-isiisi/ ‘perform religious ritual’ (penultimate prominence)

d. nikaisîsi /ni-kaa-isiisi/ ‘perform religious ritual (perfect)’ (penultimate prominence)

e. mati’uru’urún /mati-‘uru’uru-un/ ’do/make first/head (patient voice imperfective’ (suffixed, final prominence)

f. isisín /isiisi=in/ ‘their/her/his news’ (cliticized, final prominence)

Finally, a third type of prominence-specified morpheme involves two suffixes that are **prominence-attracting** — the agent voice mild imperative suffix *-án* and the patient voice mild imperative suffix *-ón*. The two suffixes are crucially distinguished from all other suffixes, as the latter interact with stems containing different stem-final vowels and may give rise to final prominence (when vowel coalescence or glide formation occurs) or penultimate prominence

(when the stem contains an echo vowel that drops in suffixation). Regular non-prominence-attracting suffixes can be exemplified by the agent-voice imperative marker *-a*, where forms containing it vary in prominence positions depending on their underlying structures:

(88) Agent-voice imperative marker *-a* as a regular (non-prominence-attracting) suffix

a. pu'á /pu'a̲-a/ 'buy (agent voice imperative)' (vowel coalescence, final prominence)

b. puiría [pwi.rja] /puiri̲-a/ 'replace (agent voice imperative)' (glide formation, final prominence)

c. po'ocípa /pa-'uci̲p-a/ 'cook (agent voice imperative)' (echo vowel deletion in suffixation, penultimate prominence)

d. matisá'a /mati-saa̲'-a/ 'capture (agent voice imperative)' (echo vowel deletion in suffixation, penultimate prominence)

The variation is, however, not observed for words containing the two prominence-attracting suffixes — *-án* and *-ón* — which always attract prominence to the final syllable regardless of the underlying structure of the derived word forms. As can be seen in (89) and (90), prominence always falls on the final syllable when the two suffixes are involved. This is the case whether vowel sequences are created through suffixation (89a-b, 90a-b), or not (89c-d, 90c-d).

(89) Agent-voice mild imperative marker *-án* as a prominence-attracting suffix

a. pu'án /pu'a-án/ 'buy (agent voice imperative)' (vowel coalescence, final prominence)

b. puirián /puiri-án/ 'replace (agent voice imperative)' (glide formation, final prominence)

c. po'ocipán /pa-'ucip-án/ 'cook (agent voice imperative)' (echo vowel deletion in suffixation, final prominence)

d. matisa'án /mati-saa'-án/ 'capture (agent voice imperative)' (echo vowel deletion in suffixation, final prominence)

(90) Patient-voice mild imperative marker *-ón* as a prominence-attracting suffix

a. pu'ón /pu'a-ón/ 'buy (agent voice imperative)' (vowel coalescence, final prominence)

b. puirión /puiri-ón/ 'replace (agent voice imperative)' (glide formation, final prominence)

c. po'ocipón /pa-'ucip-ón/ 'cook (agent voice imperative)' (echo vowel deletion in suffixation, final prominence)

d. matisa'ón /mati-saa'-ón/ 'capture (agent voice imperative)' (echo vowel deletion in suffixation, final prominence)

2.5.4 Prominence variation in discourse

The prominence realization patterns discussed so far have assumed isolated words as the domain of concern. In spontaneous speech, utterances are also characterized by prosodic features and may introduce further variation in how prosodic prominence is realized.

2.5.4.1 The intonation unit

In spontaneous speech, Kanakanavu speakers produce prosodic units – intonation units (IUs) — which fall under two main categories in terms of their identifiably different terminal pitch contours. IUs with **final intonation** are characterized by a *falling pitch* shape at the end. IUs with **continuing intonation**, on the other hand, are characterized by a salient rising or level pitch shape at the end.

The data in (91) below shows a stretch of natural discourse consisting of two IUs conveying the meaning "(After) the man came down to the ground, he collected the pomelos". Here, the first is a continuing IU, and the second is a final IU. Notice that the transcription here involves the former IU status indicated by a *comma* at the end, and the latter indicated by a *period*:[23]

[23]The transcription convention is adapted from those outlined in Du Bois et al. (1993) and Chafe (1994).

(91) Stretch of discourse from the recording *Pomelo Picking Story* (1008-PKP) consisting of two intonation units

1 mata'ʉnái=cu sua saronái,

'The man came down to the ground.'

2 acuvucuvúngun sua vú'ʉ.

"(He) collected the pomelos.'

As can be seen in the two figures below (each representing one IU from the data in (91) above), pitch contour differences can be seen on the right edges regarding whether a continuing IU or a final IU is observed. Despite both IUs being characterized by an overall pitch fall, the continuing IU (Figure 2.5) is characterized by a salient terminal pitch rise, whereas the final IU (Figure 2.6) has a salient drastic fall at the end.

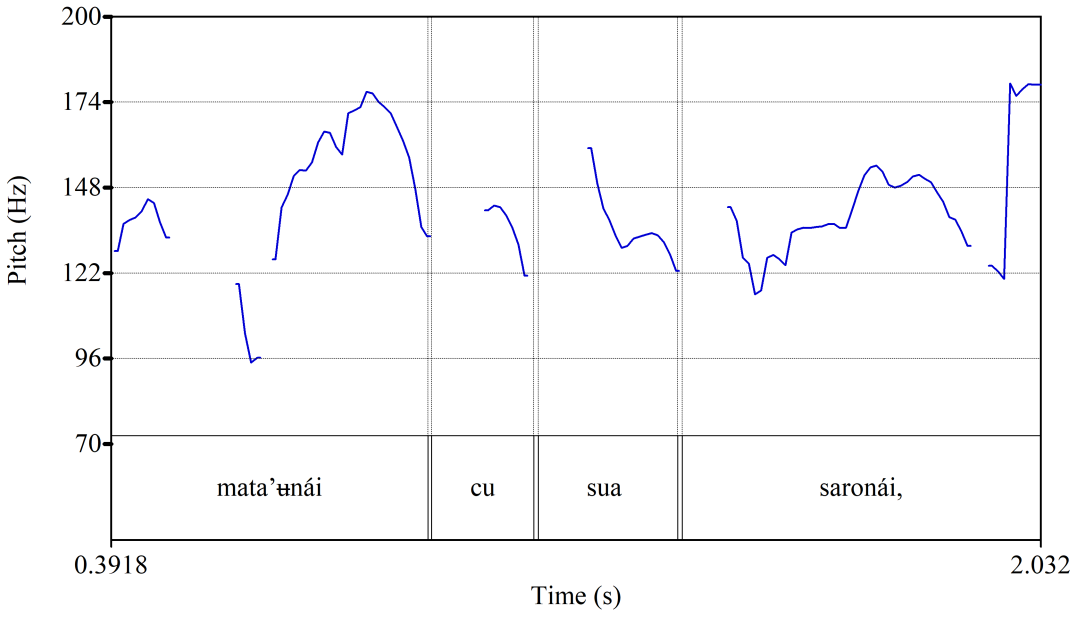

Figure 2.5: Continuing IU: terminal pitch contour illustration

Another prosodic feature that can be observed of IUs is that despite being characterized by global intonation contours, the larger contours are always overlaid with smaller, more

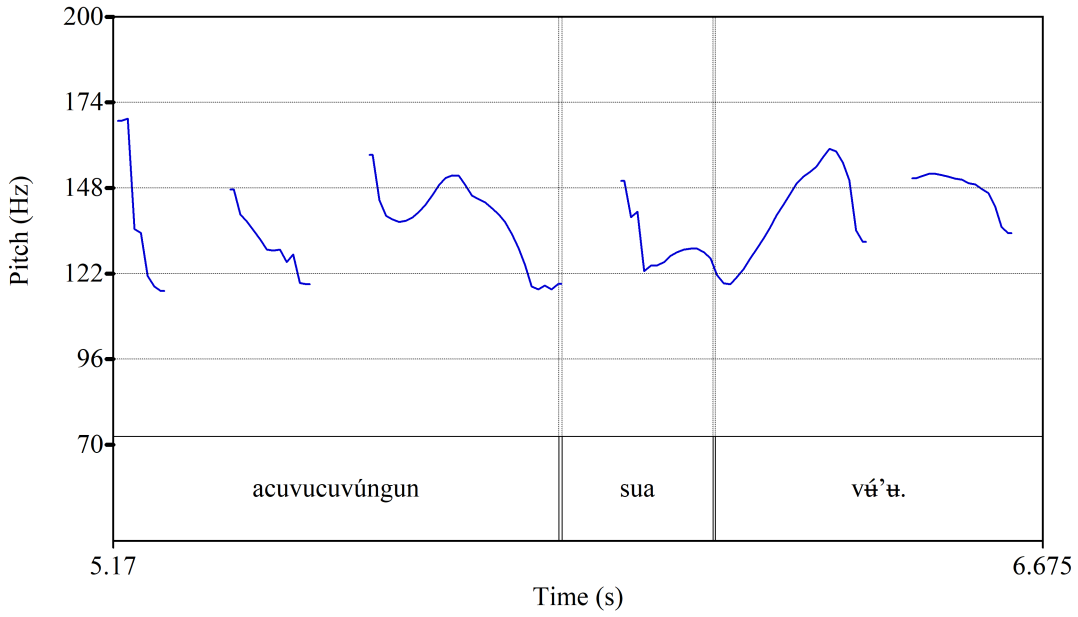

Figure 2.6: Final IU: terminal pitch contour illustration

local prosodic pitch contours as well. These contours are attributed to word-level prosodic prominence, whose realization in natural speech introduces turbulence into the more global prosody of intonation units. The more local contours in (91) above, for example, are attributed to prosodically prominent syllables in the content words involved: *mata'~~u~~nái* 'go/move down to the ground', *saronái* 'man', *acuvucuvúngun* 'collect' and *vú'~~u~~* 'pomelo' (indicated by acute accent marks on the transcription of the words). The other elements, such as the contrastive marker *sua* and the change-of-state enclitic *=cu*, do not bear prosodic prominence. Therefore, they do not introduce pronounced local pitch contours like the content words do.

Sometimes speakers would overlay the global pitch contour with an emphatic utterance-level prominence. This will be indicated by the circumflex (ˆ), which typically occurs in the first content word of an intonation unit. The emphatic prominence is often realized alongside the word-level prominence of the content word it is realized on, in which case the word is characterized by two prominent prosodic contours, as in the verb *mûntás~~u~~* 'powerful' in (92a).[24] The utterance-level prominence may also replace the original word-level prosodic prominence,

[24]The word *~~u~~nco* is a pause filler.

in which case the only prominence found would be on the first syllable of the utterance-initial word, as in the verb *pô'ocipi* 'cook' (otherwise *po'ocípi*, with penultimate prominence) in (92b).

(92) Utterance-level prominence: alongside word-level prominence

a. mût̂ásu=kán sua unco, sua unco vúru si, 'The arrows were powerful because …' (AKN-1016:353-354)

b. pô'ocipi=cu. '(They'll) then cook!' (1010-PKP:54)

2.5.4.2 Prominence variation in spontaneous speech in auxiliaries and clitics

When considered in isolation (citation forms), function words and grammatical markers (such as *sua* and *=cu* in (92) above) may or may not contain independent prosodic prominence, which differs from one item to another. **Preverbal auxiliaries** constitute one category in which differences are found in whether prosodic prominence is observed in citation forms. As exemplified below, variation can be found in both monosyllabic (93) and disyllabic (94) auxiliaries.

(93) Monosyllabic auxiliaries and (presence/absence of) prosodic prominence

a. tia FUTURE (no prominence)

b. kó PRFECTIVE NEGATION (final prominence)

(94) Disyllabic auxiliaries and (presence/absence of) prosodic prominence

a. 'acu RESULTATIVE (no prominence)

b. 'ési EXISTENTIAL / PROGRESSIVE (penultimate prominence)

Another category of grammatical markers showing variation in prosodic prominence is **clitics**. Clitics are phonologically dependent particles. When pronounced in isolation (citation forms), they may or may not bear independent prosodic prominence, which differs from

one clitic to another, as exemplified in (95) below. The majority of clitics in Kanakanavu are *enclitics*, which attach to the right of their hosts. There are only two *proclitics* — past marker *na=* (95c) and comparative marker *mala=* (95f), which attach to the *left* of their hosts.

(95) Clitics in isolation: variation in whether prosodic prominence is exhibited

a. =cu CHANGE OF STATE (no prominence)

b. =pa CONTINUOUS (no prominence)

c. na= PAST (no prominence)

d. =káni EVIDENTIAL (penultimate prominence)

e. =kála QUESTION (penultimate prominence)

f. mala= COMPARATIVE (no prominence)

In spontaneous speech, a clitic characterized by prominence in isolation — such as *káni* — may exhibit prominence (97a) or not (96b). In the latter case, it combines with a host to form a larger phonological unit that is characterized by one single prosodically prominent syllable (e.g. *misá=kan* '(she) said' in 96b).[25]

(96) Disyllabic clitic káni in spontaneous speech

a. po'ísua=kán, vʉ́'ʉ, mamárang miána. 'The elders in the past talked the pomelo (story).' (1007-MKN:1-3)

b. muvúa ucán. misá=kan. ' "Give one (of the pomelos)!", she said.' (1008-PKP:34-35)

When an enclitic forms a prosodic unit with its host, prominence is typically realized on the last syllable of the host, as is the case of *misá=kan* in (96d) above. (97) below shows one more example: the citation form of the host bears penultimate prominence (*makásua* 'be/do like that'), but it bears final prominence when cliticized (*makasuá=cu* [makaswátsu]):

[25]Prominence shows varying interactions with clitics in spontaneous speech, where prominence position is often hard to predict. Although it is still unclear if specific rules are involved, the discussion here will provide descriptions based on what is generally observed.

(97) Clitics forming one prosodic unit with host

makasúa=cu, 'And then …' (1007-MKN:59)

Clitics may combine with auxiliaries whose citation forms do not bear prosodic prominence. In this case, the newly created prosodic unit exhibits one single prominent syllable, which typically falls on the auxiliary (98):[26]

(98) Clitics combining with auxiliaries

a. té=cu alaciás~~u~~, 'It was almost dawn/morning.' (1016-AKN:184) (Enclitic =*cu*, non-prominence-bearing in citation form)

b. ná=tia rumaringé. 'They were going to lay traps (but didn't).' (1009-MKN:103) (Proclitic *na*=, non-prominence-bearing in citation form)

c. 'acú=kan niroim, '(I) have already forgotten (about it).' (1007-MKN:135) (Enclitic =*káni*, prominence-bearing in citation form)

A clitic may also combine with other clitics to form *clitic clusters*. Clitic clusters are sometimes prosodically dependent on a shared host, with the host being the only prominence-bearing unit (99a). Other times, both the host and the clitic cluster each exhibit prosodic prominence (99b), or the two combine to form one prosodic unit, but with the prominence falling on a syllable contained in the clitic cluster instead of the host (99c):

(99) Clitic clusters and prominence variation

a. 'án=va=pa mustánp~~u~~. 'Turns out it was still not enough.' (1008-PKP:66) (clitic cluster =*ava*=*pa* being prosodically dependent on the host auxiliary *ka'án~~u~~*, which frequently reduces to *'an* in spontaneous speech)

b. makasúa=cu=kán mámia, saronái íhua, 'The man was just like that.' (1007-MKN:44-45) (clitic cluster =*cu*=*kani* forming an independent prosodic unit, exhibiting promi-

[26]The citation form of the future marker *tia* is not prominence-bearing, but it undergoes vowel coalescence (*tia* → *te*) and bears prominence when cliticized (*té*=*cu*).

nence alongside the host verb *makásua* 'be/do like that')

c. 'esi=kalá=ku, uh, pótama kamúa. 'Was I bluffing to you all?' (1011-MKN:55-57) (clitic cluster =*kala*=*ku* forming a prosodic unit with host auxiliary *'esi*, with prominence located on the clitic =*kala*)

Prosodically speaking, therefore, clitics are crucially distinguished from affixes in terms of both (i) the prosodic domain they pertain to, and (ii) the degree of prominence variation they exhibit. Whereas both clitics and affixes may play a role in leading to prominence shifts, clitics are capable of shifting prominence across word boundaries, as has been shown in (98) and (99) above. Clitics may also form prosodic units with other clitics by creating clitic clusters, as in (99) above, while affixes are always subsumed under a word in terms of their prosodic features. On the other hand, clitics are variable in their prosodic profile: clitic citation forms differ in whether they exhibit prominence or not, and their prosodic realization in spontaneous speech may differ from that of their citation forms. In comparison, affixes are consistent in whether they are prominence-attracting or not; whether they bear prominence is also dependent on systematic word-level prominence assignment rules.

Chapter 3

Voice, tense-aspect-mood and verb classes in Kanakanavu

3.1 Introduction

The Western Austronesian verbal clause is often presented in the literature with prototypical examples that showcase the phenomenon of **voice alternation**. This can be seen in the Paiwan examples in (100) below, in which as many as four voice constructions may be distinguished when a semantically transitive event, such as HUNT, is packaged in the verbal clause. Syntactically speaking, one of the implications for the different voice constructions concerns which event participant is realized as the Privileged Syntactic Argument (PSA), which exhibits a range of morphosyntactic properties that are not found in other argument roles (Van Valin 2005; Riesberg and Primus 2015; V. Chen and McDonnell 2019). In Paiwan, one of such properties is direct flagging of PSA status for lexical PSAs. As can be seen in (100), the PSA is the lexical nominal preceded by the case-marker *a*, and it bears the role of the semantic agent (*caucau* 'man') in the agent-voice construction (100a), that of the semantic patient (*vavuy* 'pig') in the patient-voice construction (100b), that of the location (*gadu* 'mountain') in the locative-voice construction (100c) and that of the instrument (*vuluq* 'spear') in circumstantial

voice (100d):

(100) Paiwan (adapted from Ferrell 1979: 202)

a. **q<m>alup a caucau** tua vavuy i gadu tua vuluq.
<AV>hunt PSA man OBL pig LOC mountain OBL spear
'The man hunts wild pigs in the mountains with a spear.' (Agent voice)

b. **qalup-en** nua caucau **a vavuy** i gadu tua vuluq.
hunt-PV GEN man PSA pig LOC mountain OBL spear
'The man hunts wild pigs in the mountains with a spear.' (Patient voice)

c. **qalup-an** nua caucau tua vavuy **a gadu** tua vuluq.
hunt-LV GEN man OBL pig PSA mountain OBL spear
'The man hunts wild pigs in the mountains with a spear.' (Locative voice)

d. **si-qalup** nua caucau tua vavuy i gadu **a vuluq**.
CV-hunt GEN man OBL pig LOC mountain PSA spear
'The man hunts wild pigs in the mountains with a spear.' (Circumstantial voice)

The choice of voice construction has implications for the morphology of the clause-initial verb. Here, a common root *qalup* 'hunt' is shared across four verb forms, where different voice markers are involved. In the agent-voice construction, the verb occurs in the agent-voice form (*q<m>alup*, 100a), which involves the infix *<m>* inserted into the root. In the patient-voice construction, the verb occurs in the patient-voice form (*qalup-en*, 100b), which involves the suffix *-en* attached after the root. The other two voice forms of the verb — *qalup-an* (locative voice, 100c) and *si-qalup* (circumstantial voice, 100d) — are marked by the suffix *-an* and the prefix *si-*, respectively. Since no voice form serves as the morphologically basic form from which the other forms are derived, the voice system of Paiwan can be characterized as **symmetrical** in the morphological sense; this is because all voice forms can be considered

"equally derived" in the morphology (Himmelmann 2005).

As a Formosan language, Kanakanavu is no exception in having been characterized as exhibiting symmetry in its verbal voice morphology. In C. Wu (2006), for example, the language is described as exhibiting a four-way voice distinction similar to the one observed in Paiwan. The four verbs in the examples in (101) below share a common root, but they are affixed with different voice markers: agent voice *um-* (101a), patient voice *-~~u~~n* (101b), locative voice *-an* (101c) and instrumental voice *se-* (101d).[1] The verb forms, as presented and analyzed by Wu, are therefore also "symmetrically derived", with none appearing as the morphologically basic form.

(101) Kanakanavu (C. Wu 2006)

a. **um-~~u~~su'~~u~~** cuma paizi (na) takuacapa.
AV-put father wine LOC table
'Father (will) put wine on the table.' (Agent voice)

b. **~~u~~su-n** cuma paizi (na) takuacapa.
put-PV father wine LOC table
'Father (will) put wine on the table.' (Patient voice)

c. **ni-su-an**=cu cuma paizi (na) takuacapa.
PRF-put-LV=COS father wine LOC table
'Father (will) put wine on the table.' (Locative voice)

[1]While no explicit argument is made, Wu's data imply that the stem is analyzed as having *~~u~~su'~~u~~* 'put' as its underlying form, which undergoes reduction and is realized as *~~u~~su* (101b), *su* (101c) and *su'~~u~~* (101d) when affixed with different voice markers. The patient-voice marker, whose citation form is given as *-~~u~~n* (C. Wu 2006: 112), is also represented in a reduced form *-n* (101b). According to the sketch of Kanakanavu morphophonology in Chapter 2, the stem is analyzed as reducing to *~~u~~su'* in patient voice, and undergoing vowel coalescence when the prefixes *ni-* or *si-* (instead of *se-*) are attached to it: *~~u~~sú'~~u~~n* /~~u~~su'-~~u~~n/ (patient voice), *nisú'an* /ni-~~u~~su'-an/ (prefixed with *ni-*), *sésu'~~u~~* /si-~~u~~su'~~u~~/ (prefixed with *si-*).

d. **se-su~~'u~~** paizi nonoman isi (na) takuacapa.
IV-put=1SG.GEN wine thing this LOC table
'I use the thing (container) to put wine in on the table.' (Instrumental voice)

Such symmetry is also sometimes seen in the ways the Kanakanavu verbal voice paradigm has been presented (e.g. Cheng and L.-M. Sung 2015: 21; Zeitoun and Teng 2016: 171; Ross 2009: 318), with "M-Stem" representing the typical (schematized) agent-voice verb form, leading to the impression that the prototypical agent-voice verb in the language is marked by an agent-voice marker (represented by M-). See, however, Tsuchida (1976: 44) and Sung (L.-M. Sung 2018: 21), where "∅-" is included as an agent-voice marker, indicating that agent-voice verbs may be unmarked for voice as well.

The morphosyntactic properties of voice in Kanakanavu, including what motivates voice selection in syntax and discourse, will be discussed in detail in Chapter 4. The goal of this chapter, rather, is to explore the morphological properties of Kanakanavu's verbal voice morphology, focusing particularly on the extent to which it can be characterized by morphological symmetry as exemplified above.

The chapter begins with an investigation of the properties that distinguish verbs from nouns in Section 3.2. Two approaches to the noun-verb distinction in Kanakanavu are reviewed in this section: one is based on the diagnostics proposed by Teng and Zeitoun (2016), and the other draws on mood as a property exclusively shared by verbs in the language. The mood-based approach provides a morphological foundation for categorizing Kanakanavu verbs into two groups. Those in the first are referred to as agent-voice verbs, the derivation of which is discussed in Section 3.3, and those in the second are referred to as patient-voice verbs, the morphological properties of which are explored in Section 3.4. This chapter concludes in Section 5. It is emphasized that symmetry is indeed observed in Kanakanavu: different from a language like Paiwan, Kanakanavu shows a binary distinction between agent-voice and patient-voice verbs, and many verbs are found to be equally derived from a shared stem, manifesting the

symmetrical pattern as seen in (100) and (101) above. However, characterizing the Kanakanavu verbal morphology entirely by referring to such examples leads to the misconception that every verb is derived from a root combined with a voice marker. While every verb in Kanakanavu is specified for voice, the two categories of verb are characterized by quite different morphological properties. In a large number of cases, agent-voice verbs are not morphologically marked for their voice status at all, and in all cases, patient-voice verbs are derived from stems combining with a patient-voice marker, and they are always connected one way or another to their derivationally related counterparts in agent voice.

3.2 The noun-verb distinction

Nouns and verbs constitute two major content-word classes in Kanakanavu. Syntactically, however, nouns and verbs exhibit high degrees of flexibility in being able to occur in both predicate and argument slots of the clause. The Kanakanavu basic clause structure is exemplified in (102) below. Predicates occur in clause-initial position, and in the verbal clause, the predicate may consist of a single verb (e.g. the verb *tavalú'u* 'know' in 102a) or a verb preceded by an auxiliary (e.g. the negative auxiliary *ka'ánu* and the verb *cúnun* 'burn' in 102b).[2] Second-position clitics, such as the pronouns *=ku* (102a) and *=kíta* (102b), are invariably attached to the first word in the predicate.

(102) The verbal clause in Kanakanavu

a. tavalú'u=ku.
tavalaa'u=ku
know=1SG
'I know.' (1018-AKN:131)

[2]The word *unco* is a pause filler. Along with other disfluencies, it is not glossed in this dissertation for the reader's ease of data interpretation.

b. ’án=kíta, uh, mocun. uh, cúnun sua ~~u~~nco, eh, nimúru’u,
ka’anu=kita **cun-un** sua nimuru’u
NEG.IPFV=1PL.INCL burn-PV CTRV blood
taniár~~u~~. misé.
taniar~~u~~ mise
sun QUOT

‘We won’t be burned by the sun’s blood.’ (1016-AKN:384-392)

The verb *tavalú’~~u~~* ‘know’, which occurs as the predicate in (102a) above, may also occur as an argument of the clause, as can be in seen in (103a). Here, it serves as a referring expression, indicating a participant (“the one who knew”) involved in the event expressed by the predicate.[3] On the other hand, the noun *nimúru’u* ‘blood’, which occurs inside the argument noun phrase *nimúru’u taniár~~u~~* ‘the sun’s blood’ in (102b) above, may also serve as a nominal predicate occurring in clause-initial position, as can be seen in (103b).[4] In this specific case, *nimúru’u* ‘blood’ indicates the property of “being covered in blood”.

[3]The particle *na* in (103a) is analyzed as a past temporal marker, which may modify both verbs and nouns. When modifying proper nouns, it also functions as an honorific marker for deceased humans. See Chang (2012) for a similar marker *nia* in Tsou, which Chang characterizes as a marker of “nominal tense”. The marker *sua* is a pragmatic marker interacting with contrastive topics or contrastive foci. It is glossed as CTRV in this dissertation for “contrastive”.

[4]In Kanakanavu, nominal predicates are simply followed by arguments, without any additional copula verb, which may be required by languages where adjectival and nominal predicates are syntactically distinguished from verbal predicates (Dryer 2007: 229–230). This is also the case for adjectival expressions, which are realized as verbs and simply occupy the predicate slot of the clause (see Section 3.3.1).

(103) Nominal-predicate clauses in in Kanakanavu

a. na cuma ’úna sua tavalʉ́’ʉ.
na cuma ’una sua tavalaa’ʉ
PST father ’U CTRV know

‘The one who knew was the late father ’Una’ (1011-MKN:78)

b. nimuru’u mamia sua, namuriongin
nimuru’u mamia sua namuriongu=in
blood only CTRV nearby=3.POSS

‘There is blood all around it.’ (Lit: ‘Its surroundings are only blood’) (1011-MKN:139-140)

Before delving into the specifics of verbal morphology in Kanakanavu, therefore, it will be useful to clarify what makes a word a verb in the language. Some discussion concerning how nouns and verbs are distinguished morphosyntactically is therefore needed. This section introduces two sets of diagnostics for the noun-verb distinction in the language. One (Section 3.2.1) comes mainly from the usage and distribution of **third-person genitive pronouns** as evidence for the noun-verb distinction. The other one (Section 3.2.2) is rooted in **mood** as a fundamental property of Kanakanavu verbal morphology. The latter will be argued to be the more comprehensive diagnostic for the noun-verb distinction in the language.

3.2.1 Teng and Zeitoun’s (2016) diagnostics

Teng and Zeitoun (2016) is the first comprehensive study of the noun-verb distinction in Kanakanavu. Their major contribution lies in utilizing an important distinction made in the third-person genitive pronoun category as a diagnostic for the noun vs. verb status of a given word.[5] According to Teng and Zeitoun, Kanakanavu genitive pronouns serve different

[5]The distinction is discussed in Tsuchida (1976), but it was not employed as a diagnostic for the noun-verb distinction until Teng and Zeitoun (2016).

functions depending on the lexical category of the word with which they occur: they represent **possessors** when occurring with nouns or noun phrases, and they indicate **agents**[6] [7] (or what Teng and Zeitoun call "nonsubject actors") when occurring with verbs. This is evidenced in the spontaneous-speech data collected for this study, exemplified by the first-person singular genitive pronoun =*máku* below. When serving as a possessor, the genitive pronoun is always attached to the noun or noun phrase representing the possessum (104a-b). When serving as an agent, however, it occurs as a second-position clitic that is attached to the first word occurring in the clause-initial predicate slot (104c-d). In the latter case, the encliticized host may simply be a verb (104c) or an auxiliary, such as the future marker *tia* (which reduces to *te* when encliticized) (104d).

(104) Genitive pronouns indicating possessors and agents

a. alisíko tanáha=**máku** mihé
ali-sik-au tanasa=maku mise
manipulate-clean-PV.IMP house=1SG.GEN QUOT
'"Clean **my** house!", (she) said.' (1002-UKN:77)

[6]The term "agent" is employed here to refer to the generalized role served by agentive participants involved in transitive events, prototypically including semantic agents and semantic experiencers. It can be taken to correspond to the Macrorole/Proto-Role "Actor" as discussed in Dowty (1991) and Van Valin and LaPolla (1997). Whenever there is a need to disambiguate, the term "semantic agent" will be employed for a more specific reference to participants that are volitional instigators of an event.

[7]The similarity in case forms for marking possessors and agents is widespread across Western Austronesian languages, especially those in Taiwan and the Philippines. This has led to the hypothesis that contemporary verb forms that occur with genitive-marked agents actually have historical origins in possessed nominalized clauses (Starosta et al. 1981; Kaufman 2017). The so-called "noun/nominalization-into-verb" hypothesis explains why the syncretism between possessors and agents, two otherwise distinct role types, is found across a wide range of Austronesian languages. The explanatory power of the hypothesis is also reflected in the descriptive tradition in Austronesian linguistics in which the single label "genitive" is simply employed for both the possessor and the agent, which is also the approach adopted in the current study. However, there has been controversy surrounding whether the hypothesis can be directly applied to higher-order Austronesian subgrouping (see, for example, Blust and V. Chen 2017), as has been done by, for example, Ross (2009); Zeitoun and Teng (2016).

b. kisʉ́n kán ké sua na, kâna'uá=**maku:**, sumío.
kisa-ʉn kani ke sua na kana'ua=maku sumio
say-PV.IPFV EVI 3.GEN CTRV PST brother=1SG.GEN S.

'He told my late brother Sumio.' (1009-MKN:144-146)

c. pôkalín=**aku**, kavángvang mamán ma'úla
puu-kali-in=maku kavangvang ma~manu ma'ula
speak-word-PV.IPFV=1SG.GEN all RED~child small

'I would tell all the small kids.' (1002-UKN:24-25)

d. té=**maku**, avícin:,
tia=maku avic-in
FUT=1SG.GEN bring-PV.IPFV

'I will bring (them) with me.' (1036-AKN:360-361)

Importantly, in the third-person category the two functions are served by pronouns that are formally distinct. This can be seen in the list of genitive pronouns in Kanakanavu, as analyzed by the current author, provided in Table 3.1 below. Notice here that in the third person the possessor usage has the form *=ini* (analyzed as a suffix *-ini* by Teng and Zeitoun), and the agent usage has the form *ké* (analyzed as a clitic *=ke* by Teng and Zeitoun).

Table 3.1: Genitive pronouns in Kanakanavu

Person-number	**Form**
1SG	=máku
1PL.INCL	=míta
1PL.EXCL	=mía
2SG	=músu / =su
2PL	=mu
3	=ini (POSS) / ké (A)

As illustrated in (105a-b) the possessive form =*ini* has a distribution that is restricted to the nominal domain, always attached to the possessum noun phrase (105a-b). In addition, it does not shift to the second position, even though some clitics (such as the change-of-state clitic =*cu*, whose scope covers the entire clause) do, as in (105c).

(105) Distribution of third-person possessive-genitive pronoun =*ini*

a. ngacá'in ia=, makâhi.
ngaca'=**ini** ia makaasi
root=3.POSS TOP like.this

'As for its origin, (it) goes like this…' (1009-MKN:163-164)

b. nipacá'~~u~~ kán ké ku~~ku~~in ia,
ni-pacaa'~~u~~ kani ke ku~~ku~~=**ini** ia
PV.PRF-catch EVI 3.GEN leg=3.POSS TOP

'When he grabbed his legs, …' (1009-MKN:176)

c. pasitu'usé=cu nía, sua 'acipin.
pasi-tu'us-ai=**cu** 'inia sua 'acip=**ini**
mouth-touch-PV.PFV=COS 3.OBL CTRV foot=3.POSS

'It bit him on the foot.' (Lit.: It bit his foot.) (1009-MKN:163-164)

The agentive form *ké*, in contrast, generally occurs post-verbally, whether there is an auxiliary (106a) or not (106b). When the clause contains the negative auxiliary *kó*, as in (106c), *ké* may occur pre-verbally.

(106) Distribution of agentive-genitive *ké*

a. tia pana'uen ke.
tia pana'-~~un~~ **ke**
FUT shoot-PV.IPFV 3.GEN

'He was going to shoot (him)' (1009-MKN:188)

b. tínin=pa ké.
tiin-in=pa **ke**
hang-PV.IPFV=CONT 3.GEN

'They would hang (them) up first.' (1010-PKP:106)

c. kó ké kán:, ~~un~~co, lavíse.
ko **ke** kani lavis-ai
NEG.PFV 3.GEN EVI pull-PV.SBJV

'She didn't pull (it) out.' (1033-AKN:70-73)

The second diagnostic proposed by Teng and Zeitoun concerns the marker *sua*, which they analyze as a marker of lexical PSAs, implying that only nouns can be marked by it. The data in (107) below are from Teng and Zeitoun (2016:145). Notice that *sua* is a grammatically optional marker (glossed by them as "nominative"). In (107a), it precedes an unpossessed

noun. In (107b), it precedes the possessed noun *manu-in* 'her child', where the possessor is realized as *-in*, while in (107c), it precedes the possessed noun *si'nuva=mita* 'our door', where the possessor is realized as *=mita*. According to Teng and Zeitoun, it is ungrammatical for *sua* to precede verbs, such as the verb *putu'unuv-un* 'open' in (107c). Its verbal status is suggested by the co-occurring genitive pronoun *=maku*, which, as a second-position clitic, is attached after the clause-initial auxiliary *tia*.

(107) *sua* as an indication of nominal status (based on Teng and Zeitoun 2016: 145)

a. ni-kaun ngiau (**sua**) tapenange.
PFV.UV-eat cat NOM bird
'The cat ate the bird.'

b. cine:n=ia, kalu'un=ke (**sua**) manu-in.
mother:3.GEN.PSR=TOP love-UV=3.GEN.NSA NOM child-3.GEN.POSS
'As for the mother, she loves her child.'

c. te:=maku (*__sua__) putu'unuv-un (**sua**) si'nuva=mita.
IPFV=1SG.GEN.NSA NOM open-UV NOM door-1PL.INCL.GEN.PSR
'I will open our door.'

Thus, the diagnostics proposed by Teng and Zeitoun concern two morphosyntactic properties that arguably distinguish nouns from verbs in Kanakanavu. Nouns may be possessed, and when they are, the possessor is realized as a possessive-genitive pronoun, which has a specific form *=ini* in the third person. Verbs are not possessed but may occur with an agentive-genitive pronoun; in the third person it also has a specific form, *ké*. The pronoun-based diagnostic may also be complemented by evidence from the position of *sua*, which, according to their data, may only precede nouns, and not verbs. These diagnostics are used by Teng and Zeitoun to determine the lexical category of words marked by two specific morphemes — the suffix *-an* and the prefix *si-* — which are analyzed by Wu (2006) as verbal(izing) voice markers, as

presented in (101) above.[8] The two morphemes have cognates that commonly serve to derive verbs across many Formosan languages (see, for example, Ross 2002, 2009, 2012), but based on Teng and Zeitoun's diagnostics, they serve to derive nouns, and not verbs, in Kanakanavu. As demonstrated through their elicited data in (108), the words *nipepacalan* /ni-pe-pacal-an/ and *sipo'ocipi* /si-po'ocipi/ cannot occur with the agent pronoun *ké* (108b, d), but they can occur with the possessor pronoun =*ini* (108a, c). This suggests that they are nouns that are subject to possession, instead of verbs that occur with agents.

(108) Genitive pronouns as evidence for nominal status of words derived from *-an* and *si-* (Teng and Zeitoun 2016: 145)

a. cikiringa cakʉran=ia, ni-pe-pacal-**an**-**in** vavulu.
side river=TOP PFV-CAUS-die-LOCNMLZ-3.GEN.POSS wild.pig
'As for the riverside, it is the place where he killed wild pigs.'

b. *cikiringa cakʉran=ia, ni-pe-pacal-**an**=**ke** vavulu.
side river=TOP PFV-CAUS-die-LOCNMLZ-3.GEN.NSA wild.pig
'As for the riverside, it is the place where he killed wild pigs.'

c. kaːlu iːsi=ia **si**-po'ocipi-**in** 'uːru.
wood this=TOP INSNMLZ-cook-3.GEN.POSS cooked.rice
'As for the wood, s/he used it to cook rice.'

d. *kaːlu iːsi=ia **si**-po'ocipi=**ke** 'uːru.
wood this=TOP INSNMLZ-cook-3.GEN.NSA cooked.rice
'As for the wood, s/he used it to cook rice.'

[8]Teng and Zeitoun (2016) analyze *si-* as one of three formal variants of the instrument nominalizer: *si-*, *se-* and *sie-*, whereas Wu (2006) analyzes the morpheme only as *se-*, serving as the instrumental-voice marker. In this dissertation, *si-* is analyzed as the underlying form of the morpheme, which may undergo vowel coalescence when attached to stems beginning with vowels, leading to words with *se-* or *sie-*initial surface forms (e.g. *se'úna* /si-a'un-a/ 'instrument for carrying things').

Hence, although the two words *nipepacalan* and *sipo'ocipi* are subject to an event-based interpretation, where *nipepacalan* is analyzed at indicating 'kill at', and *sipo'ocipi* is analyzed as indicating 'kill with / use to kill', their nominal status suggests that these examples actually instantiate clauses with nominal predicates. Therefore, the two words are nouns that occur in the clause-initial predicate position. This is reflected in the alternative translations, as presented in (109) below, where the two words are interpreted as 'pig-killing place' and and 'cooking instrument', respectively.

(109) Nominal-predicate interpretation of words derived from *-an* and *si-* (Teng and Zeitoun 2016: 145)

a. cikiringa cakʉran=ia, ni-pe-pacal-**an**-**in** vavulu.
side river=TOP PFV-CAUS-die-LOCNMLZ-3.GEN.PSR wild.pig
'As for the riverside, it is his pig-killing place.'

b. kaːlu iːsi=ia **si**-po'ocipi-**in** 'uːru.
wood this=TOP INSNMLZ-cook-3.GEN.POSS cooked.rice
'As for the wood, (it) was her rice-cooking instrument.'

The findings are corroborated by their additional elicited data involving the marker *sua*. As can be seen below, words marked by *-an* or *si-* may be preceded by *sua*. This further points to the analysis that words that are derived via attachment of the two morphemes are nouns, instead of verbs.[9]

(110) Words derived from *-an* and *si-* marked by *sua* (based on Teng and Zeitoun 2016: 146)

[9]The original translation offered for (109b) in Teng and Zeitoun (2016: 146) is 'As for this rice that was bought, the child's money was used.' According to the author's own data, however, *sipú'a* /si-pu'a/ (marked by the instrument nominalizer *si-*) means 'payment', which is morphologically and semantically different from *pu'á* /pu'a-a/ 'purchased goods' (marked by the patient nominalizer *-a*). Accordingly, the interlinear gloss (109d) is presented with a different translation, although the transcription and morpheme glosses remains unchanged.

a. **sua** ni-kalʉ'-**a**=maku=ia 'aːcu ni-ara-[a]ka.
NOM PFV-like/love-P.NMLZ=1SG.GEN.POSS=TOP PFV-INCH-bad
'As for my lover, s/he is dead.'

b. **sua** **si**-pu'a vʉːra iːsi=ia vantuku manu=maku
NOM INSNMLZ-buy rice this=TOP money child=1SG.GEN.POSS
'As for the payment for this rice, (it was from) my child's money.'

3.2.2 Mood-based diagnostics

This study employs a different diagnostic for the noun-verb distinction that is deeply rooted in **mood inflection**. Before the adopted diagnostic is examined, some discussion of why Teng and Zeitoun's proposal may not be optimal is needed. First, although the distinction made regarding the third-person genitive pronouns is indeed found in the data collected for this study, the possessive *=ini* vs. agentive *ké* distinction is not comprehensive enough to account for the full range of spontaneous-speech data in the author's corpus. A case in point can be seen in (111) below. Here, the words *paná'e* 'shoot' (111a) and *patupuné* 'throw' (111b) are verb suspects: based on the glosses and translations, they clearly indicate events that are performed by agent participants. However, the agents are realized not as *ké*, but as a pronominal form not included in Teng and Zeitoun's diagnostic — *'ikúa*.[10] Therefore, it still begs the question: how does one determine based on morphosyntactic evidence if words like *paná'e* 'shoot' and *patupuné* 'throw' are nouns or verbs?

[10]The pronoun is in what is called the oblique case in this study. The functions of oblique pronouns are discussed in more detail in Chapter 4 (specifically, Section 4.2).

(111) *paná'e* 'shoot' and *patupuné* 'throw' as words not covered by Teng and Zeitoun's diagnostics

a. pâna'e kúa,
pana'-ai 'ikua
shoot-PV.PFV 1SG.OBL
'I shot (it).' (1011-MKN:199)

b. pâtupuné 'ikúa
patupunu-ai 'ikua
throw-PV.PFV 1SG.OBL
'I threw (things) at (it)' (1011-MKN:191)

Second, although the diagnostic based on *sua* appears to work well with Teng and Zeitoun's elicited data, there are counterexamples that can be found in both data collected by the current author and textual data drawn from Tsuchida (2003).[11] In (112a), the word *niápun* 'pick (fruit)' is followed by the pronoun *ké*. Based on Teng and Zeitoun's third-person pronoun diagnostic, therefore, the former should be a verb. However, the "verb" is also preceded by the marker *sua*, which, according to Teng and Zeitoun, should indicate that it is a noun instead. Another example from Tsuchida (2003), containing the word — *nikitalísi* (which Tsuchida glosses as 'rope-made') — can be seen in (112b). Here, the word is followed by the pronoun *ké* (transcribed as *kiái* by Tsuchida), and at the same time preceded by the marker *sua*. In this regard, by relying on (i) the form of the co-occurring third-person pronoun and (ii) whether marking by *sua* is grammatical, one cannot account for a richer range of data. A different set of diagnostics is needed.[12]

[11]Tsuchida (2003) is a collection of texts based on recordings made in the late 1960s and early 1970s. The counterexamples are therefore found in Kanakanavu speech across several generations.

[12]A possible explanation for these data is that *sua* is not a nominative marker, but a marker that introduces not only nouns and noun phrases, but relative clauses as well.

(112) Counterexamples to Teng and Zeitoun's (2016) noun-verb distinction diagnostics

a. ~~umúsu~~'~~u~~ na sópo sua, nia- niap- – niáp~~un~~ ké v~~ú~~'~~u~~,
um-~~usu~~'~~u~~ na sopo sua ni-ap~~unu~~ ke v~~uu~~'~~u~~
AV-put LOC basket CTRV PV.PRF-pick 3.GEN pomelo

'(He) put the pomelos he had picked into the basket.' (1008-PKP:117-119)

b. tatiá-na puungáaana sua ni-ki-talísi kiái
bigness water-vessel NOM rope-made his

'The rope he made was as big as a water-vessel' (Tsuchida 2003: 22)

This study proposes **mood** as a basis for an alternative set of morphosyntactic diagnostics for the noun-verb distinction in Kanakanavu. Mood has always been treated as a fundamental property of verbs across Formosan languages (Zeitoun et al. 1996; Ross 1995, 2009, 2015a). Previous studies of Kanakanavu also commonly include mood as an indispensable parameter in verb paradigms, interacting closely with tense-aspect on the one hand, and voice on the other (Tsuchida 1976; Mei 1982; H.-C. Liu 2014; Zeitoun and Teng 2016; Wild 2018; L.-M. Sung 2018). In Tsuchida (1976), verbs are presented as showing alternations across six categories of what is labeled "aspect" — perfective, neutral, imperfective, future, negative and imperative; the latter two are commonly included in typological studies on mood as a verbal category (e.g. Palmer 2001). In Ross (2009: 318), the categories are expanded to nine for comparative purposes — realis, future, imperfective, perfective, nominal, narrative, imperative, dependent and durative. In Zeitoun and Teng (2016), an indicative-nonindicative dichotomy is proposed, and each mood category further distinguishes between affirmative and negative domains.

Mood in Kanakanavu is essentially an **inflectional** category in the domain of verbal morphology, in the sense that all verbs (and only verbs) can alternate across mood categories. In this study, three mood categories are established in Kanakanavu: (i) the indicative mood and two non-indicative mood categories — (ii) the imperative mood and (iii) the subjunctive mood. The alternation between the indicative and imperative moods concerns grammatical

marking that corresponds to different illocutionary forces (Nikolaeva 2016) or the speaker's subjective attitude towards a proposition (Palmer 2001). This corresponds to what Portner (2018) calls **sentence mood**. Depending on the specific verb involved (and the voice category it belongs to, in particular), a verb may be unmarked for mood in the indicative, where it is used to express the assertive speech act, but marked by a mood suffix in the imperative mood, where it is used to express commands, typically directed at the second-person addressee. For example, as an agent-voice verb, *ivátu* 'come' is unmarked for mood in its indicative form (113a), but must take mood affixes when occurring in the imperative mood. As can be seen in (113b and 113c), this is indicated by its ability to take the (regular) imperative suffix *-a* and the mild imperative suffix *-án*. Compared to their (regular) imperative counterparts, the mild imperative often implies that the speaker is making a suggestion, instead of giving out strong commands, to the addressee.

(113) (Indicative-imperative) mood alternation illustrated with the verb *ivátu* 'come'

a. ivátu=kím.
   i-vatu=kimi
   move-come=1PL.EXCL
   'We came.' (1009-MKN:17)

b. to ivâta néhi,
   to i-vat-**a** nesi
   COMP move-come-IMP LOC.DEM.PROX
   '… saying "Come over here!' (1002-UKP:26)

c. ivatán.
   i-vat-**án**
   move-come-MIMP
   '(Please kindly) come!' (Elicited)

On the other hand, *ukusúːn* 'go' (114a) is a patient-voice verb, and patient-voice verbs are distinguished from agent-voice verbs because they are always marked for tense-aspect or mood. The morpheme *-ːun* (114a) marks both the patient-voice status of the verb and the imperfective aspect value of the clause in the indicative mood. When it occurs in the imperative mood, as in (114b) and (114c), the imperative suffix *-au* or the mild-imperative suffix *-ón* is attached instead.[13] (*-au* reduces to *-u* when attached to a stem ending in the low vowel /a/.)

(114) (Indicative-imperative) mood alternation illustrated with the verb *ukusúːn* 'go'

a. ukusúːn=cu ké kán, masikúːcu.
ukusa-**ːun**=cu ke kani masikuːucu
move-toward-PV.IPFV=COS 3.GEN EVI pinch

'She would then go pinch (it)' (1033-AKN:141-142)

b. ukúso.
u-kusa-**u**
move-toward-PV.IMP

'Go!' (1009-MKN:147)

c. ukusón.
u-kusa-**ón**
move-toward-PV.MIMP

'(Please kindly) go!' (Elicited)

The alternation between the indicative and subjunctive moods corresponds to what Portner (2018) calls **verbal mood**, which is constituted by distinctions made in the verbal morphology that are concerned with complements selected by a subset of matrix predicates. The morphological distinctions are typically binary, and they are often labeled as oppositions between the

[13] As will be discussed in Section 3.3 below, all patient-voice markers are portmanteau morphemes that fuse both voice and tense-aspect-mood values.

"subjunctive" or "irrealis" with some other mood category (see, e.g., Givón 1994; Mauri and Sansò 2015). In this study, the two negative auxiliaries *kó* and *'akúni* are analyzed as predicates that obligatorily select verbs occurring in the subjunctive mood.[14] The subjunctive is treated as a coherent mood category in Kanakanavu because a specific mood affix is involved. The indicative verb *nelupáca* 'use' (marked by the indicative suffix *ni-*), for example, obligatorily takes the form *ulupacé* (marked by the suffix *-ai*) when negated by the two auxiliaries:[15]

(115) (Indicative-subjunctive) mood alternation illustrated with the verb *nelupáca* 'use'

a. nelupacá=maku, vavúlu pusu'úma.
ni-ulupaca=maku vavulu pusu'uma
PV.PRF-use=1SG.GEN wild.pig pay.for.labor
'I have used (the meat of) wild pigs to pay for labor.' (1011-MKN:74-75)

b. kó=maku ulupacé.
ko=maku **ulupaca-ai**
NEG.PFV=1SG.GEN use-PV.SBJV
'I didn't use (it).' (Elicited)

c. 'akúni ulupacé.
'akuni **ulupaca-ai**
PROH use-PV.SBJV
'Don't use (it)!' (Elicited)

The suffix *-ai* is also required for the verb *nikúnu* (again, marked by *ni-*, one of the indicative verbal prefixes) when it occurs in the subjunctive mood. The examples in (116) below show the subjunctive form of the verb *kúne* (marked by *-ai*), which obligatorily occurs when the

[14]The subjunctive mood corresponds to Zeitoun and Teng's (2016:138) "nonindicative-negative" mood.

[15]The suffix *-ai* is glossed as "subjunctive patient-voice marker". It is treated in this dissertation as being homophonous with the perfective patient-voice marker *-ai*, which occurs in the indicative mood. More discussion on the homophony will be provided in Section3.4.1.

negators *kó* or *'akúni* are involved:

(116) (Indicative-subjunctive) mood alternation illustrated with the verb *nikúnu* 'eat'

a. nikún=aku.
ni-kuunu=maku
PV.PRF-eat=1SG.GEN
'I've eaten (it)' (Elicited)

b. kó=musu kúne alámu.
ko=musu **kuun-ai** alamu
NEG.PFV=2SG.GEN eat-PV.SBJV meat
'You didn't eat the meat.' (Elicited)

c. 'akúni kúne alámu.
'akuni kuun-ai alamu
PROH eat-PV.SBJV meat
'Don't eat the meat.' (Elicited)

Some verbs, such as *túmmana* 'listen', do not take any further affixes when occurring in the subjunctive mood. In (117a-b), it can be seen that the suffix *-a* is involved when the verb occurs in the imperative mood; however, when negated by the subjunctive auxiliary *kó*, as in (117c), no additional morphemes are involved: the indicative and subjunctive forms of the verb are identical, although the imperative form further involves the suffix *-a*.

(117) (Indicative-imperative-subjunctive) mood alternation illustrated with the verb *túm-mana* 'listen'

a. túmmana=kía 'inía ia,
t<um>imana=kia 'inia ia
<AV>listen=1SG 3.OBL TOP

'When I listened…' (1029-PKP:2)

b. tummaná mámia tapang- – a, tapinánge cacán
t<um>imana-a mamia tapinange cacan~~u~~
<AV>listen-IMP only bird road

'Just listen to the birds on the way!' (1029-MKN:34-36)

c. kó=kía túmmana na mamarúrang miána,
ko=kia **t<um>imana** na mamarurang miana
NEG.PFV=1SG <AV>listen LOC elders past

'I didn't listen to the elders in the past.' (1008-PKN:8)

Nevertheless, the fact that *túmmana* 'listen' occurs in a clause negated by the subjunctive auxiliary *kó* already distinguishes it from nouns. As observed by Lan (2012), nouns are never negated by *kó*. Elicited examples of negated nouns in (118) below show that a different negator *ka'án~~u~~* is required instead. This is taken in this study as evidence that nouns do not undergo mood alternation, which is a property exclusively shared by verbs.

(118) Noun negation based on data from Lan (2012)

a. ka'án~~u~~ pa'íci ísua.
NEG.IPFV alcohol DEM.DIST

'That is not alcohol.' (based on Lan 2012:66-67)

b. *kó pa'íci ísua.
NEG.PFV alcohol DEM.DIST
Intended: 'That is not alcohol.' (based on Lan 2012:66-67)

The diagnostic proposed in this study takes a different perspective from the one proposed by Teng and Zeitoun (2016). However, the two converge in supporting the claim that in Kanakanavu, some morphemes that may be subject to analysis as verbal voice affixes — namely, the suffix *-an* and the prefix *si-* (with a variant *se-*) — derive nouns instead of verbs. According to the mood-based diagnostic, words that involve either suffix are nouns, and not verbs, because they cannot undergo mood inflection. While the suffix *-an* is formally similar to the mild-imperative suffix *-án*, the two are functionally distinct.[16] The former is a patient nominalizer (119a), and the second indicates a command (119b). It is the latter that exhibits mood alternation, whereby it contrasts with, for example, an indicative verb form that is not marked by any mood affix (119c).

(119) Patient nominalizer *-an* vs. Mild imperative marker *-án*

a. k~~u~~nán=su.
k~~uu~~n-an=musu
eat-P.NMLZ=2SG.GEN
'(It's) your food!' (1018-AKN:530)

b. pokalikalián.
puu-kali~kali-án
speak-RED-word-MIMP
'(Try) speaking (a little)!' (Elicited)

[16]The mild-imperative suffix *-án* is a prominence-attracting morpheme. The prominence specification of morphemes is discussed in Chapter 2 (specifically, Section 2.5.3).

c. té=pa nguáin pokalíkali.
tia=pa nguain **puu-kali~kali**
FUT=CONT 3 speak-RED-word

'She is still going to speak.' (1002-UKP:157)

Similarly, words containing the prefix *si-* are nouns, because they are not subject to mood inflection, either. Although the data in (120) may suggest that a *si*-marked word can alternate between mood-unmarked (120a) and mood-marked (120b) forms (involving a suffix-like morpheme *-a*), both are nominalized structures that are not subject to mood alternation. Here, the word *siá'unu* /si-a'unu/ (120a) involves the transported theme nominalizer (the prefix *si-*) and indicates transported theme nominalization; it can be translated literally as 'carried-thing'. On the other hand, the word *se'úna* /si-a'un-a/ (120b) involves the instrument nominalizer (the circumfix *si-…-a*) and indicates instrument nominalization; it can be translated literally as 'carrying instrument'.

(120) Transported theme nominalizer *si-* vs. instrument nominalizer *si-…a*

a. siá'unu má vutukul=áku.
si-a'unu mamia vutukul=maku
T.NMLZ-carry only fish=1SG.GEN

'My fish were the only things being carried away (carried-away thing).' (1013-MKN:36)

b. káni makái=kía ma se'úna ma. vutúkulu a.
kani makai=kia mamia **si-a'un-a** mamia vutukulu a
INT resemble=1SG only INSNMLZ-carry-INSNMLZ only fish PART

'I was really just like an instrument for carrying fish (a fish-carrying instrument)!' (1013-MKN:79-80)

The mood-based diagnostic also provides a more encompassing method for determining noun vs. verb status of a content word without reference to the form of co-occurring third-person genitive pronouns. The words *paná'e* 'shoot' (121a) and *patupuné* 'throw' (121c), for example, are unequivocally verbs because they can undergo mood alternation, although the pronominal agent occurs in a form not included in Teng and Zeitoun's pronoun-based diagnostics. The verb *paná'e* 'shoot' is clearly able to occur in the subjunctive mood because it is negated by the auxiliary *kó* in (121b). The same is observed for the verb *patupuné* 'throw', where it is also negated by the auxiliary *kó* in (121d). Notice here that the third-person pronoun used to indicate the agent participant alternates in form across different mood categories. This is a mood-conditioned phenomenon not widely observed across Formosan languages, which will be discussed in more detail in Chapter 4.

(121) Mood alternation as evidence that *paná'e* 'shoot' and *patupuné* 'throw' are verbs

a. pâna'e kúa,
pana'-ai 'ikua
shoot-PV.PFV 1SG.OBL
'I shot (it).' (1011-MKN:199)

b. kó=maku paná'e,
ko=maku pana'-ai
NEG.PFV=1SG.GEN shoot-PV.SBJV
'I didn't shoot (it).' (Elicited)

c. pâtupuné 'ikúa
patupunu-ai 'ikua
throw-PV.PFV 1SG.OBL
'I threw (things) at (it)' (1011-MKN:191)

d. kó=maku patupuné
ko=maku patupunu-ai
NEG.PFV=1SG.GEN throw-PV.PFV
'I didn't throw (things) at (it)' (Elicited)

The discussion so far has established that verbs constitute the only word class in Kanakanavu that can (i) involve a mood affix and/or (ii) be negated by the subjunctive negators *kó* and *'akúni*. The next section now turns to investigate how verbs are derived morphologically. As will be demonstrated, Kanakanavu verbs can be divided into two categories: agent-voice verbs and patient-voice verbs. The two categories of verbs are distinguished in terms of how mood is marked, and how they are derived via different morphological processes.

3.3 Root classes and verbal(izing) affixes

This section explores the derivation of Kanakanavu verbs whose indicative forms do not involve morphemes that encode mood. These verbs are collectively referred to as **agent-voice verbs** in this dissertation: when they are used to package semantically transitive events, it is always the agent that is realized as the Privileged Syntactic Argument (PSA). Some examples can be seen in (122) below, where the PSA is consistently realized as an unmarked-case pronoun, a property shared by pronominal PSAs in Kanakanavu.[17]

(122) Examples of agent-voice verbs used for packaging semantically transitive events, with the PSAs bearing the agent role

[17]Chapter 4 will provide more discussion on other properties of the PSA and the unmarked-case pronouns.

a. pomanúng=ku ísi
puu-manungu=**ku** isi
utter-good=1SG DEM.PROX
'I am talking about this in a good manner.' (1011-MKN:231)

b. sua ísua ia, ka'án=ku alakulácu.
sua isua ia ka'anu=**ku** ala-kulacu
CTRV DEM.DIST TOP NEG.IPFV=1SG become-angry
'As for that, I won't get angry about it.' (1011-MKN:37-38)

c. nimpaná'u=ku kángvang na nántaku,
ni-mu-pana'u=**ku** kavangvang na nant=aku
PRF-AV-shoot=1SG all LOC shotgun=1SG.GEN
'I have also opened fire with my shotgun' (1011-MKN:177)

Agent-voice verbs also consistently show homophony between (TAM-unmarked) indicative and subjunctive forms, meaning that no mood affix is attached when an agent-voice verb is negated by the subjunctive-selecting auxiliaries — *kó* and *'akúni*. The indicative-subjunctive homophony has been illustrated in (117) above with corpus data. The verb forms are given below along with schematic representations of their morphological structures:

Table 3.2: Agent-voice verb forms across indicative, subjunctive and imperative moods (illustrated with agent-voice verb *túmmana* 'listen')

Mood	**Structure**	**Example**
Indicative	Stem	túmmana /t<um>imana/
Subjunctive	Stem	túmmana /t<um>imana/
Imperative	Stem-**a**	tummaná /t<um>imana-**a**/
Mild imperative	Stem-**án**	tummanán /t<um>imana-**án**/

Again, the syntactic properties of voice will be discussed in Chapter 4; this chapter continues to focus on the morphological properties of verbs. The three subsections that follow examine the derivation of agent-voice verbs, which involves two important types of morphological units: roots and verbalizing affixes. Section 3.3.1 explores morphological roots in Kanakanavu, which fall into three classes based on their derivational potential to occur in nouns and/or verbs. Section 3.3.2 then investigates how different root types may be derived as agent-voice verbs, where two types of verbalizing affixes may be involved: agent-voice markers and derivational prefixes. Section 3.3.3 introduces the notion of verb classes and shows that agent-voice verbs may differ in terms of (i) how the agent-voice category is explicitly marked and (ii) whether the imperfective aspect is formally marked in the indicative mood.

3.3.1 Root classes

There are three root classes that can be identified in Kanakanavu: a root may be **entity-denoting**, **property-denoting** or **action-denoting**. As implied by the labels themselves, root classification in Kanakanavu has a conceptual/semantic basis: entity-denoting roots denote objects and entities, property-denoting roots denote properties and states, and action-denoting roots denote dynamic actions and events. This is illustrated with examples of each root class as in Table 3.3 below:

Table 3.3: Roots and conceptual classes

Conceptual class	**Root example**	**Gloss**
ENTITY-DENOTING	kuacapa	'utensil'
	natungu	'leafy green'
	ringai	'hunting trap'
PROPERTY-DENOTING	aka	'bad'
	cangkan	'dirty'
	kusa	'toward'
ACTION-DENOTING	pu'a	'buy'
	tavalaa'u	'know'
	kooru	'dig'

The classification also has a basis in the **derivational potential** of a root when it comes to deriving nouns and verbs (Croft 1991; 2001: 87). To begin with, entity-denoting roots are inherently nominal: all entity-denoting roots are free morphemes and can simply occur as nouns without any further affixation, but they always require attachment of one or more verbalizing affixes in order to be derived as verbs. The three entity-denoting roots shown in Table 3.3 above, for example, may simply occur as nouns — *kócapa* /kuacapa/ 'utensil', *natúngu* /natungu/ 'leafy green' and *ringái* /ringai/ 'hunting trap'.[18] While this is true of all entity-denoting roots, only a subset of them are able to be verbalized. The root *ringai* 'hunting trap', for instance, can be affixed with the verbalizing morpheme <*um*> to become the verb *rumínge* /r<um>ingai/ 'lay hunting trap'.[19] More examples of entity-denoting roots undergoing verbalization can be seen in Table 3.4:

[18]As discussed in Chapter 2, prosodic prominence is analyzed in this dissertation as realized on or beyond the word level. Therefore, as morphemes that are below the word level, roots are not represented with prominence. Also discussed in Chapter 2 above, Kanakanavu exhibits complex morphophonological processes that may obscure morpheme boundaries. Whenever necessary, therefore, words discussed in the main text of this dissertation will be represented with underlying representations hereafter to assist the reader with identifying and recognizing their morphological structures.

[19]The infix <*um*> is an agent-voice marker, which will be discussed in much more detail later in this section.

Table 3.4: Entity-denoting roots deriving as verbs

Root	**Word**	**Verbalizing morpheme(s)**
ringai 'hunting trap'	rumínge /**r**<um>**ingai**/ 'lay hunting trap'	<um> AGENT VOICE
manu 'child'	kamanúmanu /kaa-manu~**manu**/ 'give birth'	kaa- 'make' and CVCV-reduplication
vunai 'snake'	alavunái /ala-**vunai**/ 'become (a) snake'	ala- 'become'
ngisaa 'breath'	pulungisá /pulu-**ngisaa**/ 'breathe'	pulu- 'engage'

Different from entity-denoting roots, property-denoting and action-denoting roots may or may not be free morphemes, but when they are they simply occur as verbs. The property-denoting roots *aka* 'bad' and *cangkan* 'dirty' from Table 3.3 above are free morphemes, and they can undergo zero derivation to occur as (stative) verbs *áka* /aka/ 'be bad' and *cángkan* /cangkan/ 'be dirty' without any further affixation. The action-denoting roots *pu'a* 'buy' and *tavalaa'ʉ* 'know' from Table 3.3 above are also free morphemes,[20] and they can simply occur as verbs — *pú'a* /pu'a/ 'buy' and *tavalʉ́'ʉ* /tavalaa'ʉ/ 'know', respectively. Property-denoting and action-denoting roots that are bound require further affixation. Some examples can be found in Table 3.5 below. Here, the bound property-denoting roots *kusa* 'toward' and *ai'i* 'back' each require prefixation of verbalizing morphemes to become verbs. This is also the case for the bound action-denoting roots *kʉʉnʉ* 'eat' and *tutulu* 'tell.[21]

[20]Some free action-denoting roots, such as *tavalaa'ʉ* 'know' and *pu'a* 'buy' discussed above, may have resulted from fossilization of erstwhile morphologically complex verbs. In Tsuchida (2003), for example, the verb *tavalʉ́'ʉ* 'know' is transcribed as *taa-vala'ʉ* (with a prefix *taa-*, whose function is unclear); and the verb *pú'a* 'buy' is transcribed as *pu-'a*' (with a prefix *pu-*, which is possibly a verbalizing derivational prefix attached to the root *'a*, whose meaning is also unclear).

[21]Some of the verbalizing morphemes included here have rather concrete meanings (such as *tala-* 'look', *ali-* 'manipulate'). They are, however, analyzed as prefixes because (i) they can never occur on their own and (ii) they may attach to roots that are free as well. For example, *talákali* /tala-kali/ 'inquire' involves the entity-denoting root *kali*, which is a free morpheme as it can occur as a noun on its own: *káli* 'speech'. The prefix *ali-* 'manipulate'

Table 3.5: Property-denoting and action-denoting roots derived as verbs

Root	**Word**	**Verbalizing morpheme(s)**
kusa (P) ‘toward’	talákusa /tala-**kusa**/ ‘look over (at)’	tala- ‘look’
	malíkusa /m-ali-**kusa**/ ‘transport’	m- AGENT VOICE and ali- ‘manipulate’
	mukúsa /m-u-**kusa**/ ‘go, move toward (agent voice)’	m- AGENT VOICE and u- ‘move’
ai’i (P) ‘back’	pué’i /pu-**ai’i**/ ‘return, go/move back’	pu- ‘engage’
	taláí’i /tala-**ai’i**/ ‘look back’	tala- ‘look’
	’apué’i /’apa-pu-**ai’i**/ ‘make return’	’apa- CAUS and pu- ‘engage’
k~~uunu~~ (A) ‘eat’	k~~umúnu~~ /**k**<um>**~~uunu~~**/ ‘eat (agent voice)’	<um> AGENT VOICE
	’apak~~únu~~ /’apa-**k~~uunu~~**/ ‘feed’	
tutulu (A) ‘tell’	tumútulu /**t**<um>**utulu**/ ‘tell (agent voice)’	<um> AGENT VOICE
	kitútulu /ki-**tutulu**/ ‘learn’	ki- PASSIVE

An important distinction between property-denoting and action-denoting roots lies in how they are derived as nouns, as exemplified in Table 3.6 below. Whereas all action-denoting roots can be derived as nouns via direct attachment of a nominalizer, property-denoting roots show different derivational restrictions regarding nominalization. The two free property-denoting roots *aka* ‘bad’ and *cangkan* ‘dirty’ discussed above, for example, do not happen to show any

can also attach to the free entity-denoting root *sinat~~u~~* (which can occur as a noun *sinát~~u~~* ‘book’), and result in the verb *malisinát~~u~~* /m-ali-sinat~~u~~/‘study’ (further involving the agent-voice marker *m-*).

nominalized forms. Nominalization, however, is possible for the (bound) property-denoting roots *kusa* 'toward' and *caas~~u~~* 'long', although they require a verbalizing affix (such as the motion prefix *u-* and stative marker *ka-*) to be attached before nominalization can be applied. In contrast, all action-denoting roots can be directly nominalized. This includes the two free action-denoting roots *pu'a* 'buy' and *tavalaa'~~u~~* 'know' discussed above, and bound ones such as *k~~uu~~n~~u~~* 'eat' and *tutulu* 'tell'. Some entity-denoting roots can also be further nominalized to be derived as nouns different from their zero-marked counterparts. For example, the roots *kuacapa* 'utensil' and *nat~~u~~ng~~u~~* 'leafy green' occur as nouns *kócapa*[22] 'utensil' and *nat~~ú~~ng~~u~~* 'leafy green', respectively. But they can also combine with the location nominalizer *ta-…-a* and become *takocapá* /ta-kuacapa-a/ 'kitchen cabinet' (i.e. place for storing utensils) and *tanat~~ú~~nga* /ta-nat~~u~~ng-a/ 'leafy green garden', respectively.

Table 3.6: Root classes and noun derivation

Root	**Derived noun**	**Affix(es) involved**
kusa (P) 'toward'	tokusá /ta-u-**kusa**-a/ 'destination'	u- 'motion' + ta-…-a 'location nominalizer'
caas~~u~~ (P) 'long'	'ikacas~~u~~ /'i-ka-**caas**-a/ 'length'	ka- 'stative marker' + 'i-…-a 'abstract nominalizer'
pu'a (A) 'buy'	pu'á /**pu'a**-a/ 'purchased good(s)'	-a 'patient nominalizer'
tavalaa'~~u~~ (A) 'know'	tavalá'a /**tavalaa'**-a/ 'knowledge'	-a 'patient nominalizer'
k~~uu~~n~~u~~ (A) 'eat'	k~~ú~~na /**k~~uu~~n**-a/ 'food'	-a 'patient nominalizer'
tutulu (A) 'tell'	sitútulu /si-**tutulu**/ 'message'	si- 'transported-theme nominalizer'

[22]According to the prominence assignment rules in Chapter 2 above, prominence is assigned to the third-to-last vowel of the root *kuacapa* 'utensil', where the first two vowels undergo coalescence to become [o] before surfacing, resulting in antepenultimate prominence in the surface form. The process can be schematized as: kuacapa (input) → kuácapa (prominence assignment) → kócapa (vowel coalescence) → kócapa (output).

Root	Derived noun	Affix(es) involved
koocapa (E) 'utensil'	takocapá /ta-**kuacapa**-a/ 'kitchen cabinet'	ta-…-a 'location nominalizer'
nat~~u~~ng~~u~~ (E) 'leafy green'	tanatúnga /ta-**natung**-a/ 'leafy green garden'	ta-…-a 'location nominalizer'

The formal properties of the three classes of roots are summarized as in Table 3.7 below. Whereas all three root classes can undergo verb derivation, only entity-denoting roots are found to be capable of occurring as unaffixed nouns. As for noun derivation, there is variation across the three root classes: while entity-denoting roots can be further affixed to be derived as different nouns and action-denoting roots can be directly nominalized, nominalization is "indirect" for property-denoting roots in the sense that they need to be verbalized before they can be nominalized.

Table 3.7: Summary of formal properties of roots

Root class	Free/bound status	Noun derivation	Verb derivation
Entity-denoting	Always free	zero/nmlz	vblz
Property-denoting	Typically bound	indirect nmlz	zero/vblz
Action-denoting	Typically bound	direct nmlz	zero/vblz

The verbalizing affixes included in the examples above fall under two major types: agent-voice markers and derivational prefixes. They both serve to derive agent-voice verbs, to which the next subsection will now turn.

3.3.2 Derivation of agent-voice verbs

Agent-voice verbs are rather diverse in terms of how they are derived. First, they may be derived via attachment of an **agent-voice marker**, onto a root. Action-denoting roots that

are bound can always be derived as verbs via direct attachment of an agent-voice marker. For example, the action-denoting root *tangi* 'cry' can be affixed with the agent-voice marker <*um*> and be derived as the verb *tumángi* /t<um>angi/ 'cry (agent voice)'.[23] In this case, <*um*> serves a verbalizing function in deriving the root *tangi* 'cry' as a verb, and it also indicates the agent-voice status of the resulting verb. Some examples of action-denoting roots that are derived as agent-voice verbs via attachment of agent-voice markers can be seen in Table 3.8 below. Observe that the form of the agent-voice marker may change from one verb to another: it may be realized as infix *um*, prefix *mu-* or prefix *m-*. Which agent-voice marker is involved depends solely on the specific agent-voice verb being derived, which may belong to one of many morphological verb classes. For example, *tumángi* 'cry (agent voice)' and *k~~u~~mú~~nu~~* 'eat (agent voice)' belong to the same morphological verb class, as they both involve <*um*> as the agent-voice marker. But the verb *muáca* 'walk' belongs to a different verb class, since a different agent-voice marker, *mu-*, is involved. Morphological verb classes will be discussed in much more detail in Section 3.3.3 below.

Table 3.8: Action-denoting roots deriving as agent-voice verbs via agent-voice markers

Root	**Agent-voice marker**	**Verb**
tangi 'cry'	<um>	tumángi /**t**<um>**angi**/ 'cry (agent voice)'
k~~uunu~~ 'eat'	<um>	k~~u~~mú~~nu~~ /**k**<um>**~~uunu~~**/ 'eat (agent voice)'
aca 'walk'	mu-	muáca /mu-**aca**/ 'walk (agent voice)'
pana'~~u~~ 'shoot'	mu-	mupána'~~u~~ /mu-**pana'~~u~~**/ 'shoot (agent voice)'
ala 'take'	m-	mála /m-**ala**/ 'take (agent voice)'
ima 'drink'	m-	míma /m-**ima**/ 'drink (agent voice)'

When agent-voice verbs are derived from action-denoting roots, there are generally no semantic changes (e.g. *aca* 'walk' → *muáca* /mu-aca/ 'walk (agent voice)'). This is not the case

[23]Hereafter in this dissertation, verbs that are derived via attachment of a voice marker will be glossed with the derived voice category indicated in parentheses.

when entity-denoting roots are involved. Like action-denoting roots, entity-denoting roots may also be directly affixed with an agent-voice marker and become agent-voice verbs, but semantic changes often result from such a morphological process. As can be seen in Table 3.9 below, when nouns are derived from entity-denoting roots, they refer to entities; when verbs are derived from entity-denoting roots, by contrast, these often denote an event involving the entity referred to by their nominal counterparts.[24] Note, however, that the resulting event associated with each agent-voice verb derived from an entity-denoting root may not be fully predictable from the meaning of the root itself. For example, the root *ringai* 'hunting trap' derives as the agent-voice verb *rumínge* 'lay hunting traps (agent voice)', where the root meaning does not entail that the event of laying would be included in the meaning of the resulting agent-voice verb.

Table 3.9: Entity-denoting roots deriving as nouns and agent-voice verbs

Root	**Derived word**
ringai 'hunting trap'	ringái /**ringai**/ 'hunting trap' (Noun)
	rumínge /**r**<um>**ingai**/ 'lay hunting traps (agent voice)' (Verb)
ivu 'urine'	ívu /**ivu**/ 'urine' (Noun)
	mívu /m-**ivu**/ 'urinate (agent voice)' (Verb)
'ucanu 'rain'	'ucánu /**'ucanu**/ 'rain' (Noun)
	'umúcanu /**'**<um>**ucanu**/ 'rain' (Verb)

Agent-voice verbs may also be derived via attachment of a **derivational prefix** onto a root. Kanakanavu exhibits a large number of derivational prefixes. Some have rather concrete semantics, such as *ala-* 'become', *kaa-* 'make' and *kuu-* 'eat'.[25] Others are characterized by more abstract functions, such as causative *pa-*, passive *ki-* and stative *ma-*. There is also a set of

[24]The entity denoted by the nominal counterpart is often characterized by non-specific reference in the derived verb. For example, the verb *rumínge* 'lay hunting trap (agent voice)' is concerned with laying hunting traps in general. This is a common feature found in noun incorporation (Mithun and Corbett 1999).

[25]Many of these prefixes can be considered **lexical prefixes** (Tsuchida 1990, 2000), as they often translate as verbs in more familiar languages.

general verbalizing prefixes not straightforwardly characterizable with concrete meanings — such as *pu-*, *pulu-* and *maa-* — which can simply be glossed as 'engage in X activity', where "X" is specified by the root semantics. Some examples of agent-voice verbs deriving via attachment of derivational prefixes can be seen in Table 3.10 below:

Table 3.10: Verbs derived via attachment of derivational prefixes

Root	**Derivational prefix**	**Verb**
lupang~~u~~ 'finished'	ala- 'become'	alalupáng~~u~~ /ala-**lupang~~u~~**/ 'ripen'
manúng~~u~~ 'good'	kaa- 'make'	kamanúng~~u~~ /kaa-**manung~~u~~**/ 'make, create'
vang~~u~~vang~~u~~ 'all'	kuu- 'eat'	kovángvang /kuu-**vang~~u~~vang~~u~~**/ 'eat up'
'ucipi 'alive'	pa- CAUSATIVE	po'ocípi /pa-**'ucipi**/ 'cook (make "alive")'
tutulu 'tell'	ki- PASSIVE	kitútulu /ki-**tutulu**/ 'learn (be told)'
caas~~u~~ 'long'	ma- STATIVE	macás~~u~~ /ma-**caas~~u~~**/ 'long'
ai'i 'back'	pu- 'engage'	pué'i /pu-**ai'i**/ 'return (engage in "getting back")'
ngisaa 'breath'	pulu- 'engage'	pulungisá /pulu-**ngisaa**/ 'breathe (engage in "breath")'
kali 'speech'	maa- 'engage'	mákali /maa-**kali**/ 'speak (engage in "speech")'

Derivational prefixes are always required by bound property-denoting roots in order to become verbs. The first 7 examples in Table 3.10 above, for example, involve bound property-denoting roots deriving as verbs via attachment of derivational prefixes. Entity-denoting and action-denoting roots, in contrast, differ in whether a voice marker, a derivational prefix or both are required for verb derivation. The roots *ringai* 'hunting trap' (entity-denoting), *k~~u~~unu* 'eat' (action-denoting) and *c~~u~~vur~~u~~* 'grow' (action-denoting), for example, may be affixed with the agent-voice marker <*um*> or a derivational prefix to be derived as different verbs. The

entity-denoting roots *vunai* ‘snake’ and *ngisaa* ‘breath’, however, can only be verbalized via attachment of a derivational prefix. Examples of verbs derived from the above roots can be seen below:

Table 3.11: Entity-denoting and action-denoting roots deriving as verbs

Root	**Verbalizing morpheme**	**Verb**
ringai ‘hunting trap’	<um> (AV marker)	rumínge /**r**<um>**ingai**/ ‘lay hunting traps (agent voice)’
	puu- (D prefix)	puringé /puu-**ringai**/ ‘catch a prey with hunting traps’
k~~uunu~~ ‘eat’	<um> (AV marker)	kumú~~nu~~ /**k**<um>**~~uunu~~**/ ‘eat (agent voice)’
	’apa- (D prefix)	’apakú~~nu~~ /’apa-**k~~uunu~~**/ ‘feed’
c~~uvuru~~ ‘grow’	<um> (AV marker)	c~~um~~ú~~v~~u~~ru~~ /**c**<um>**~~uvuru~~**/ ‘grow (agent voice)’
	ala- (D prefix)	alac~~uv~~ú~~ru~~ /ala-**c~~uvuru~~**/ ‘have grown up’
vunai ‘snake’	ala- (D prefix)	alavunái /ala-**vunai**/ ‘become a snake’
ngisaa ‘breath’	pulu- (D prefix)	pulungisá /pulu-**ngisaa**/ ‘breathe’

A third way for agent-voice verbs to be derived is via attachment of both a derivational prefix and an agent-voice marker. This type of derivation is only found when the derivational prefix involved forms a bound verb stem with a root, which further requires voice marking in order to be derived as a full-fledged verb. Some examples of such derivational prefixes can be seen in Table 3.12 below, including the manipulation prefix *ali-*, the motion prefix *u-*, and the anticausative prefix *i-*:

Table 3.12: Derivational prefixes further requiring voice marking in verb derivation

Root	Derivational prefix	Verb
sinat~~u~~ 'book'	ali- 'manipulate'	malisinát~~u~~ /m-ali-**sinatu**/ 'study (agent voice)'
kusa 'toward'	u- 'move'	mukúsa /m-u-**kusa**/ 'go (toward) (agent voice)'
tav~~uru~~ 'sink'	i- ANTICAUS	mitáv~~uru~~ /m-i-**tavuru**/ 'sink'

Finally, as mentioned above, property-denoting and action-denoting roots that are free simply occur as verbs. Although such verbs are not voice-marked, as exemplified in Table 3.13 below, they all belong to the agent-voice category.[26]

Table 3.13: Examples of agent-voice verbs (from free action-denoting roots) not overtly marked for voice

Root	Derivational prefix	Verb
pu'a 'buy'	-	pú'a /**pu'a**/ 'buy'
looimi 'forget'	-	lóimi /**luaimi**/ 'forget'
tavalaa'~~u~~ 'know'	-	tavalú'~~u~~ /**tavalaa'u**/ 'know'

[26]Recall from the beginning of this section that the label "agent voice" is motivated by the usage of such verbs for expressing semantically transitive events, which always requires the agent to be realized as the PSA. Agent-voice verbs may also be characterized by intransitive meanings that are not necessarily agentive — e.g. *lóimi* 'forget' in Table 3.13 below. In this case, the PSA would bear a non-agentive role. The interaction between the semantic role of the PSA in agent-voice and patient-voice clauses will be discussed in more detail in Chapter 4.

3.3.3 Tense-aspect marking, voice marking and morphological verb classes

Agent-voice verbs fall under several morphological verb classes, which are characterized by (i) whether and how the imperfective aspect is formally marked in the indicative mood, and (ii) whether and how the agent-voice status of the verb is marked. Before delving into the morphological verb classes, however, some discussion of how tense-aspect distinctions are formally marked in the indicative mood is needed.

3.3.3.1 Tense-aspect distinctions in the indicative mood

An indicative agent-voice verb may formally distinguish maximally three tense-aspect categories. First, all the agent-voice verb forms discussed so far represent the **TAM-unmarked form**. Although this verb form has been characterized as "neutral" in tense-aspect in previous studies (D.T. Liu 2014), natural discourse data suggest that TAM-unmarked agent-voice verbs systematically show different interpretations depending on whether the verb has dynamic or stative meanings. When occurring in the TAM-unmarked form, dynamic verbs are characterized by a perfective interpretation, whereby the events are presented as being bounded. The TAM-unmarked activity verb *mukúsa* /m-u-kusa/ 'go (agent voice)', for example, is interpreted in discourse as indicating a motion event that has already ended, as in (123a). In contrast, TAM-unmarked stative verbs are characterized by an imperfective interpretation, whereby the states are presented as holding across a stretch of time. This can be seen in the TAM-unmarked verb of psychological state verb *ma'icúpu* /ma-'icuupu/ 'afraid' in (123b).

(123) TAM-unmarked agent-voice verbs with perfective and imperfective interpretations

a. mukúsa=ku nía,
m-u-kusa=ku 'nia,
AV-motion-toward=1SG 3.OBL

'I went there.' (1011-MKN:114)

b. ma'icúpu.

ma-'icuupu.

STAT-afraid

'(It/the sun) was afraid.' (1016-AKN:581)

All agent-voice verbs can be marked by the prefix *ni-* (with an allomorphic variant <*in*> that appears when combining with stems that begin with a dental/alveolar consonant). Kanakanavu *ni-* is cognate with modern Formosan reflexes of Proto Austronesian *<*in*>, often described as a perfective marker. Although Kanakanavu *ni-* has also been analyzed as a perfective marker in many previous studies (Tsuchida 1976; Mei 1982; D.T. Liu 2014; Wild 2018),[27] natural discourse data considered for this study strongly suggest that *ni-* exhibits a range of functions that instantiate the **perfect**. Typologically speaking, the perfect is closely associated with the expression of states instead of events, and it often subsumes several semantic types that surround a state that is presented as relevant to the current discourse – i.e. a stative situation characterized by some type of **current relevance** (J. Bybee et al. 1994; Ritz 2012; Dahl and Hedin 2008; Dahl and Velupillai 2013).[28] A stative situation may be deemed as having current relevance for different reasons. A central one is when a past situation has resulted in a lasting state that still holds at the moment of speech (i.e. the "perfect of result", see Dahl and Hedin 2000:391, Ritz 2012). This is typically seen in verbs that denote perfective situations. Consider first the agent-voice verb *macái* 'die', which denotes a change of state from being alive to being dead.[29] The data in (124) below are excerpted from the same narrative, where the speaker uses the verb twice. The first time (124a) the verb is in the TAM-unmarked form — *macái* 'die', as the speaker describes one of the protagonists — the Pangolin — as simply reporting

[27]The terminology adopted by Wild (2018) is "terminative" aspect.

[28]Interestingly, although *ni-* is labeled as the perfective marker in Kanakanavu by D.T. Liu (2014), it is characterized by her as a morpheme used to "describe a situation viewed as a past action or completed event with present/past relevance, or a present state resulting from a past situation". A terminological mismatch may have been involved here.

[29]There is another verb *mamacái* /maa-macai/ 'dead' that denotes the state of being dead, contrasting with dynamic/change-of-state *macái* 'die'.

the event of the other protagonist — the Civet — dying. The second time (124b), the speaker describes the Pangolin talking to the Civet after they have been revived. Here, the perfect form — *nimácai* /ni-macai/ 'have died' (marked by the prefix *ni-*)— is used, as the state of the Fox "having died" is now construed as having a lasting impact on the Civet — it makes them hungry after they have been revived:

(124) The perfect of result indicated by *ni-*

a. **macái**.
   macai
   die
   '(You) died.' (AKN-1018:493)

b. ah manâs~~u~~, si, nimácai=kásu misóni, masín ia a- – 'é=cu=kásu
   ah manas~~u~~ si **ni-macai**=kasu misoni masini ia 'esi=cu=kasu
   INT probably because PRF-die=2SG earlier now TOP PROG=COS=2.SG
   móravu.
   muaravu
   hungry
   'Ah, probably because you had died earlier, now you're hungry!' (AKN-1018:510-516)

Another reason why a situation may be presented as having current relevance is when it results from an event that has just occurred (i.e. the ''recent past" or ''hot news" perfect, Ritz 2012). This can be seen in (125) below, which involves the agent-voice verb *nimus~~u~~ngiáac~~u~~* /ni-mumus~~u~~ngiáac~~u~~/ 'burn to a crisp (agent voice perfect)' marked in the perfect.

(125) The hot news perfect

c~~u~~mú’~~u~~la	’inía.	~~u~~a.	**nimus~~u~~ngiác~~u~~**	sua	~~u~~nco,	tamkaráram,
c<um>~~u~~‘~~u~~la	’inia.	~~u~~a.	ni-mus~~u~~ngiac~~u~~	sua		tamkararam,
<AV$>see	3SG.OBL	INTJ	PRF-burn.to.a.crisp	CTRV	civet	

‘(He) looked at them (and said:) “Wow! The Civet has burned to a crisp!” ’ (AKN-1018:414-417)

Finally, a verb in the perfect may also introduce a situation as having current relevance when a prior event is presented as having occurred at least once in the past, thus serving as an experiential state that characterizes a referent (i.e. the ‘’existential” or ‘’experiential” perfect Ritz 2012). This is especially salient in the usage of perfect agent-voice verbs, as can be seen in (126a) and (126b) below. Again, the perfect marker *ni-* is consistently involved in the morphology of the verbs in question:

(126) Existential/experiential perfect

a. kán cinm~~u~~’~~u~~la=kía vavúlu.
kani **c<in><um>~~u~~’~~u~~la**=kia vavulu.
INT <PRF><AV>see=1SG wild.pig

‘I have really seen (a lot of) wild pigs.’ (1011-MKN:227)

b. tínmana=ci=kía, ’acu=kía nelólin,
t<in><um>imana=cu=kia ‘acu=kia ni-ala-ulini
<PRF><AV>listen=COS=1SG RES=1SG PRF-become-exhausted

‘I have heard (about it)(and) I am already tired of it.’ (1029-MKN:48-49)

c. nelupacá=maku vavúlu pusu'úma.
ni-ulupaca=maku vavilu pusu'uma
PV.PRF-use=1SG.GEN boar pay.for.labor

'I have used wild pigs to pay for labor.' (KNV-1011)

A third tense-aspect category in agent-voice verbs is the **imperfective**. In languages exhibiting a perfective-imperfective distinction, the functional basis typically lies in whether there is explicit reference made to the internal temporal structure of the state of affairs encoded by the verb (Comrie 1976). In Kanakanavu, the perfective-imperfective distinction is manifested in dynamic agent-voice verbs that show both a TAM-unmarked form and an imperfective form. As can be seen below, the TAM-unmarked motion verb — *mupála* /m-u-pala/ 'climb (agent voice)' — serves to present a motion event as having occurred and ended, without reference to how it unfolded. The imperfective-marked counterpart of the verb — *mópala* /m-u-a-pala/ 'climb (agent voice imperfective)' (marked by the imperfective prefix *a-*) — in contrast, introduces the same events as still on-going (hence the translation 'climbing "up and down" ') (128a).

(127) Motion event expressed by TAM-unmarked vs. imperfective-marked agent-voice verbs

a. **mupála** sua ~~u~~nco:, tamkaráram na, tav~~u~~nvú~~n~~,
m-u-pala sua tamkararam na tav~~u~~nú~~v~~u~~nu~~
AV-locomotion-climb.up CTRV civet LOC banana

'The Civet climbed into the tree.' (AKN-1018:96-98)

b. uh makasúa=cu, mo- – **mópala**,
uh makasua=cu m-u-a-pala
like.that=COS AV-motion-IPFV-climb.up

'Then, (they) kept climbing (up and down),' (AKN-1018:106-108)

Imperfective verbs are also commonly found to co-occur with auxiliaries that specify the event interpretation. In addition to being expressed by independent verbs, progressive events may also be expressed by imperfective-marked verbs preceded by the progressive auxiliary *'ési*, as in (128a). The future auxiliary *tia* also co-occurs with imperfective-marked verbs, whereby events are presented as not-yet occurring, but may occur in the future, exemplified in (128b). Furthermore, imperfective verbs are also compatible with the imperfective negator *ka'ánu*,[30] which serves to negate the occurrence of imperfective events. An example can be seen in (128c).

(128) Imperfective-marked agent-voice verbs co-occurring with auxiliaries

a. tia mopaná'u,
tia mu-a-pana'u
FUT AV-IPFV-shoot
'(He) was going to shoot.' (1007-MKN:151)

b. 'ési=kia móha cakúran patéli,
'esi=kia m-u-a-kusa cakuranu pateli
PROG=1SG AV-motion-IPFV-toward river electrify
'I was going (on my way) to the river to fish with electricity.' (1013-MKN:112)

c. no, ka'an=kía sumasupúru ia,
no ka'anu=kía s<um>a-supuru ia,
if NEG.IPFV=1SG <AV>IPFV-read.out.loud TOP
'If I don't keep saying it, …' (1036-AKN:506-510)

Notice that the imperfective marking differs from one verb to another. The imperfective is indicated by the prefix *a-* in three agent-voice verbs (127b, 128a-b), but by C*a*-reduplication

[30]Recall from Section 3.2.2 that *ka'ánu* contrasts with *kó*, the former being a negator that does not trigger verbs to occur in the subjunctive mood.

in one (128c) discussed above. Imperfective marking, along with the form of the agent-voice marker, serves as evidence for establishing morphological (agent-voice) verb classes in Kanakanavu, to which the discussion that follows will now turn.

3.3.3.2 Morphological (agent-voice) verb classes

Kanakanavu shows four morphological verb classes depending on whether and how the imperfective is marked morphologically, which also interacts with the form of the agent-voice marker. As seen in the paradigms presented below, regardless of the morphological verb class, all agent-voice verbs show both a TAM-unmarked and a perfect-marked form; non-indicative moods also receive identical marking across the board.

3.3.3.2.1 The *um*-verbs The action-denoting root *cu'ula* 'see' exemplifies *um*-verbs, as in Table 3.14 below. As suggested by the verb class label, *um*-verbs unanimously involve the infix <*um*> as the agent-voice marker. In addition, all *um*-verbs involve C*a*-reduplication as the exponent for the imperfective: the imperfective form always involves the agent-voice marker <*um*> being inserted into a complex stem formed by applying C*a*-reduplication to the verb root. Another set of *um*-verb examples are provided in Table3.15, which involves forms derived from the root *tangi* 'cry'.

Table 3.14: *um*-verbs derived from the stem *cu'ula* 'see'

Tense-aspect-mood	**Verb form**
Indicative: TAM-unmarked	cumú'ula /c<**um**>u'ula/
Indicative: imperfective	cumacu'úla /c<a>-cu'ula/
Indicative: perfect	cinmu'úla /c<in><**um**>u'ula/
Subjunctive	cumú'ula /c<**um**>u'ula/
Imperative	cumu'ulá /c<**um**>u'ula-a/
(Mild) imperative	cumu'ulán /c<**um**>u'ula-án/

Table 3.15: *um*-verbs derived from the stem *tangi* 'cry'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	tumángi /t<**um**>angi/
INDICATIVE: IMPERFECTIVE	tumátangi /t<**um**>a-tangi /
INDICATIVE: PERFECT	tínmangi /t<in><**um**>angi/
SUBJUNCTIVE	tumángi /t<**um**>angi/
IMPERATIVE	tumánga /t<**um**>ang-a/
(MILD) IMPERATIVE	tumangán /t<**um**>ang-án/

3.3.3.2.2 The *mu*-verbs The second morphological verb class involves verbs marked by prefix *mu-* as the agent-voice marker, and prefix *a-* as the imperfective marker in agent voice. Unlike the *um*-verbs, the imperfective form of a *mu*-verb always involves the agent-voice marker *mu-* being attached to a complex verb stem formed by prefixation of *a-*. Examples of *mu*-verbs can be seen in tables 3.16 and 3.17 below, involving the roots *pana'ʉ* 'shoot' and *vua* 'give'.

Table 3.16: *mu*-verbs derived from the stem *pana'ʉ* 'shoot'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	mupána'ʉ /**mu**-pana'ʉ/
INDICATIVE: IMPERFECTIVE	mopaná'ʉ /**mu**-a-pana'ʉ/
INDICATIVE: PERFECT	nimpaná'ʉ /ni-**mu**-pana'ʉ/
SUBJUNCTIVE	mupána'ʉ /**mu**-pana'ʉ
IMPERATIVE	mupána'a /**mu**-pana'-a
(MILD) IMPERATIVE	mupana'án /**mu**-pana'-án

Table 3.17: *mu*-verbs derived from the stem *vua* 'give'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	muvúa /**mu**-vua/
INDICATIVE: IMPERFECTIVE	móvua /**mu**-a-vua/
INDICATIVE: PERFECT	nimúvua /ni-**mu**-vua/
SUBJUNCTIVE	muvúa /**mu**-vua/
IMPERATIVE	muvúa /**mu**-vua-a
(MILD) IMPERATIVE	muvuán /**mu**-vua-án

3.3.3.2.3 The *m*-verbs The *m*-verbs form a rather diverse verb class, showing variation across several sub-classes that are nevertheless united by (i) the involvement of prefix *m-* as the/one of the agent-voice marker(s), and (ii) the three-way tense-aspect distinction made across both agent voice and patient voice.

The first sub-class of *m*-verbs can be exemplified by verb forms deriving form the complex verb stem *u-kusa* 'go (toward)', which consists of the root *kusa* 'toward' and the derivational prefix *u-* 'motion'. As can be seen in Table 3.18 below, the prefix *m-* is the invariable agent-voice marker, and in the imperfective agent-voice form, *m-* is attached to the stem in which the imperfective marker *a-* occurs between the derivational prefix *u-* and the verb root *kusa*. This is a property shared across a list of agent-voice motion verbs involving the derivational prefix *u-*: perfective *mucála* /**m**-u-cala/ vs. imperfective *mócala* /**m**-u-a-cala/ 'go uphill', perfective *mupála* /**m**-u-pala/ vs. imperfective *mópala* /**m**-u-a-pala/ 'climb up', perfective *mutánasʉ* /**m**-u-tanasʉ/ vs. *motanásʉ* /**m**-u-a-tanasʉ/ 'go home', etc.

Table 3.18: *m*-verbs derived from the stem *u-kusa* 'go (toward)'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	mukúsa /**m**-u-kusa/
INDICATIVE: IMPERFECTIVE	mókusa /**m**-u-a-kusa/
INDICATIVE: PERFECT	nimúkusa /ni-**m**-u-kusa/
SUBJUNCTIVE	mukúsa /**m**-u-kusa/
IMPERATIVE	mukusá /**m**-u-kusa-a/
(MILD) IMPERATIVE	mukusán /**m**-u-kusa-án/

m-verbs may also involve the agent-voice marker alternating between prefix *m-* and prefix *um-*. This is observed, for example, in verbs derived from the stem *a'unu* 'carry (on one's forehead)'. As can be seen in Table 3.19 below, the imperfective agent-voice verb form is distinguished from its counterparts in other TAM categories with a different agent-voice marker: it is prefix *um-* in the imperfective (*umá'unu* /**um**-a'unu/), but *m-* elsewhere. This happens to be a property shared across a list of tri-syllabic vowel-initial verb stems: perfective *musú'u* /m-usú'u/ vs. imperfective *umúsu'u* /um-usú'u/ 'put, place', perfective *mangúru* /m-anguru/ vs. imperfective *umánguru* /um-anguru/ 'escape', perfective *mumúku* /m-umúku/ vs. imperfective *umúmuku* /um-mumuku/ '(to) plant', etc.

Table 3.19: *m*-verbs derived from the stem *a'unu* 'carry (on one's forehead)'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	ma'únu /**m**-a'unu/
INDICATIVE: IMPERFECTIVE	umá'unu /**um**-a'unu/
INDICATIVE: PERFECT	nimá'unu /ni-**m**-a'unu/
SUBJUNCTIVE	ma'únu /**m**-a'unu/
IMPERATIVE	ma'úna /**m**-a'un-a/

Tense-aspect-mood	**Verb form**
(MILD) IMPERATIVE	ma'unán /**m**-a'un-án/

Finally, *m*-verbs may also involve agent-voice marker alternation along with the prefix *a-* serving as the imperfective marker in agent voice. This is seen, for example, in *m*-verbs derived from the stem *ala* 'take'. As can be seen in Table 3.20 below, the agent-voice marker is prefix *um-* in the imperfective but prefix *m-* in all other TAM categories; in addition, the prefix *a-* is further involved in the imperfective agent-voice verb form, where it is attached to the stem before agent-voice marker *um-* is attached. This is found for at least one other stem *ava* 'carry (on one's back)', which also happens to be a disyllabic morpheme that begins with a vowel: perfective *máva* /**m**-ava/ vs. imperfective *umâva* /**um**-a-ava/.

Table 3.20: *m*-verbs derived from the stem *ala* 'take'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	mála /**m**-ala/
INDICATIVE: IMPERFECTIVE	umâla /**um**-a-ala/
INDICATIVE: PERFECT	nimála /ni-**m**-ala/
SUBJUNCTIVE	mála /**m**-ala/
IMPERATIVE	malá /**m**-ala-a/
(MILD) IMPERATIVE	malán /**m**-ala-án/

3.3.3.2.4 The *m-/Z*-verbs The final morphological verb class are labelled *m-/Z*-verbs (with voice marker *m-* or with no/zero marking for voice). Also a rather diverse class, *m-/Z*-verbs are united by the lack of formally distinct imperfective verb form. Some verbs belonging to this class are marked by the agent-voice marker *m-*. This is exemplified by the verb forms deriving from the root *ima* 'drink', as in Table 3.21 below. Here, notice the verb forms resemble those of the *m*-verbs in involving the prefix *m-* as the agent-voice marker. However, there is

no further distinction made in the agent-voice imperfective category.

Table 3.21: Verbs derived from the root *ima* 'drink'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	míma /**m**-ima/
INDICATIVE: IMPERFECTIVE	míma /**m**-ima/
INDICATIVE: PERFECT	nimíma /ni-**m**-ima/
SUBJUNCTIVE	míma /**m**-ima/
IMPERATIVE	mimá /**m**-ima-a/
(MILD) IMPERATIVE	mimán /**m**-ima-án/

Other verbs belonging to this class are unmarked for voice. These can be seen in verb forms that involve the (complex) stem *pu-ai'i* 'return', as in Table 3.22 below, and those that involve the (also complex) stem *mata-cuvucuvungu* 'gather', as in Table 3.23 below.

Table 3.22: Verbs derived from the stem *pu-ai'i* 'return'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	pué'i /pu-ai'i/
INDICATIVE: IMPERFECTIVE	pué'i /pu-ai'i/
INDICATIVE: PERFECT	nipué'i /ni-pu-ai'i/
SUBJUNCTIVE	pué'i /pu-ai'i/
IMPERATIVE	pué'a /pu-ai'-a/
(MILD) IMPERATIVE	pue'án /pu-ai'-án/

Table 3.23: Verbs derived from the stem *mata-cuvucuvungu* 'gather'

Tense-aspect-mood	**Verb form**
INDICATIVE: TAM-UNMARKED	matacuvucuvúngu /mata-cuvucuvungu/
INDICATIVE: IMPERFECTIVE	matacuvucuvúngu /mata-cuvucuvungu/
INDICATIVE: PERFECT	nimatacuvucuvúngu /ni-mata-cuvucuvungu/
SUBJUNCTIVE	matacuvucuvúngu /mata-cuvucuvungu/
IMPERATIVE	matacuvucuvúnga /mata-cuvucuvungu-a/
(MILD) IMPERATIVE	matacuvucuvungán /mata-cuvucuvungu-án/

The lack of a distinct imperfective form in *m-/Z*-verbs does not imply that such verbs cannot be used in contexts where an imperfective verb form would be expected. Although for the other three verb classes, an auxiliary such as future *tia* would trigger an imperfective verb form, an *m-/Z*-verb would simply occur in the TAM-unmarked form but interpreted as an imperfective. An example is seen in the *m-/Z*-verb *po'ocípi* /pa-'ucipi/ 'cook' (129a), whose TAM-unmarked form is used with a future interpretation, contributed by the auxiliary *tia*. This contrasts with, for example, the *um*-verb *sumápar~~u~~* /s<um>apar~~u~~/ 'make bed' (129b), which occurs in the imperfective form *sumasapáar~~u~~* /s<um>a-sapar~~u~~/ when preceded by the future auxiliary *tia*.

(129) Future and (the lack of) dedicated imperfective agent-voice verb forms

a. nguáin=kán tia, po'ocípi alám,
nguain=kani tia **pa-'ucipi** alam~~u~~
3SG=EVI FUT CAUS-alive meat

'It is him who will cook the meat.' (1011-MKN:83-84)

b. té=ku sumasapáar~~u~~,
tia=ku **s<um>a-sapar~~u~~**
FUT=1SG <AV>IPFV-bed

'I will make a bed.' (1033-AKN:321)

Some *m*-verbs are found to show a fuzzy status in terms of whether the imperfective is formally marked, with speakers showing variation in natural discourse. The *m*-verb *mála* /m-ala/ 'take (agent voice)', for example, is sometimes used in its TAM-unmarked form even when the future auxiliary *tia* is present, although its imperfective form *umála* /um-a-ala/ 'take (agent voice imperfective) may be used as well. The examples below are excerpted from the same narrative, where the speaker alternates in using both forms in a short stretch of discourse:

(130) The *m*-verb *mála* /m-ala/ 'take (agent voice)' showing variation in whether the imperfective form is used

a. té=kita, umâla cucu- – cu- –
tia=kita **um-a-ala**
FUT=1PL.INCL AV-IPFV-take

'We must take (some) …' (1036-AKN:396-398)

b. cucúlu, tia, mala si,
cuculu tia **m-ala** si
real FUT AV-take because

'(we) really must take (some) because …' (1036-AKN:399-401E)

This suggests that the membership of the *m-/Z*-verb class may be expanding in contemporary Kanakanavu, where some *m*-verbs are undergoing loss of their imperfective forms and being reclassified as *m-/Z*-verbs. Some *m-/Z*-verbs may also have belonged to the other three

verb classes, but later lost the erstwhile dedicated imperfective verb forms.

3.4 Voice alternation

This section turns to an investigation of the other category of verbs in Kanakanavu, collectively referred to as **patient-voice verbs** in this dissertation. While the syntactic properties of patient-voice verbs are not the focus of this chapter, some examples may help illustrate the syntactic basis for the label "patient voice". As can be seen in (131), patient-voice verbs are always used to package semantically transitive events, and it is the patient that is systematically realized as the PSA, which occurs in the unmarked case when it is a pronoun. In comparison, agent-voice verbs, as illustrated in (130) above, involve the agent realized as the PSA instead.

(131) Examples of patient-voice verbs used for packaging semantically transitive events, with the PSAs bearing the patient role

a. ʼakún=ku, piakakái.
ʼakuni=**ku** pia-akaaka-ai
PROH=1SG harm-PV.SBJV
'Do not harm me!' (1009-MKN:60-61)

b. pilalucinó=ku.
pila-lucini-au=**ku**
offer-two-PV.IMP=1SG
'Offer me two (of the pomelos)!' (1007-MKN:83)

Unlike agent-voice verbs, whose indicative forms do not involve morphemes that indicate mood, patient-voice verbs are always specified for mood. This can be illustrated by the examples of indicative patient-voice verbs in Table 3.24 below, all of which are derived from roots that are affixed with the patient-voice marker *-ai*.

Table 3.24: Examples of indicative patient-voice verbs (in the perfective)

Verb	**Gloss**	**Voice marker**
alé /ala-**ai**/	'take (patient voice)'	-ai
kóre /koor-**ai**/	'dig (patient voice)'	-ai
~~usú~~'e /~~usu~~'-**ai**/	'put, place (patient voice)'	-ai
íme /ima-**i**/	'drink (patient voice)'	-ai
timáne /timana-**i**/	'listen (patient voice)'	-ai

As one of the six patient-voice markers in Kanakanavu, the suffix *-ai* is a portmanteau morpheme that simultaneously encodes (i) the patient-voice status of the verb and (ii) its (indicative) mood value. As exemplified in the patient-voice verb forms derived from the root *ala* 'take' in Table 3.25 below, patient-voice verbs are also always voice-marked, in addition to always being specified for mood. In the indicative mood, patient-voice verbs also differ in tense-aspect, where three different indicative patient-voice markers may be involved.

Table 3.25: Patient-voice verbs and tense-aspect-mood alternations

Root	**Patient-voice verb form**	**TAM category**
ala 'take'	alé /ala-**ai**/	Indicative (perfective)
	al~~ú~~n /ala-~~**u**~~**n**/	Indicative (imperfective)
	niála /**ni**-ala/	Indicative (perfect)
	aló /ala-**au**/	Imperative
	alón /ala-**ón**/	Mild imperative
	alé /ala-**ai**/	Subjunctive

Regarding voice marking, therefore, patient-voice verbs are further distinguished from agent-voice verbs in that the choice of voice marker is deeply rooted in tense-aspect-mood alternations. As discussed in detail in Section 3.3.3 above, agent-voice verbs that are voice-marked

may differ from one another in terms of which agent-voice marker is involved. The verb *k~~u~~mú~~nu~~* /k<um>~~uunu~~/ 'eat' (agent voice), for example, invariably involves the infix <*um*> as the agent-voice marker, which is formally different from prefix *m-*, the agent-voice marker in the verb *míma* /m-ima/ 'drink (agent voice)'. In contrast, patient-voice verbs are marked by different voice markers as they alternate across different tense-aspect-mood categories. Importantly, the alternation does not create different lexemes. Instead, the same verb is involved, but with a different tense-aspect and/or mood interpretation.

The tense-aspect analysis in the indicative mood presented here differs from those in previous studies on Kanakanavu. The main difference lies in the analysis of *-ai* as perfective and *ni-* as perfect. *-ai* is not generally included as an indicative patient-voice marker in many recent studies on Kanakanavu (e.g. H.-C. Liu 2014; Cheng and L.-M. Sung 2015; L.-M. Sung 2018; Zeitoun and Teng 2016), and *ni-* is often analyzed as a perfective marker (Tsuchida 1976; Mei 1982; D.T. Liu 2014; Zeitoun and Teng 2016; Wild 2018). Section 3.4.1 presents arguments for the current analysis of indicative patient-voice affixes.

Compared to agent-voice verbs, which show a variety of derivational processes, the derivation of patient-voice verbs is rather uniform: they can only be derived via attachment of patient-voice markers. Furthermore, every patient-voice verb is necessarily connected to a derivationally related agent-voice verb. There are two possible derivational relationships that may link a patient-voice verb to its agent-voice counterpart, which are discussed in Section 3.4.2. In Section 3.4.3, a closer look is given at the phenomenon of stem alternation, whereby some patient-voice verbs require their morphological components (root or derivational prefix) to alternate in form when deriving from an agent-voice counterpart.

3.4.1 Tense-aspect distinctions in patient-voice verbs

Like agent-voice verbs, patient-voice verbs also show a maximally three-way tense-aspect distinction in the indicative mood. Unlike AV verbs, however, all patient-voice verbs maintain a basic perfective-imperfective distinction, made by the alternation between two patient-voice

marking suffixes *-ai* and *-un*. It was observed early by Tsuchida (1976) that *-ai*-marked verbs in Kanakanavu occur only in narratives. Many subsequent studies have also commented on the seemingly rare occurrence of these verbs in elicited data. L.-M. Sung (2018: 70), for example, characterizes the suffix as a moribund patient-voice marker that is gradually being lost. Wild (2018: 185) also notes that the *-ai*-marked verb form is "not used by the speakers in daily speech". Close examination of natural discourse data produced by contemporary speakers, however, shows that not only do *-ai*-marked patient-voice verbs tend to occur in narratives, but they also consistently serve a very specific function: introducing events as bounded, complete wholes, whereby they are simply presented as having occurred, without any reference to how they unfold. Notably, these are properties that have been widely attested for **perfective** verb forms across the world's languages (Timberlake 2007; Comrie 1976). This can be best illustrated by data showing a systematic contrast between *-ai*-marked and *-un*-marked verb forms sharing stems that indicate imperfective events. In (132), the stem *u-kusa* 'go' is derived as an *-ai*-marked patient-voice verb *ukúse* /u-kusa-i/ (132a), and its *-un*-marked counterpart *ukusún* /u-kusa-un/ (132b). Notice that a perfective interpretation, where the activity event 'go' is characterized as having ended, is only available in the former, where the verb is also interpreted as 'approach'. The latter shows a habitual interpretation instead.

(132) The perfective-imperfective distinction in patient voice (illustrated with patient-voice verbs derived from the stem *u-kusa* 'go (towards)')

a. ukúse sua unco, kaniarúme sua tamkaráram,
u-kusa-i sua kaniarume sua tamkararam
motion-toward-PV.PFV CTRV pangolin CTRV civet

'The pangolin approached (went toward) the civet.' (1018-AKN:191-193)

b. ukusún=cu mamárang, miána, cumú'ula sua,
u-kusa-un=cu ma-marang miana c<um>u'ula sua
locomotion-toward-PV.IPFV=COS RED-old past <AV>see CTRV

nikamánung ké ringái,
ni-kamanungu ke ringai,
PV.PRF-make 3.GEN hunting.trap,

'The elders would (usually) then go check the traps that they made' (PKP-1014:61-64)

A similar contrast in terms of boundedness is also seen in patient-voice verb forms derived from the stem *ala* 'take, hold with hand'. In (133a), the *-ai*-marked verb form *aláai* /ala-ai/ implies that there has been a change of state on the part of the patient, and that the event of taking has taken place, hence the reading 'take away'. In contrast, the corresponding *-un*-marked verb form *alún* /ala-un/, as in (133b) implies that the patient is still being carried or held by the agent.

(133) The perfective-imperfective distinction in patient voice (illustrated with patient-voice verbs derived from the root *ala* 'take')

a. aláai=kán sua nanaku:, uh vú'u,
ala-ai=kani sua nanaku vuu'u
take-PV.PFV=EVI CTRV woman pomelo

'The woman took away the pomelos.' (1008-PKP:34-65)

b. alún=ci ké,
ala-un=cu ke
take-PV.IPFV=COS 3.GEN

'They would (continue) holding (it).' (1010-PKP:126-130)

In this regard, the contrast between *-ai*-marked and *-~~u~~n*-marked patient-voice verbs is best analyzed as instantiating a distinction between perfective and imperfective verb forms, whereby *-ai* serves as a perfective patient-voice marker, and *-~~u~~n* as an imperfective patient-voice marker. This analysis is further supported by the observation that *-ai*-marked patient-voice verbs are always employed by speakers to introduce foreground events that advance the storyline of a narrative, which is a function commonly reported to characterize the perfective aspect crosslinguistically (J. Bybee et al. 1994: 54; Hopper 1982). In the specific excerpt in (134) below, there are two patient-voice clauses that introduce dynamic events that are performed by the protagonist, which occur one after another: the clause in line 2 indicates that he looks at a nearby stream/river, and the one in line 4 indicates that he then throws things at the wild pig that he is hunting down. Both events are packaged in *-ai*-marked patient voice verbs: *cu~~u~~'ú~~u~~le* /cu~~u~~'ú~~u~~la-i/ 'see' (line 2) and *patupuné* /patu-punu-ai/ 'throw' (line 4). The two clauses are interspersed among other clauses that do not introduce foreground events that advance the storyline, but provide contextual information (lines 1, 3 and 5) alongside the main events instead. The background, contextual information is expressed by: (i) a locative clause that indicates the existence of a deep stream/river (line 1), (ii) a clause details what the protagonist finds out after looking (line 3), and (iii) a clause where the verb is marked in the imperfective (line 4) that shows what the protagonist is thinking at a certain moment.

(134) KNV-1011-Boar_hunting:186-190

1 'ési amurócu:, núngnung, nialatúmulua.
'There was a deep stream further down.'

2 **cu~~u~~'ú~~u~~le** kúa.
'I **looked over** (there at it).'

3 'acu mororócu nía sua vavúlu.
'The wild pig had already gone down there below.'

4 **pâtupuné** 'ikúa.
'I **threw** (wood branches) at (it).'

5 tia sumasangáne káni ’ikúa misé.
‘“(It) wanted to fight me back”, I thought.’

While it is the imperfective that shows variation in agent voice, in patient voice verbs may differ in whether a dedicated form for the **perfect** category is found instead. Perfect patient-voice verb forms are marked by the perfect patient-voice marker *ni-* (also with an allomorph <*in*>, which occurs when the stem begins with a dental/alveolar consonant), a marker homophonous with the perfect marker *ni-* in agent voice. As discussed in Section 3.3.3 above, forms that are cognate with Proto Austronesian *<*in*> are typically analyzed as serving perfective functions. In Kanakanavu patient-voice verbs, the patient-voice marker *ni-* is also argued here to be a perfect marker, mainly because it marks patient-voice verbs that do not introduce events, but states characterized by current relevance. The examples below illustrate such a usage with *ni*-marked patient-voice verbs that instantiate the experiential perfect (135a) the hot news perfect (135b), and past perfect (135c):

(135) Perfect patient-voice verbs

a. nelupacá=maku vavúlu pusu’úma.
ni-ulupaca=maku vavilu pusu’uma
PV.PRF-use=1SG.GEN boar pay.for.labor

‘I have used wild pigs to pay for labor.’ (KNV-1011)

b. ah, nik~~u~~lí’i=músu, íkasu támna civúin.
ah, **ni-k~~uu~~li’i**=musu, ikasu tamna civuin.
INTJ PV.PRF-swallow=2SG.GEN 2SG POSS stomach

‘Ah! You’ve swallowed your own stomach! (AKN-1018:555-557)

c. nipepacé=maku.
ni-pia-pacai=maku
PV.PRF-CAUS-die=1SG.GEN
'I had killed (it).' (1011-MKN:219)

In patient voice, verbs with stative meanings tend to lack a perfect form, and the perfective-imperfective distinction gives rise to rather different interpretations, with considerable lexical idiosyncrasies. Consider first the imperfective-marked verb *alakulác~~u~~n* /ala-kulac-~~u~~n/ 'angry (patient voice imperfective), which has a stative interpretation'(be) angry' (136a). Its perfective counterpart — *alakuláce* /ala-kulac-ai/ (136b), in contrast, has a dynamic interpretation, leading to the meaning 'scold'. Here, the perfective now encodes a dynamic event instead of a stative situation, and the semantic experiencer that is represented by the genitive-marked pronominal agent in the imperfective corresponds to the (oblique-marked) volitional instigator (i.e. a prototypical semantic agent) in the perfective. The two interpretations also crucially differ in aspect: the stative interpretation represents an imperfective situation, whereas the dynamic interpretation represents a perfective one.

(136) Patient-voice stative verbs occurring in the imperfective and the perfective

a. alakulác~~u~~n=áku cáu ísua.
alakulac-~~u~~n=maku cau isua
angry-PV.IPFV=1SG.GEN person DEM.DIST
'I am angry at that person.' (Elicited)

b. alakuláce 'ikúa cáu ísua.
ala-kulac~~u~~-ai 'ikua cau isua
become-angry-PV.PFV 1SG.OBL person DEM.DIST
'I scolded that person.' (Elicited)

A similar case can be seen in (137) below, where the perfective patient-voice verb — *amanúnge* 'treat well' indicates a dynamic event performed by a volitional agent (137b). The event expressed in the perfective verb form can be considered to be motivated by the psychological state indicated by its imperfective counterpart — *amanúngun* '(be) happy/pleased' (137a):

(137) Perfective/imperfective alternation and dynamic (re)interpretation of patient-voice stative verbs

a. amanúngun=áku cáu ísua.
a-manungu-u**n**=maku cau isua
STAT-good-PV.IPFV=1SG.GEN person DEM.DIST
'I am happy/pleased with the person.' (Elicited)

b. amanúnge 'ikúa cáu isua.
a-manungu-ai 'ikua cau isua
STAT-good-PV.PFV 1SG.OBL person DEM.DIST
'I treated that person well (because I was happy/pleased with them).' (Elicited)

Sometimes, however, the perfective verb form introduces an inchoative interpretation instead, indicating a change of state caused by entrance into an emotional/psychological state by the experiencer.[31] This can be seen in (138), where the perfective verb form *kacangcangále* is interpreted as 'get/become happy' (138b), whereas its imperfective counterpart *kacangcangálun* does not imply any indication of entrance into the expressed state (138a).

(138) Perfective/imperfective alternation and inchoative (re)interpretation of patient-voice stative verb

[31]It has been documented in the literature that a change-of-state interpretation (similar to the inchoative reading here) may arise when the perfective aspect is forced on a stative predicate (cf. Timberlake 2007: 293).

a. kacangcangál~~un~~=áku cáu ísua.
kacangcangal-**~~un~~**=maku cau isua
happy-PV.IPFV=1SG.GEN person DEM.DIST
'I am happy with that person.' (Elicited)

b. kacangcangále 'ikúa cáu ísua.
kacangcangal-**ai** 'ikua cau isua
happy-PV.PFV 1SG.OBL person DEM.DIST
'I got/became happy with that person.' (Elicited)

Notice that the type of semantic reinterpretation resulting from the perfective-imperfective alternation is arguably lexically idiosyncratic. Although *kacangcangál~~un~~* '(feel) happy (with)' can be considered semantically similar to *amanú~~ng~~~~un~~* '(feel) good (about)', the reinterpretations led to by their perfective forms are very different. A list of patient-voice stative verbs and their imperfective and perfective interpretations can be seen in Table 3.26 below:

Table 3.26: Imperfective and perfective interpretations of patient-voice stative verbs

Verb (IPFV~PFV)	IPFV interpretation	PFV interpretation
amanú~~ng~~~~un~~ ~ amanúnge	pleased with	treat well
alakulác~~un~~ ~ alakuláce	angry with	scold
kacangcangál~~un~~ ~ kacangcangále	happy with	become happy with
tavalú~~'un~~ ~ tavalá'e	know	begin to know

3.4.2 Derivation of patient-voice verbs

There are two ways in which patient-voice verbs may be derived, both closely tied to derivationally related forms in agent voice. First, a given verb stem is affixed with either an agent-voice marker or a patient-voice marker to derive a verb. This type of derivation can be considered

symmetrical because the agent-voice and patient-voice forms are equally derived from the shared stem, a morphological feature of verbs in prototypical symmetrical-voice languages (Himmelmann 2005). Some examples can be seen in Table 3.27 below. Here, each row shows a (TAM-unmarked) agent-voice verb and a (perfective-marked) patient-voice verb with the same gloss. The two verbs in each row are derived from the same stem, which may consist of a single root (first three rows) or a root plus a derivational prefix (last three rows).

Table 3.27: Agent-voice and patient-voice verb forms sharing the same stem

Root/Stem	**Agent-voice verb form**	**Patient-voice verb form**	**Gloss**
k~~uunu~~	kumún /k<**um**>a~~u~~n~~u~~/	kúne /k~~u~~u~~u~~n-**ai**/	eat
c~~u~~'~~u~~la	c~~u~~mú'~~u~~la /c<**um**>~~u~~'~~u~~la/	c~~u~~'úle /c~~u~~'~~u~~la-**i**/	see
tiini	tumín /t<**um**>iini/	tiné /tiini-a**i**/	hang
ali-viici	malivíci /**m**-ali-viici/	alivíce /ali-viic-**in**/	bring
u-kusa	mukúsa /**m**-u-kusa/	ukusún /u-kusa-~~**un**~~/	go
a-ai'i	maí'i /**m**-ai'i/	ai'ín /ai'i-**in**	retrieve

In symmetrical derivation, the agent-voice verb may or may not belong to a morphological verb class in which a dedicated perfect verb form does not exist. An example in which a three-way tense-aspect distinction is maintained in both the agent-voice and patient-voice verb forms derived from the same stem is shown in Table 3.28, in which the stem *u-kusa* 'go (toward)' is involved. An example in which only a two-way tense-aspect distinction is maintained in agent voice is shown in Table 3.29

Table 3.28: Symmetrical derivation involving stem *u-kusa* 'go (toward)'

Tense-aspect	**Agent voice**	**Patient voice**	**Tense-aspect**
TAM-UNMARKED	mukúsa /**m**-u-kusa/	ukúse /u-kusa-**i**/	PERFECTIVE
IMPERFECTIVE	mókusa /**m**-u-a̲-kusa/	ukusún /u-kusa-~~**un**~~/	IMPERFECTIVE

Tense-aspect	Agent voice	Patient voice	Tense-aspect
PERFECT	nimúkusa /ni-**m**-u-kusa/	niúkusa /**ni**-u-kusa/	PERFECT

Table 3.29: Symmetrical derivation involving stem *ima* 'drink'

Tense-aspect	Agent voice	Patient voice	Tense-aspect
TAM-UNMARKED	míma /**m**-ima/	íme /ima-**i**/	PERFECTIVE
IMPERFECTIVE	míma /**m**-ima/	imún /ima-~~**un**~~/	IMPERFECTIVE
PERFECT	nimíma /ni-**m**-ima/	níma /**ni**-ima/	PERFECT

On the other hand, some stems occur as a zero-marked agent-voice verb, but in order for it to occur as a patient-voice verb, a patient-voice marker is required. As can be seen in Table 3.30 below, none of the agent-voice verbs involved in this type of derivation are voice-marked; to be derived as a patient-voice verb, though, a patient-voice marker is simply attached to the root/stem.

Table 3.30: Zero voice marking in agent voice vs. Voice marking in patient voice

Root/Stem	Agent-voice verb form	Patient-voice verb form	Gloss
pu'a	pú'a /pu'a/	pu'ái /pu'a-**ai**/	'buy'
taavala'ʉ	tavalʉ'ʉ /taavala'ʉ/	tavalá'e /taavala'-**ai**/	'know'
tala-kusa	talákusa /tala-kusa/	talakúse /tala-kusa-**i**/	'look over'
pu-ai'i	pué'i /pu-ai'i/	pué'e /pu-ai'-**ai**/	'return'

In this type of derivation, two patterns of configuration can be identified in terms of the tense-aspect distinctions made across the two categories. First, a two-way tense-aspect distinction may be maintained in agent voice, while a three-way distinction is maintained in

patient voice. This is exemplified by verb forms derived from the complex stem *pu-ai'i* 'return' as in Table 3.31. Notice here that due to the lack of an agent-voice marker, both the agent-voice and patient-voice forms in the perfect simply attach the prefix *ni-*, which is interpreted as the (purely tense-aspect-marking) perfect marker in agent voice but as a portmanteau morpheme — perfect patient-voice marker — in patient voice. The form can, therefore, be interpreted as either an agent-voice verb or a patient-voice verb.

Table 3.31: Verbs derived from the stem *pu-ai'i* 'return'

Tense-aspect	**Agent voice**	**Patient voice**	**Tense-aspect**
TAM-UNMARKED	pué'i /pu-ai'i/	pué'e /pu-ai'-**ai**/	PERFECTIVE
IMPERFECTIVE	pué'i /pu-ai'i/	pué'in /pu-ai'-**in**/	IMPERFECTIVE
PERFECT	nipué'i /ni-pu-ai'i/	nipué'i /**ni**-pu-ai'i/	PERFECT

A two-way tense-aspect distinction may also be maintained in both voice categories. However, in this case the distinction made in agent voice is one where the TAM-unmarked form contrasts with the perfect form, while in patient-voice the distinction is made between the perfective and the imperfective forms. This is exemplified by verb forms derived from the root *tavala'ʉ* 'know' as in Table 3.32.

Table 3.32: Verbs derived from the stem *tavala'ʉ* 'know'

Tense-aspect	**Agent voice**	**Patient voice**	**Tense-aspect**
TAM-UNMARKED	tavalʉ́'ʉ /taavala'ʉ/	tavalá'e /taavala'-**ai**/	PERFECTIVE
IMPERFECTIVE	-	tavalʉ́'ʉn /taavala'-**ʉn**/	IMPERFECTIVE
PERFECT	nitavalʉ́'ʉ /ni-taavala'ʉ/	-	PERFECT

Importantly, whereas *all* patient-voice verbs have agent-voice counterparts that share a common verb stem, this is not the case the other way around: only a subset of agent-voice

verbs have patient-voice counterparts. In Table 3.33 are examples of roots and complex stems that can only occur or be derived as agent-voice verbs. A generalization that can be made is therefore: *all* patient-voice verbs are morphologically derived one way or another (via symmetrical or asymmetrical derivation), but this is not necessarily the case for agent-voice verbs.

Table 3.33: Examples of verb stems involved in agent-voice verbs only

Root/Stem	**Agent-voice verb form**	**Patient-voice verb form**	**Gloss**
cangkan	cángkan /cangkan/	—	'be dirty'
aka	áka /aka/	—	'be bad'
tangi	tumángi /t<**um**>angi/	—	'cry'
'ucanu	'umúcanu /'<**um**>ucanu/	—	'rain'
i-tavuru	mitávuru /**m**-i-tavuru/	—	'sink'
u-ringai	murínge /**m**-u-ringai/	—	'get caught in trap'

The observations made in this section support the label "derivation" in characterizing Kanakanavu voice morphology. Crucially, morphological processes that create verbs belonging to different voice categories are not fully productive: as has been shown above, there are stems that can only be derived as agent-voice verbs and cannot be affixed with a patient-voice marker to become patient-voice verbs. It is also not fully predictable when a stem can undergo derivation equally as agent-voice and patient-voice verbs, as idiosyncrasies are commonly observed. One apparently plausible generalization is that stems that indicate monovalent states-of-affairs would be predicted to only have agent-voice verb forms, but those that indicate bivalent state-of-affairs would have both voice forms. However, there are stems that indicate motion events, which can be argued to be monovalent in nature, that can be derived as verbs

in both voice categories (e.g. *mukúsa* 'go (agent voice)' vs. *ukúse* 'go (patient voice)'). There are also stems that indicate psychological states that may be involved in the derivation of agent-voice and patient-voice verbs (e.g. *alakulácu* 'angry' vs. *alakulácun* 'infuriating'). The role of lexical idiosyncrasies in voice alternation will be discussed in much more detail in Chapter 4, where factors including construal, information structure and syntactic construction choice may come into play.

3.4.3 Voice-conditioned morpheme alternation

The derivation of patient-voice verbs is characterized by one further feature: it may lead certain morphemes contained in the verb stem to further alternate their forms. Morphemes that are subject to such alternations will be represented in the following format in this dissertation — ALLOMORPH1~ALLOMORPH2 — where ALLOMORPH2 represents the form of the morpheme that obligatorily occurs in patient voice.

Voice-conditioned morpheme alternation may apply to roots or derivational prefixes. A root that alternates in form depending on voice is *maacaca~paacaca* 'laugh'. It may simply occur with its *m*-initial form to derive an agent-voice verb: *mácaca* /maacaca/ 'laugh'. When it is involved in the derivation of patient-voice verbs, in contrast, it obligatorily occurs in the *p*-initial form. Note that this is regardless of which patient-voice marker is used. Observe that the *p*-initial form is found across all three indicative patient-voice forms: *pacacé* /paacaca-ai/ 'laugh (patient voice perfective)', *pacacún* /paacaca-un/ 'laugh (patient voice imperfective)', *nipacáca* /ni-paacaca/ 'laugh (patient voice perfect)', etc.

Three derivational prefixes also alternate between an *m*-initial form and a *p*-initial form. They are: *maa-~paa-*, *mati-~pati-*, and *mia-~pia-*. as exemplified in Table 3.34 below. The first two prefixes are general verbalizing affixes that derive verbs characterized by the meaning of 'engage in X event', whereas the third prefix is a causative derivational prefix. Here, all three prefixes are realized in *m*-initial forms when occurring in agent-voice verbs, but *p*-initial forms when occurring in patient-voice verbs.

Table 3.34: Examples of voice-conditioned allomorphy

Prefix	**Verb**	**Gloss**
maa-~paa-	mákari /**maa**-kari/	'speak (**agent voice**)', root = kari 'speech'
	pakarín /**paa**-kari-in/	'speak (**patient voice** imperfective)', root = kari 'speech'
mati-~pati-	mati'avásʉ /**mati**-'avasʉ/	'stick one's tongue out (toward)' (**agent voice**), root = 'avasʉ 'tongue'
	pati'avásʉn /**pati**-'avas-ʉn/	'stick one's tongue out (toward) (**patient voice** imperfective)', root = 'avasʉ 'tongue'
mia-~pia-	miakáka /mia-aka~aka/	'harm' (**agent voice**), root = aka 'bad'
	piakakái /pia-aka~aka-ai/	'harm (**patient voice perfective**)', root = aka 'bad'

The stative derivational prefix *ma-~ka-* also alternates, but the alternation is conditioned by the presence of specific morphemes that are additionally attached, which may include voice markers. The prefix occurs in the *k*-initial form when the verb in which it occurs (i) contains a patient-voice marker or (ii) contains a causative morpheme (such as *pa-*)[32] or (iii) is nominalized by the morpheme *'i-…-(a)*; otherwise, it occurs in the *m*-initial form:[33]

[32]There are a total of three causative prefixes in Kanakanavu: *'apa-*, *pa-* and *mia-~pia-*. Each is attached to a specific set of roots to derive different verbs, with *'apa-* being the most productive among the three.

[33]There is one morpheme identified in Kanakanavu so far that undergoes form alternation in a non-voice-related morphological environment only: the (action-denoting) root *macai~pacai* 'die'. It is realized in the *p*-initial form when the causative prefix *mia-~pia-* is attached to it, which is itself a morpheme that alternates according to voice, and the *m*-initial form elsewhere: *miapacái* /mia-**pacai**/ 'kill', *mamacái* /maa-macai/ '(be) dead', *macái* /macai/ 'die'.

Table 3.35: Examples of stative verbal prefix *ma-~ka-* with allomorphy conditioned by voice or neighboring morpheme

Root	Verb	Gloss
lʉ'ʉ 'love'	malʉ́'ʉ /**ma**-lʉ'ʉ/	'love (**agent voice**)'
	kalʉ́'ʉn /**ka**-lʉ'-ʉn/	'love (**patient voice**)'
cangini 'fight'	macangíni /**ma**-cangini/	'fight, wage war against'
	pakacangíni /**pa**-**ka**-cangini/	'(be) hostile (towards)' (make fight)
lʉngcai 'tall'	malʉ́ngcai /**ma**-lʉngcai/	'tall'
	'ikalʉ́ngcai /**'i**-**ka**-lʉngcai/	'height'

3.5 Conclusion

The mood-based approach to the noun-verb distinction presented in Section 3.2.2 not only provides a comprehensive diagnostic for verb status in Kanakanavu but also indicates that a binary distinction is found at the morphological level: every verb in Kanakanavu is specified for voice, and there are two opposing voice categories — agent voice and patient voice.

The discussion in this chapter has also shown that the two categories of verbs have very different morphological properties, in addition to whether mood is marked in the indicative verb forms. Agent-voice verbs may or may not be overtly marked for voice, and they exhibit rather diverse derivational processes: they may simply come from free property-denoting and action-denoting roots, or they may be derived via attachment of an agent-voice marker or a derivational prefix onto different types of roots. Patient-voice verbs, on the other hand, are always derived via attachment of a patient-voice marker onto a root or complex stem. Therefore, in addition to always being marked for tense-aspect-mood, they are also always marked for voice.

Furthermore, the two categories of verbs show distinct patterns in tense-aspect-mood marking. Agent-voice verbs always show a TAM-unmarked form that contrasts with a perfect form. Depending on the morphological verb class to which an agent-voice verb belongs, the imperfective may or may not be formally marked, which also interacts with the form of the agent-voice marker. In contrast, patient-voice verbs always maintain a perfective-imperfective morphological distinction, and some patient-voice verbs, especially those with stative semantics, lack perfect-marked forms.

Another important observation regarding the binary voice distinction is that patient-voice verbs always have derivationally related agent-voice counterparts, but only a subset of agent-voice verbs have patient-voice counterparts. This has implications for the type of situation that may be expressed by both patient-voice and agent-voice verbs, which interacts with argument structure and grammatical relations. This will be the main focus of Chapter 4, to which the discussion now turns.

Chapter 4

Voice, transitivity and ergativity in Kanakanavu

4.1 Introduction

The previous chapter has demonstrated that, unlike many Formosan languages that show four-way, Philippine-type verbal voice distinctions, Kanakanavu only exhibits a binary opposition: every verb in the language belongs to either of the two voice categories — agent voice and patient voice. The two categories of verbs pattern differently in how tense-aspect-mood is marked: agent-voice verbs are unmarked for mood in the indicative, and patient-voice verbs are always marked for their tense-aspect or mood status. In addition, only a subset of agent-voice verbs have derivationally related counterparts in the patient-voice category, but every patient-voice verb has one in the agent-voice category. A syntactic consequence that follows from this morphological fact is that for every type of situation that may be expressed by a patient-voice verb in the verbal clause, there is a corresponding agent-voice verb that can express the same situation.[1] As can be seen below, the patient-voice verb — *cu'ule* /cu'ul-ai/ 'see (patient voice perfective)' (139b) — expresses a perception event that involves both an

[1]The term "situation" is used in this study to refer to both events and states, corresponding to the term "state of affairs" that is also commonly used in the literature.

experiencer and a stimulus, and the same event can be expressed by a derivationally related agent-voice verb — *cumacʉ'ʉ́la* /c<um>a-cʉ'ʉla/ 'see (agent voice imperfective)' (139a), the two being derived from the same root *cʉ'ʉ́la* 'see':

(139) Perception event SEE expressed by derivationally related agent-voice and patient-voice verbs in Kanakanavu

a. cumacʉ'ʉ́la 'akúa mamálang.
c<um>a-cʉ'ʉla 'ikua ma-marangʉ.
<AV>IPFV-see 1SG.OBL RED-old
'The elders were looking at me.' (1002-UKN:65) Agent voice

b. cʉ'ʉ́le kúa, tinúa=máku.
cʉ'ʉla-i 'ikua t<in>ua=maku
see-PV.PFV 1SG.OBL hunting.trap=1SG.GEN
'I looked at my hunting trap.' (1011-MKN:189) Patient voice

The **voice alternation** phenomenon instantiated above illustrates the flexibility for a situation like SEE to be expressed in the Kanakanavu verbal clause either in the **agent-voice construction** or in the **patient-voice construction**. It is also reminiscent of what is observed in symmetrical-voice systems, as in Standard Malay-Indonesian, where there is also a binary voice distinction between what are generally called the actor-voice and undergoer-voice constructions in Standard Malay-Indonesian:

(140) Standard Malay-Indonesian (Himmelmann 2005: 112)

a. Anak saya me-lihat orang itu.
child 1SG AV-see person that
'My child saw that person.' Actor voice

b. Orang itu di-lihat anak saya.
person that PV-see child 1SG

'My child saw that person.' Undergoer voice

Morphologically speaking, symmetrical-voice systems are defined as involving the presence of two voice constructions, neither being clearly the basic one (Himmelmann 2005). The previous chapter has demonstrated that this definition is at least not fully applicable to Kanakanavu voice morphology, because one voice construction — agent voice — may involve (at least superficially) an unmarked verb, as is the case for some Austronesian languages of Indonesia (Arka 2009; V. Chen and McDonnell 2019: 186). A remaining question, however, is whether voice in Kanakanavu can still be considered symmetrical based on the syntactic properties of its voice system. There are two major syntactic features that characterize prototypical symmetrical-voice systems. First, in a symmetrical-voice system there is no preferred argument type that is realized as the Privileged Syntactic Argument (PSA), and the primary function of voice is to map different semantic roles onto the PSA. In (140) above, for example, the experiencer is realized as the PSA in one construction (140a), whereas it is the stimulus that is realized as the PSA in the other construction (140b). This is, therefore, demonstrably distinguished from nominative-accusative systems on the one hand, where agentive participants (such as semantic agent, semantic experiencer) are the unmarked choice for the transitive subject, and ergative-absolutive systems on the other, where patientive participants (semantic patient, semantic theme, semantic stimulus, etc.) are the unmarked choice for the transitive absolutive argument (Foley 2008).

When employed for expressing transitive situations, the two opposing voice constructions in a symmetrical-voice system may also be considered symmetrical in the sense that they are equally transitive: the actor-undergoer voice alternation in Standard Malay-Indonesian (140) above, for example, is often described as not involving either participant having a clear demoted, oblique status. In other words, both the experiencer and stimulus remain as core

arguments regardless of voice in Standard Malay-Indonesian. This is in sharp contrast to the asymmetrical (active-passive) voice-alternation phenomenon in a language such as English (141), where the agent is cast as oblique by the preposition *by* in passive voice, losing its status as a core argument (Himmelmann 2005).

(141) Active-passive voice alternation in English

a. **I** saw the person.

b. The person was seen **by me**.

The basic constituent order of Kanakanavu is predicate-initial, and the PSA generally occurs post-verbally. In both examples in (139) above, the PSA occurs in clause-final position, and it is the experiencer in one construction (*mamálang* 'elders' in 140a) but the stimulus in the other construction (*tinúa=máku* 'my hunting trap' in 140b). Although this specific set of examples shows the other participants occurring in the oblique case when realized as a pronoun, more evidence is required in order to determine (i) whether either participant in a transitive situation is preferred as the PSA, and (ii) whether voice alternation does or does not result in any change in the syntactic status of the participants involved. The goal of this chapter, therefore, is to address the following research questions:

1) What are the syntactic implications for the participants involved in the expressed situations when one voice construction is selected over the other?
2) What motivates speakers to select one voice construction over the other?
3) What can exploring 1) and 2) above tell us about the nature of voice in Kanakanavu?

The discussion that follows will mainly draw on instances of verbal clauses from unscripted, spontaneously produced narratives, so as to allow syntactic and discourse contexts beyond simple sentences to inform our understanding of voice alternation in Kanakanavu. Elicited data may also be included for consideration whenever necessary.

The research questions are addressed by exploring how speakers employ voice constructions for expressing different types of situations in terms of the number and nature of the

participants involved. As is demonstrated, there are strong correlations between voice constructions on the one hand, and basic (in)transitive clauses on the other: intransitive situations are typically expressed in the agent-voice construction, whereas transitive situations are typically expressed in the patient-voice construction. The correlation allows for a detailed investigation of grammatical properties of the different participants involved. To this end, this study draws on both coding properties and behavioral properties, two dimensions of properties that have been employed in the typological literature for identifying arguments (Haspelmath and Hartmann 2015). By examining the (i) case-marking patterns, (ii) interactions with syntactic constructions and (iii) discourse interpretation, of different participant types, it is shown that coreness/argumenthood of a participant does not lend itself as a straightforwardly identifiable feature in Kanakanavu. Instead, it is better characterized as a gradient phenomenon, which can, nevertheless, be captured quantitatively by employing the core index proposed by Arka (2017). In addition, the property of patientive participants (including semantic patients and other patientive participant types) with regard to their animacy features and degrees of discourse prominence, also has an impact on which voice construction is selected.

The findings lead to an analysis of Kanakanavu as not only deviating from the prototypical symmetrical-voice languages in several syntactic aspects, but also exhibiting ergativity in different domains of its verbal-voice morphosyntax. In particular, Kanakanavu is a language that can be argued to show differential agent marking, a phenomenon that has been more commonly noticed in ergative languages. In addition to expressing prototypical intransitive and transitive situations, Kanakanavu voice also serves patient-oriented valency-alternating functions, where the agent-voice construction can be established as a(n albeit atypical) antipassive construction. Finally, the animacy feature of participants is demonstrated to have significant impacts on voice alternation: where it may interact with the information-flow features of discourse referents, whose position on the animacy hierarchy may also condition voice selection in discourse.

This chapter is organized as follows. The first research question is addressed in Section 4.2

and Section 4.3. The former begins by exploring how different participants are case-marked, and the latter further elucidates how the differently case-marked participants exhibit various behavioral properties in syntax and discourse. The discussion leads to the interim conclusion that although identifying coreness/argumenthood is not a straightforward task in Kanakanavu, patientive participants clearly have demoted/backgrounded status when occurring in the agent-voice construction. Section 4.4 serves to address the second research question by examining the factors that motivate speakers to select one voice construction over the other, which include discourse-pragmatic, semantic-ontological and grammatical ones. The conclusion is provided in Section 4.5, where voice alternations in Kanakanavu are argued to be best characterized as complex transitivity alternations, instead of symmetrical alternations.

4.2 Basic (in)transitive clauses and argument case marking

This section examines the relationship between verb categories and the basic intransitive/transitive distinction in the Kanakanavu verbal clause. Transitivity of basic clauses is defined broadly here in terms of numerical valence (Bickel 2010). Basic intransitive clauses are those where there is only one argument involved, and basic transitive clauses are those where there are two arguments. The two arguments involved in transitive clauses are referred to as the agent and the patient, the former representing the more agent-like argument of the two, and the latter, the more patient-like one.

The basic distinction happens to correspond categorically to the distinction between agent-voice and patient-voice clauses: all basic intransitive clauses involve agent-voice verbs as the predicate, and all basic transitive clauses involve patient-voice verbs as the predicate. It is important to note, however, that the labels “agent voice” and “patient voice” are strictly used for referring to the two morphological categories of verbs, following a long Austronesianist tradition and the literature on Kanakanavu, as introduced in Chapter 1. In basic intransitive

clauses, where the predicate is an agent-voice verb, the argument may have a variety of semantic roles that are not necessarily the semantic agent. Similarly, in basic transitive clauses, the arguments are also not limited to semantic agent and semantic patient. The terms "agent" and "patient" will be used strictly for referring to the two generalized arguments of basic transitive clauses (following Comrie 1978, 1981; Dixon 1979, 1994). They should be distinguished from more specific semantic roles of an argument (to be added with a preceding "semantic"), including those that are semantically more agentive or agent-like (e.g. semantic agent, semantic experiencer) and those that are semantically more patientive or patient-like (e.g. semantic patient, semantic stimulus, semantic theme, semantic recipient).[2] Any semantic roles that do not fall under the two general categories are referred to as peripheral roles, including: location, goal, comitative, instrument, etc.

By investigating how arguments and adjuncts are case-marked and distributed across basic (in)transitive clauses, the discussion that follows identifies four types of grammatical roles (grammatical relations): (i) the Privileged Syntactic Argument (PSA), (ii) the (transitive/grammatical) agent, and two types of adjuncts: (iii) those that have peripheral semantic roles and (iv) those that have patientive roles. Each grammatical role is characterized by a specific set of coding properties based on flagging/case marking, which serves as the basis for further exploring their behavioral properties in syntax and discourse, to be discussed in the sections that follow.

4.2.1 Basic intransitive clauses and agent-voice verbs

In basic intransitive clauses, the predicate is always an agent-voice verb. Some examples are shown in (142) below. Here, the verbal predicate may be marked by an agent-voice marker

[2]The generalized semantic distinction between agentive and patientive roles is parallel to that between the proto-roles/macroroles "actor" and "undergoer" in (Dowty 1991; Van Valin and LaPolla 1997; Van Valin 2005). Note that the semantic experiencer and the semantic recipient may be more agentive or patientive depending on the language. In Kanakanavu, the semantic experiencer is more agentive in that it typically corresponds to the transitive agent, while the semantic recipient is more patientive in that it typically corresponds to either the transitive patient or argument roles that are characterized by patientive semantic roles (such as the patientive adjunct, to be discussed in more detail below).

(e.g. *m-* in 142a) or unmarked for voice (142b-d); the agent-voice verbs presented here are also all in the indicative mood, which is not marked in the morphology, a property exclusively shared by agent-voice verbs, as established in the previous chapter.

(142) Basic intransitive clauses and agent-voice verbs

a. mucán=cu sua, uh, nanák~~u~~.
m-u-caan~~u~~=cu sua **n~~u~~nak~~u~~**.
AV-motion-road=COS CTRV woman
'The woman then left.' (1008-PKN:114-116)

b. lakáu sua, taníar~~u~~.
lakau sua **taniar~~u~~**
appear CTRV sun
'The sun appeared.' (1016-AKN:367-368)

c. mâcangcangál~~u~~=kia.
ma-cangcangal~~u~~=**kia**
STAT-happy=1SG
'I am happy.' (1011-MKN:247)

d. nimácai=kásu misóni,
ni-macai=**kasu** misoni
PRF-die=2SG earlier
'You had died earlier!' (AKN-1018:510-516)

In each example above, there is one nominal constituent (in boldface), which may have a range of semantic roles: semantic agent (142a), semantic theme (142b), semantic experiencer (142c) or even semantic patient (142d). This constituent is the **Privileged Syntactic Argument (PSA)** of the clause. The PSA exhibits a range of syntactic properties that may not be found

in other argument roles (Van Valin 2005; Riesberg and Primus 2015; V. Chen and McDonnell 2019). Among them, the most readily observable concerns case-marking. When realized as a lexical noun phrase, the PSA is unmarked for case. This can be seen in (142a) and (142b) above, where the PSA noun phrases — *nanáku* 'woman' and *taníaru* 'sun' — are not preceded by any case markers.[3] When occurring as a pronoun, in contrast, the PSA always occurs in what is called the **unmarked case** in this study.[4] This can be seen in (142c) and (142d) above, where the PSAs occur in the first person singular and the second person singular, respectively. Pronominal forms analyzed in this study as manifesting the unmarked case can be seen in Table 4.1 below. Throughout the first and second persons, unmarked-case pronouns may be free/independent or bound, but there are only free pronouns in the third person.[5]

Table 4.1: Pronominal forms in the unmarked case

Person-number	**Free**	**Bound**
1SG	íku / ikía	=ku / =kía
1PL.INCL	íkita	=kíta
1PL.EXCL	íkimi	=kími
2SG	íkasu	=kásu
2PL	íkamu	=kámu
3SG	nguáin	-
3PL	nguáni	-

[3]The marker *sua* has been treated as a PSA marker in previous studies (see, for example, Teng and Zeitoun 2016; Zeitoun and Teng 2016; L.-M. Sung 2018). However, as observed by Wild (2018) and Cheng (2018b), *sua* is found to mark a range of participants beyond the PSA. It is treated as a pragmatic, instead of grammatical, marker of noun phrases in this study. It is temporarily glossed as CTRV (for "contrastive") as it frequently occurs in constructions that can be characterized by contrastive topic or contrastive focus. The actual function requires further examination in future research.

[4]The unmarked case corresponds to what is typically referred to as the nominative case in Formosan linguistics (P.J. Li 1997; Ross and Teng 2005). The term nominative is avoided in this study because it may entail discourse properties that are associated with subjects crosslinguistically (Chafe 1994) and a nominative-accusative analysis of the language.

[5]In the first person singular, two alternative forms are listed in each of the two (free vs. bound) formal categories of pronouns. According to the speakers the author has worked with, *ikía* and *=kía* are typically used when the speaker is an elder addressing younger community members.

In intransitive/agent-voice clauses, any additional participant that is not the PSA would occur as an adjunct. Typically, adjuncts are not centrally involved in the semantics of the expressed situation and are participants with peripheral roles. In the lexical domain, adjuncts may be marked by either the locative marker *na* or the comitative marker *mata*. Some examples can be seen below. *na*-marked noun phrases may have locative (143a) or instrumental (143b) roles. *mata*-marked noun phrases, on the other hand, are found in the inclusory construction, where the PSA is realized as a first-person plural pronoun that is interpreted as including both the speaker and an additional participant indicated by the *mata*-marked noun phrase that follows.[6]

(143) Peripheral participants realized as case-marked lexical noun phrases

a. musúpala=ku na:, parárasʉ.
musu-pala=ku **na** **pararasʉ**
engage-climb=1SG LOC Pararasʉ.tree
'I climbed up **to the Pararasʉ tree**.' (1011-MKN:164-165)

b. nimpaná'ʉ=ku kángvang na nántaku,
ni-mu-pana'ʉ=ku kavangvang **na** **nant=aku**
PRF-AV-shoot=1SG all LOC gun=1SG.GEN
'I've also shot with **my gun**.' (1011-MKN:177)

c. mésua ia, masíralu niarupála=ci=kim mata:, micíko.
miasua ia, masiralu ni-'arup-ala=cu=kimi **mata** **miciko**
back.then TOP already PRF-RECP-take=COS=1PL.EXCL COM M.
'At that time, **Michiko** and I had already gotten married.' (Literally: At that time, "we" had already gotten married **with Michiko**.) (1011-MKN:5-7)

[6] *mata* is also used as a conjunction in coordination. The linkage between inclusory construction and coordination is also attested in other Austronesian languages (Lichtenberk 2000; Bril 2011).

The lexical *na-*/*mata-*marking is optional, as peripheral participants may be realized as unmarked lexical noun phrases as well. In this case, their semantic roles are inferred from the verb semantics and/or any contextual information available. (144a) is an example of an unmarked locative noun phrase and (144b), an example of an unmarked instrumental noun phrase:

(144) Peripheral participants realized as unmarked lexical noun phrases

a. pô'ocipi=cu sua nánnaku. tanása.
pa-'ucipi=cu sua na-nunaku **tanasa**
CAUS-alive=COS CTRV RED-woman house

'The women would then cook in the house.' (1010-PKP:55-56)

b. kamanúng vátu. to'oná po'ocípi:.
kaa-manungu **vatu** ta-'una-a po'ocipi
make-good rocks LOC.NMLZ-exist-LOC.NMLZ cook

'(We) built kitchens (places for cooking) with rocks.' (1002-UKN:46-47)

When realized as pronouns, peripheral participants always occur in the **oblique case**. Some examples can be seen below, where the oblique pronouns have the location role (145a), the goal role (145b) or the comitative role (145c).

(145) Peripheral participants realized as oblique pronouns

a. món kasúa.
ma-'una **kasua**
STAT-exist 2SG.OBL

'(We) stayed **at your place**.' (1033-AKN:446)

b. mukúsa=ku nía,
m-u-kusa=ku **'nia**,
AV-motion-toward=1SG 3.OBL
'I went **there**.' (1011-MKN:114)

c. sinmá'ʉ=ku kasúa
s<in><um>ima'ʉ=ku **kasua**
<PRF><AV>play=1SG 2SG.OBL
'I have played **with you**.' (Elicited)

The forms of the oblique pronouns are shown in Table 4.2 below. All oblique pronouns are free/independent, and no number distinctions are made in the third person.

Table 4.2: Pronominal forms in the oblique case

Person-number	**Oblique pronoun**
1SG	'ikua
1PL.INCL	kitána
1PL.EXCL	kimía
2SG	kasúa
2PL	kamúa
3	'inía

4.2.2 Basic transitive clauses and patient-voice verbs

In basic transitive clauses, the predicate is always a patient-voice verb, and it is always implied that the expressed situations involve both an agent and a patient. Some examples are shown in (146) below. Here, every verb is marked in patient voice by a patient-voice marker. All the examples are in the indicative mood, and the patient-voice markers also simultaneously

encode the tense-aspect value of the clause. Again, as discussed in the previous chapter, this is a feature exclusively shared by patient-voice verbs.

(146) Basic transitive clauses and patient-voice verbs

a. nikovángvang sua, tamkaráram sua ~~u~~nco maváng, tav~~u~~nv~~ú~~n.
ni-kuu-vangvang sua tamkaráram sua **mavang~~u~~** **tav~~u~~nv~~u~~v~~u~~n~~u~~**
PV.PRF-eat-all CTRV civet CTRV ripe banana

'The civet has eaten all the ripened bananas.' (1018-AKN:131-133)

b. namále sua ~~u~~nco kaniarúme sua, capcapúku.
namal-ai sua kaniarume sua **capu-capuku**
light.on.fire-PV.PFV CTRV pangolin CTRV RED-silver.grass

'The pangolin lit the silver grass on fire.' (1018-AKN:392-394)

c. ulán~~u~~n=áku i- i- malang ari- támu.
u-raan-~~u~~n=maku **ma-rang~~u~~** **tamu**
motion-help-PV.IPFV=1SG.GEN STAT-old male.grandparent

'I was helping the old grandpa.' (1002-UKN:120)

d. timâne kúa tete'ísin.
timana-i 'ikua **te-te'is=in**.
listen-PV.PFV 1SG.OBL RED-stepping.sound=3.POSS

'I heard the sound of its footsteps.' (1011-MKN:158)

In the examples above, the agent involved may be a semantic agent (146a-c) or a semantic experiencer (146d), which acts on a semantic patient (146a-c) or interacts with a semantic stimulus (146d). Regardless, it is always the patient that is realized as the PSA. This is evidenced in how all the patient lexical noun phrases above (marked in boldface) — *maváng tav~~u~~nv~~ú~~n* 'ripened bananas' (146a), *capcapúku* 'silvergrass' (146b), *kuíci* 'peels' (146c) and *tete'ísin* 'its

stepping sound' (146d) — are unmarked for case.

For a transfer event like GIVE, either the semantic theme or the semantic recipient can be realized as the PSA patient. (147) below shows an example where the transported theme is realized as a lexical PSA — *can póti vutúkulu* 'one (full) bag of fish' (147a) — and two examples where the recipient is realized as the PSA. The latter involve the first-person singular unmarked case pronoun *=ku* in (147a) and the second-person singular unmarked-case pronoun *=kásu* in (147b).[7]

(147) Pronominal PSAs in transitive clauses

a. vú~~n~~=aku nía, can póti. vutúkulu.
vua-~~un~~=maku 'inia **cani** **poti** **vutukulu**
give-PV.IPFV=1SG.GEN 3.OBL one cloth.bag fish
'I would give to them **one (full) bag of fish**.' ((1013-MKN:56-58))

b. vó=ku maváng tav~~u~~nv~~u~~n
vua-u=**ku** ma-vang~~u~~ tav~~u~~nv~~u~~n~~u~~
give-PV.IMP=1SG STAT-ripe banana
'Give **me** the ripened bananas!' (1018-AKN:88-90)

c. u té=cu=kásu, u vú~~n~~.
tia=cu=**kasu** vua-~~un~~
FUT=COS=2SG give-PV.IPFV
'**You** will be given.' (1036-AKN:386-387)

The agent, on the other hand, is similar to the PSA in terms of lexical case marking: it is left unmarked for case when realized as a lexical noun phrase. This can be seen in the examples

[7]Each of the latter two examples still implies the existence of an agent. (147a) is an imperative sentence, and the addressee is implied as the agent; (147b) does not involve the agent being explicitly expressed because it has non-specific reference — i.e. The recipient will be given something "by someone".

below, where the lexical agents — *tamkaráram* 'civet' in (148a) and *kaniarúme* 'pangolin' in (148b) — are not case-marked:

(148) Lexical agents in transitive clauses

a. nikovángvang sua, tamkaráram sua ~~u~~nco maváng, tav~~u~~nv~~u~~́n.
ni-ku-vangvang sua **tamkaráram** sua mavang~~u~~ tav~~u~~nv~~u~~v~~u~~n~~u~~
PV.PRF-eat-all CTRV civet CTRV ripe banana

'**The civet** has eaten all the ripe bananas.' (1018-AKN:131-133)

b. namálee sua ~~u~~nco **kaniarúme** sua, capcapúku.
namal-ai sua kaniarume sua capu-capuku
light.on.fire-PV.PFV CTRV pangolin CTRV RED-silver.grass

'**The pangolin** lit the silver grass on fire.' (1018-AKN:392-394)

When realized as a pronoun, however, the agent may occur in one of two cases. First, like peripheral participants, the pronominal agent may occur in the **oblique case**, but this only happens when the (patient-voice) verb is in the perfective aspect, where the specific voice marker *-ai* is found, as exemplified in (149a). Outside of this specific environment, the pronominal agent occurs in the **genitive case**. This is exemplified by patient-voice clauses that are in the imperfective, where the patient-voice marker *-~~u~~n* is involved, as in (149b), and the perfect, where the patient-voice marker *ni-* is involved, as in (149c). Note that in the subjunctive mood, the verb is marked by *-ai*, a marker homophonous with the perfective patient-voice marker *-ai*. Regardless, the agent still occurs in the genitive case, as can be seen in (149d). The conditioning factor for agent pronominal case, therefore, is whether it occurs in a perfective or non-perfective clause.

(149) Agent participants realized as oblique or genitive pronouns when occurring with patient-voice verbs marked by the suffix *-ai*

a. pâna'e 'ikúa,
pana'-ai **'ikua**
shoot-PV.PFV 1SG.OBL

'I shot (it).' (1011-MKN:199)

b. pókalín=aku, kángvang mamán ma'úla,
puu-kali-in=**maku** kavanvang ma-manu ma-'ula
utter-speech-PV.IPFV=1SG.GEN all RED-child STAT-small

'I would tell all the small kids…' (1002-UKN:24-25)

c. nipepacé=maku.
ni-pia-pacai=**maku**
PV.PRF-CAUS-die=1SG.GEN

'I had killed (it).' (1011-MKN:219)

d. ko=pa:, incaúe- – incaúe ke, sua ~~u~~nco, tacáu,
ko=pa incau-ai **ke** sua tacau
NEG.PFV=CONT pay.visit-PV.SBJV 3.GEN CTRV dog

'He has not checked on the dog yet.' (1031-AKN:210-214)

Genitive pronouns that express event participants are provided in Table 4.3 below.[8] As with the oblique pronouns (Table 4.2), no number distinctions are made in the third person. There is, however, a formal split between first- and second-person genitive pronouns on the one hand, which are all bound/enclitics, and the third-person genitive pronoun *ké* on the other,

[8]Genitive pronouns may also express possessors. In the third person, however, possessors are expressed by the possessive pronoun *=in*, which is not included in Table 4.3 due to the focus on event participants. The reader may refer to Chapter 3 (specifically Section 3.2.1) for a review of Teng and Zeitoun's (2016) analysis of possessor-marking vs. agent-marking functions of genitive pronouns. There, the third-person possessive pronoun *=in* is included under the genitive case. See Table 3.1.

which is not analyzed as an enclitic in this study.

Table 4.3: Pronominal forms in the genitive case

Person-number	**Genitive pronoun**
1SG	=máku
1PL.INCL	=míta
1PL.EXCL	=mía
2SG	=su
2PL	=mu
3	ké

Any participants other than the agent and patient occur as adjuncts in patient voice. An example of a *na*-marked locative adjunct can be seen in (150a), and an example of a locative oblique pronoun can be seen in (150b). Here, peripheral participants are in boldface. They bear the role of location in (150a) and recipient in (150b). The former is a lexical adjunct case-marked marked by *na*, and the latter a pronominal adjunct in the oblique case.

(150) Adjuncts in patient voice

a. sua, vutúkulu ia, tinín=pa ké. na:, rócu. tanása.
sua vutukulu ia tini-in=pa ke **na** **rocu** **tanasa**
CTRV fish TOP hang-PV.IPFV=CONT 3.GEN LOC bottom house

'As for the fish, they would hang (them) at the bottom of the house.' (1010-PKP:104-109)

b. vúun=aku nía, can póti. vutúkulu.
vua-un=maku **'inia** cani poti vutukulu
give-PV.IPFV=1SG.GEN 3.OBL one cloth.bag fish

'I would give to them one (full) bag of fish.' ((1013-MKN:56-58))

4.2.3 Patientive adjuncts and patient-agent voice alternation

Although semantically transitive situations are typically expressed in transitive/patient-voice clauses, they may also be expressed in intransitive clauses involving a derivationally related agent-voice verb. The derivational relationship is exemplified below, where the patient-voice verb *vó* /vua-u/ 'give (patient voice imperative)' (151a) contrasts with one of its agent-voice counterparts *móvua* /mu-a-vua/ 'give (agent voice imperfective)' (151b), the two sharing the root *vua* 'give'. Notice that in the intransitive/agent-voice clause (151b), the semantic recipient is realized as an oblique pronoun. Regardless, it corresponds to the patient PSA in (151a). Such constituents are referred to as **patientive adjuncts**.

(151) Patientive adjuncts and patient-agent voice alternation

a. vó=ku maváng tav~~u~~nv~~ú~~n
vua-u=**ku** ma-vang~~u~~ tav~~u~~nv~~u~~n~~u~~
give-PV.IMP=1SG STAT-ripe banana

'Give **me** the ripened bananas!' (1018-AKN:88-90)

b. misén=kásu, móvua 'ikúa, kuíci mámia,
miseni=kasu mu-a-vua **'ikua** kuici mamia
why=2SG AV-IPFV-give 1SG.OBL peel only

'Why did you only give the peels **to me**?' (1018-AKN:121-123)

Patientive adjuncts are identical to adjuncts with peripheral roles, or peripheral adjuncts, in terms of case-marking. As seen in (152a-b), the patientive adjunct may be marked by the comitative marker *mata* (with a semantic patient role) or the locative marker *na* (with a locative role) when realized as a lexical noun phrase. When realized as a pronoun (151b), it obligatorily occurs in the oblique case.

(152) Adjuncts as participants with patientive roles

a. nimatú'usu mata vunái,
ni-ma-tu'usu **mata** **vunai**
PRF-STAT-contact COM snake
'(He) encountered **a snake**.' (1009-MKN:80)

b. cumú'ula, na:, t- uh:, ni'oná tamtítu,
c<um>u'ula **na** **ni-'una-a** **tamtitu**,
<AV>see LOC PRF-exist-LOC.NMLZ dog
'(He) looked at **where the dogs were (existing place of the dogs)**.' (1031-AKN:229-232)

4.2.4 Interim summary: grammatical roles and case-marking properties

The basic intransitive/transitive distinction in the verbal clause can be analyzed as one between two constructions — the agent-voice construction and the patient-voice construction. The two constructions are schematically represented in (153) below. In the agent-voice construction, any additional participant that is not the PSA is realized as an adjunct, which may have peripheral or patientive roles. In patient-voice, the PSA is always the patient, and any peripheral participant is realized as an adjunct. In addition to the voice category of the verb, therefore, an essential difference between the two constructions is whether an agent argument is involved in addition to the PSA. This is the case for the patient-voice construction, but not for the agent-voice construction.

(153) Structures of the agent-voice and patient-voice constructions

a. Agent voice: Verb_{AV} + PSA (+ $\text{adjunct}_{\text{peripheral}}$/$\text{adjunct}_{\text{patientive}}$)

b. Patient voice: Verb_{PV} + Agent + Patient/PSA (+ $\text{adjunct}_{\text{peripheral}}$)

The discussion so far indicates that there are four types of grammatical argument roles that can be identified based on case-marking properties, as summarized in Table 4.4 below. The properties are captured with regard to two domains of realization — whether they are realized as lexical noun phrases or pronouns.

Table 4.4: Summary of case-marking properties across four participant types in Kanakanavu

	PSA	**Agent**	**Adjunct$_{\text{patientive}}$**	**Adjunct$_{\text{peripheral}}$**
Lexical marking	unmarked	unmarked	(*na-*/*mata-* marked)	(*na-*/*mata-* marked)
Pronominal case	unmarked	oblique/genitive	oblique	oblique

A rather complex picture emerges regarding case marking, as the four grammatical roles show different degrees of overlap in how they are case-marked. One observation that stands out is that the patientive adjunct shows case-marking properties that are identical to adjuncts with peripheral roles. Both are optionally marked by the case markers *na* and *mata* when occurring as lexical noun phrases; when occurring as pronouns they obligatorily occur in the oblique case. On the other hand, the transitive agent exhibits mixed case-marking properties: in the lexical domain, it resembles the PSA in being unmarked for case; in the pronominal domain, it shows partial resemblance to the two types of adjuncts in that it may occur in the oblique case. Crucially, the resemblance is partial because the agent may also occur in the genitive case, the case alternation being conditioned by the tense-aspect-mood value of the clause.

While the discussion so far has shed light on how the different participants are case-marked and realized as grammatical relations, the case-marking patterns do not provide any clear indication of their respective grammatical statuses. For example, although case-marking suggests that the agent exhibits mixed properties, it still remains to be seen if this is reflected in how it is indeed treated at the syntactic and discourse levels. The same question arises for the patientive adjunct: does its resemblance to peripheral adjuncts extend beyond case-marking?

These are topics that will be addressed in the next two sections.

4.3 Argument status in grammar and discourse

This section examines the **behavioral properties** of the four grammatical roles that have been shown to exhibit different case-marking patterns, aiming to determine their respective grammatical status in syntax and discourse. The behavioral properties of each grammatical role will be explored by examining how they interact with syntactic constructions and discourse contexts, focusing particularly on the extent to which the two non-PSA roles — (i) the **transitive agent** in transitive/patient-voice clauses and (ii) the **patientive adjunct** in intransitive/agent-voice clauses — may align with the PSA on the one hand, or with peripheral adjuncts on the other. Section 4.3.1 demonstrates that despite involving the oblique pronominal case, the transitive agent is crucially distinguished from adjuncts because it can serve as the obligatory controller of omitted participants in purpose clauses, which is a property also shared by the PSA, but not adjuncts. Section 4.3.2, however, presents further evidence in discourse to show that there is a functional basis for the pronominal agent case marking alternation, which lies in how it may be interpreted when left unexpressed in discourse. Through the discussion, the patientive adjunct is also found to consistently show properties confirming its adjunct status. The findings converge in Section 4.3.3, where Kanakanavu is argued to show asymmetricality in the status of non-PSA arguments across the two voice constructions: whereas patientive participants are clearly cast as oblique in intransitive clauses, the transitive agent is found to retain a certain degree of coreness.

4.3.1 Alternative constructions and grammatical status of arguments

C. Wu (2006) notes that only the PSA (which he labels "subject") can be topicalized. However, in the corpus data considered for this study, all four argument roles are found to undergo topicalization. As can be seen in (154), topicalization involves a nominal in clause-initial position

followed by the topic marker *ia*. A prosodic break also often follows, here represented by the intonation-unit boundari(es) that separate(s) *ia* from the rest of the clause. The topicalized nominal may (154b) or may not (154a, c-d) be repeated in the following clause. In (154a), the topicalized nominal corresponds to the PSA of the clause: it is the semantic agent occurring in an intransitive/agent-voice clause. In (154b), the topicalized nominal is the transitive agent: here, it corresponds to the third-person genitive pronoun *ké* in the transitive/patient-voice clause that follows. In (154c), the topicalized nominal corresponds to the patientive adjunct (the the semantic stimulus role) in the following clause, whereas in (154d), the topicalized nominal is a peripheral participant with the location role.

(154) Topicalization of all four participant types

a. mamálang ia, nialán 'umó'uma,
ma-marang~~u~~ ia ni-alanai 'uma-'uma
RED-old TOP PRF-be.from RED-farm.land

'As for **the elders**, (they) have come from the farmland.' (1002-UKN:176-177)
(Topicalized PSA)

b. mésua támcuru ia, eh:, 'é=pa=kán, '~~u~~kú~~r~~u~~n~~ ké, v~~u~~cú~~k~~in
miasua **tamcuru ia** 'esi=pa=kani '~~u~~kur-~~u~~n ke v~~u~~cu~~k~~=in
back.then civet TOP PROG=CONT=EVI rub-PV.IPFV 3.GEN belly=3.POSS
si,
si
because

'At that time, **the Civet**, they were still rubbing their belly, because …' (1018-AKN:467-471) (Topicalized transitive agent)[9]

c. sua ísua ia, ka'án=ku alakulácu.
sua **isua** **ia** ka'anu=ku ala-kulacu
CTRV DEM.DIST TOP NEG.IPFV=1SG become-angry
'As for that, I won't get angry (about it).' (1011-MKN:37-38)
(Topicalized patientive adjunct)

d. na canná=máku 'inía ia, nelupáca=máku, vavúlu
na **canna=maku** **'inia** **ia** ni-ulupaca=maku vavulu
PST rice.paddy=1SG.GEN 3.OBL TOP PRF-use=1SG.GEN wild.pig
puso'úma.
pusuu'uma
hire.for.farm.work
'As for **the rice paddy over there**, I have used wild pigs to hire for farm work (there).' (1011-MKN:73-75) (Topicalized adjunct)

As will be demonstrated below, the topicalization construction will turn out to be the only syntactic construction in which adjuncts, including patientive and peripheral ones, participate.

4.3.1.1 Control

A syntactic phenomenon that completely excludes adjuncts but includes the transitive agent, is **control**. Also known as equi-NP deletion, control is a phenomenon where the reference of an omitted argument in a complement clause is controlled by some other argument in the matrix clause (Abeillé 2019). In Kanakanavu, purpose clauses are a complement clause type where the PSA is always omitted. In many cases, the reference of the omitted PSA in the purpose clause is controlled by the transitive agent in the matrix clause.[10] This can be illustrated by the examples in (155) below, where the two patient-voice verbs — *alé* /ala-i/ 'take (patient voice

[10]See, for example, Chang (2004) and Riesberg (2014), for discussion of control as a diagnostic for argument status in Formosan and non-Formosan Western Austronesian languages, respectively.

perfective)' (155a) and *niála* /ni-ala/ 'take (patient voice perfect)' (155b), both derived from the action-denoting root *ala* 'take — are followed by a purpose complement clause. In both cases, the PSAs of the complement clause are obligatorily omitted, and they are coreferential with the transitive agent of the matrix predicate. In (155a), the agent is realized as an oblique pronoun, and in (155b), a lexical agent is involved, although it would occur in the genitive case if realized as a pronoun due to the non-perfective status of the clause.

(155) The transitive agent as obligatory controller

a. alé 'inía, umávici, tanása ,
ala-ai '**inia**$_i$ [um-avici tanasa _$_i$]
take-PV 3.OBL AV-bring house

'**They**$_i$ took (it) [_$_i$ to bring (it) home].' (1033-AKN:183-186)

b. niála, kaná'ua=máku. nántin ~~um~~ú~~v~~u~~v~~ung ,
ni-ala **kana'ua=maku**$_i$ nant=in [um-~~uv~~u~~v~~ung~~u~~ _$_i$]
PV-take brother=1SG.GEN gun=3.POSS AV-hide

'**My late brother**$_i$ took the gun [_$_i$ to hide (it)].' (1009-MKN:256-261)

The omitted PSA of the purpose clause may also have the matrix-clause PSA as its obligatory controller. This is seen, for example, in (156a) below, where the matrix-clause PSA — *kaniarúme* 'Civet' — controls the reference of the omitted PSA in the complement clause. Crucially, this is a property not exhibited by the non-PSA patient. In (156b), for instance, the speaker is found to causativize the complement verb, and this can be attributed to the impossibility of the non-PSA patient — the oblique-case pronoun *kasúa* — as a controller of the omitted PSA in the complement clause.[11] Here, the reference of the latter is controlled instead by the PSA of the matrix agent-voice verb *móvua* /mu-a-vua/ 'give (agent voice imperfective)'.

[11]If the complement verb is not causativized — i.e. if it occurs in the form *kum~~ú~~n* /k<um>~~uu~~n/ 'eat (agent voice)' — then the omitted PSA in the complement clause would bear the role of the agent (instead of the causer), which would require the non-PSA patient in the matrix clause to serve as its obligatory controller.

(156) The PSA as obligatory controller

a. umarócu sua ~~u~~nco, kaniarúme, mókusa na,
um-a-rocu sua **kaniarume**$_i$ [m-u-a-kusa na
AV-STAT-downhill CTRV civet AV-IPFV-toward LOC
to'onén:, mitav~~ú~~ng.
ta-'una-a=in $\__i$ mi-tav~~uu~~ng~~u~~]
LOC.NMLZ-exist-LOC.NMLZ=3SG.POSS AV-hide

'**The pangolin**$_i$ went downhill [$\__i$ to go to their place to hide].' (1018-AKN:409-413)

b. móvua=ku kasúa 'apak~~ún~~ .
mu-a-vua=**ku**$_i$ kasua$_j$ ['apa-k~~uun~~~~u~~ $\__{i/*j}$]
AV-IPFV-give=1SG 2SG.OBL CAUS-eat

'**I**$_i$ will give (some) to you$_j$ [$\__{i/*j}$ to make (you) eat].' (1018-AKN:54)

4.3.1.2 Focalization and relativization

Focalization is a syntactic phenomenon whereby a nominal constituent is presented as *in focus* — i.e. as an unpredictable piece of new information (Lambrecht 1994). In focalization, a nominal constituent occurs in the clause-initial position instead of the default post-predicate position. Unlike topicalized nominals, however, focused nominals are not marked with *ia*, and only the PSA of the clause may be put in focus. In (157) below, the free translations are formulated in cleft sentences to highlight the participants in focus.

(157) Focalization

a. nánnak~~u~~ kavángvang kaman~~ú~~ng
na-n~~u~~nak~~u~~ kavangvang kaa-man~~u~~ng~~u~~
RED-woman all make-good

'It's **all the women** who are preparing.' (1002-UKP:56-87)

b. îkasu, malivivíci mamán.
ikasu m-ali-vi-viici ma-manu
2SG AV-take-RED-bring RED-child
'It's **you** who keeps bringing the kids over.' (1010-PKP:63)

Like focalization, **relativization** is a construction that targets only the PSA.[12] As can be seen below, headed relative clauses in Kanakanavu may precede (158a-b) or follow (158c) their head nouns.[13] As indicated in the data, the gap strategy is observed where the participant that is coreferential with the head noun is omitted within the relative clause.

(158) Relativization

a. sua, némuku ké sua vú'u ia,
sua [ni-umuku ke _$_i$]RC sua **vuu'u**$_i$ ia
CTRV PV.PRF-plant 3.GEN CTRV pomelo TOP
'As for **the pomeloes** [that he had planted] …' (AKN-1016:521-522)
Relativized patient, RC in patient voice

b. 'úna nipókali kúa:, pakísia.
'una [ni-puu-kali 'ikua _$_i$]RC **pakisia**$_i$
EXIST PRF-utter-speech 1SG.OBL Southern.Min
'There was **a Southern Min person** [who had invited me].' (MKN-1009:8-9)
Relativized agent, RC in agent voice

[12]Kanakanavu is, therefore, a language where only the highest ranked argument role of the clause — the PSA — can undergo relativization, according to the typology proposed by Keenan and Comrie (1977).

[13]The existence of head-initial relative clauses would be considered typologically odd, given that Kanakanavu is a verb-initial language (Dryer 2013). See, for example, Comrie (2008) for discussion of head-initial relative clauses in Amis, also a Formosan language with verb-initial word order.

c. ’éhi nía vavúlu ’umô’ukúku .
‘esi ’inia **vavulu**$_i$ [’<um>a’ukuku _$_i$]RC
EXIST 3.OBL wild.pig <AV>howl

‘Over there was **a wild pig** [that had been howling]’ (MKN-1011:50)

Relativized sole participant, RC in agent voice

Since the PSA is the only relativizable argument in the clause, the voice category of the relative clause always corresponds to the role played by the head noun within the relative clause. If the head noun bears the agent role in the relative clause, the latter is always encoded in agent voice (158b-c). If it bears the patient role, then the relative clause always occurs in patient voice (158a).[14] In this regard, voice serves a role-indexing function in relativization, as it provides information about the semantic role of the head noun modified by the relative clause.

4.3.2 Unexpressed participants and interpretation in discourse

As discussed in Section 4.2.2 above, the transitive agent appears to show split properties that are conditioned by tense-aspect-mood. In the perfective, it occurs in the oblique case when realized as a pronoun, whereas in all other (i.e. non-perfective) environments, the pronominal agent occurs in the genitive case. The discussion of control properties in Section 4.3.1.1 above, however, has shown that the two types of agent are at least syntactically equivalent, as they can both serve as the obligatory controller of omitted PSAs in purpose clauses, also a property shared by the PSA. As can be seen in the summary table below, the grammatical status of the transitive agent contrasts with that of the patientive adjunct, the latter being identical to adjuncts with peripheral roles both in terms of case-marking (flagging) and with regard to their (lack of) participation in a range of syntactic phenomena (behavioral properties).

[14]This has also been explored by H.-C. Liu (2014) where elicited data are examined for the impossibility for non-PSA participants to be relativized on.

Table 4.5: Case-marking and behavioral properties of the four participant types

	PSA	**Agent**	**Adjunct$_{\text{patientive}}$**	**Adjunct$_{\text{peripheral}}$**
Lexical marking	unmarked	unmarked	(*na-*/*mata-* marked)	(*na-*/*mata-* marked)
Pronominal case	unmarked	oblique/genitive	oblique	oblique
Topicalization	yes	yes	yes	yes
Controller	yes	yes	no	no
Focalization	yes	no	no	no
Relativization	yes	no	no	no

There is, however, one crucial functional difference between the two types of transitive agents, which concerns their interpretation when they are left unexpressed in discourse, to which this subsection turns. For ease of reference, the agent occurring in the perfective will be referred to as the **oblique agent** in this section, and its non-perfective counterparts will be referred to as the **genitive agent**.[15]

The oblique agent is almost always explicitly mentioned in discourse. This is exemplified by the third-person oblique pronoun in (159a), which corresponds to a pronoun in the free English translation. When it is left unexpressed, which occurs rarely in the corpus but is exemplified in (159b), the oblique agent is always understood as a "zero" (null pronoun) argument. Zero arguments are represented by empty-set symbols in the morpheme gloss, corresponding to pronouns occurring between parentheses in the English free translation. This method of representation will be applied to all zero arguments in the data hereafter.

[15]Note that the labels are motivated by their coding only when they are realized as pronouns. They are both unmarked for case when they are realized as lexical noun phrases.

(159) Oblique agent as zero in discourse

a. atiumái=cu, 'inía sua, vutúkulu,
atiuma-i=cu 'inia sua vutukulu,
receive-PV.PFV=COS 3.OBL CTRV fish

'They took over the fish.' (1010-PKP:155-157)

b. **alivalé**=cu , ʉ́'ʉ. misé.
alivali-ai=cu $\emptyset_i$ $\emptyset_j$ ʉ'ʉ mise
reply-PV.PFV=COS yes QUOT

'(**I**$_i$) answered (**him**$_j$), saying "Okay!"' (1029-MKN:274-276)

A zero argument is always coreferential with a discourse referent that has specific reference and has been mentioned in prior discourse. This suggests that speakers use this strategy to represent a discourse referent that is highly accessible to the addressee (Ariel 2001), and it can be considered topical in the sense that it represents a highly given discourse referent (Du Bois and Thompson 1991; Chafe 1994) that is continuously tracked by the speaker (Givón 1983, 2017). Importantly, the "zero" behavior of the oblique agent is also exhibited by the PSA.[16] The PSA often assumes topical discourse status, and when left unexpressed, it is also always interpreted as a zero argument. An example of zero PSA in combination with a zero agent was shown in (159b) above. Two more examples of zero PSA are provided in (160) below. The zero PSA in (160a) represents a discourse referent that is a semantic agent in an agent-voice clause, while that in (160b) represents one that is a semantic patient in a patient-voice clause.

[16]Recall that the PSA and the transitive agent share the property of being unmarked for case when realized as lexical noun phrases.

(160) PSA as zero in discourse

a. ’e=kán po’ocípi vutúkulu ,
’esi=kani pa’ucipi vutukulu $\emptyset_i$
PROG=EVI cook fish
‘(**They$_i$**) were cooking fish. (1009-MKN:120) "Zero" PSA in agent voice

b. tia paná’~~un~~ ké .
tia pana’~~u-un~~ ke$_i$ $\emptyset_j$
FUT shoot-PV.IPFV 3.GEN
‘He$_i$ was going to shoot (**him$_j$**).’ (1009-MKN:188) "Zero" PSA in patient voice

A sharp contrast is seen when the genitive agent is considered: any unexpressed genitive agent is simply interpreted as a participant that is omitted from mention. Typically, this is either because it has non-specific reference or because it is presented as not centrally involved in the situation expressed by the verb. An example is in (161a), where the patient-voice verb *alémin* /aloim-in/ ‘forget (patient voice imperfective)’ is used to indicate that the PSA — *tapcaláke* ‘the Tapcalake people’ — shall not be forgotten, not by a specific person, but by everyone. In this case, the agent (semantic experiencer) has generic reference, and is simply omitted from mentioning in the clause. Another example can be seen in (161b), where the patient-voice verb *nelupáca* /ni-ulupaca/ ‘use (patient voice perfect)’ is again used only with the PSA — *váva kalávung* ‘bull’s bone’ — being explicitly expressed in the clause. Here, the patient is the foregrounded participant because the speaker aims to direct attention to the material being used for the arrows, instead of to their maker. The latter, in this case, is simply omitted from mention. Because the unmentioned agents are used with non-perfective patient-voice verbs, they are expected to occur in the genitive case if expressed explicitly as pronouns.

(161) Genitive agent as omitted participant in discourse

a. ’án:, **alémin**, matanganái sua ~~u~~nco, eh:, tapcaláke
ka’an~~u~~ **alooim-in** mata-nganai sua tapucalake
NEG forget-PV.IPFV become-name CTRV Tapcalake.people
si,
si
because

‘The Tapcalake people **will not be forgotten** in the naming ritual (of the Mikong Festival), because …’ (1036-AKN:624-628)

b. m~~u~~ntás~~u~~ kán sua ~~u~~nco, sua ~~u~~nco vúlu si, **nelupáca** váva
m-~~u~~ntas~~u~~ kani sua vulu si **ni-ulupaca** vava
AV-powerful EVI CTRV arrow because PV.PRF-use bone
kalávung.
kalavung.
bull

‘The arrows were powerful because the bull’s bones **were used**.’ (1016-AKN:353-357)

The “omissibility” of the genitive agent is in fact shared by the patientive and peripheral adjuncts, which are often left unexpressed in discourse when having non-specific reference or presented as backgrounded in discourse. This can first be exemplified by the semantic patient (cooked food/ingredient) that is implied in the meaning of the agent-voice verb *po’ocípi* ‘cook’, but is not explicitly expressed in (162a). Here, it is the general event COOK that is of interest to the speaker: although it is generally understood that there would be a semantic patient involved — i.e. ingredients cooked — no specific ingredients are of interest to the speaker here. The semantic patient here is simply left unmentioned. This is in sharp contrast to (162b), where the ingredients to be cooked are actually a specific referent that has been mentioned

in prior discourse. Notice here that the speaker selects the patient-voice construction for packaging the event, where the patient occurs as a zero PSA:

(162) Transitive situation COOK expressed in agent voice or patient voice

a. pô'ocipi=cu sua nánnaku. tanása.
pa'ucipi=cu sua na-nanaku tanasa
cook=COS CTRV RED-woman house

'The women staying indoors are now about to cook.' (1010-PKP:55-56)

b. pô'ocipin=cu .
pa'ucip-in=cu $\emptyset_i$
cook-PV.IPFV=COS

' (**It/the fish**$_i$) will then be cooked.' (1010-PKP:158)

Similarly, locative adjuncts may alternate in being omitted or explicitly expressed in discourse. In (163), there are two clauses where the agent-voice verb *pué'i* /pu-ai'i/ 'return' is used. In both cases, no prior mentions have been made of the goal to which the agent participant returns. In (163a), it is explicitly mentioned as a *na*-marked nominal. In (163b), the goal is simply left unmentioned: it is generally assumed — from the semantics of the verb — that there is a location to which the agent returns, which, however, is not a foregrounded aspect of the event expressed in this clause.

(163) Goal participant as explicitly mentioned adjunct or omitted participant in discourse

a. pué'i=ku nía.
pu-ai'i=ku **'inia**
VBLZ-back=1SG 3.OBL

'I went back **there**.' (1001-MKN:118)

b. pué'i=cu=ku ia,
pu-ai'i=cu=ku ia
VBLZ-back=COS=1SG TOP

'When I went back, …' (1013-MKN:146)

A detailed investigation of the discourse behaviors of the different grammatical roles, therefore, reveals that not only are the two types of differently marked transitive agent functionally distinct, but the functional differences provide further evidence for the grammatical status of all non-PSA participants. First, both the PSA and the oblique agent can be considered prototypical core arguments in the discourse-functional sense: they are participant types that are always presented as centrally involved in the situations expressed by the verbs with which they occur. This can be considered evidence that they are **subcategorized for** by the verb (Van Valin 2005; Haspelmath and Hartmann 2015): even when left unexpressed in discourse, it is always the case that there is a specific referent involved. In contrast, the other argument roles are all omissible in the sense that speakers may leave them unexpressed if they have non-specific/generic reference or are presented as not important in the situation being introduced by the verb.

4.3.3 Interim conclusion: coding properties, behavioral properties and coreness/argumenthood

The two patterns of behavior in terms of (i) interpretation of absence as a continuing topical referent or (ii) simple omission of mention enhance our understanding of the grammatical roles identified in the Kanakanavu verbal clause, motivating a further split in the agent category, into oblique agents and genitive agents. The status of each grammatical role can, therefore, be captured in Table 4.6 below, which lists seven properties that have been explored in this section. Properties b and e capture how the different participants are case-marked (i.e. their flagging properties) across the lexical and pronominal domains, respectively. Properties a, c,

f and g each represent a specific syntactic phenomenon with which the grammatical roles interact, whereas property d "zero interpretation" specifically refers to the interpretation of a participant in discourse when left unexpressed.

Table 4.6: Case-marking, behavioral properties and the core index

	PSA	**Obl. agent**	**Gen. agent**	**Adjunct$_{\text{patientive}}$**	**Adjunct$_{\text{peripheral}}$**
a. **Topicalization**	yes	yes	yes	yes	yes
b. **Lexically unmarked**	yes	yes	yes	no	no
c. **Controller**	yes	yes	yes	no	no
d. **Zero interpretation**	yes	yes	no	no	no
e. **Unmarked pron.**	yes	no	no	no	no
f. **Focalization**	yes	no	no	no	no
g. **Relativization**	yes	no	no	no	no
CORE INDEX	1	4/7 (0.57)	3/7 (0.42)	1/7 (0.14)	1/7 (0.14)

As the table suggests, the PSA can be considered the argument that exhibits the most core properties. Formally speaking, it represents the only participant in the clause that is found to be targeted by all the syntactic constructions examined. Functionally speaking, it is also always centrally involved in the situation, evidenced in how it is always indexed by the voice category/morphology of the verb and how it is always interpreted as a zero participant when left unexpressed in discourse. The other grammatical roles, by contrast, show different degrees of deviation from the PSA core argument prototype, which is captured by the **core index** proposed by Arka (2017). The core index (last row of Table 4.6 above) is calculated based on the percentage of PSA properties exhibited by each participant type. The index for PSA is 1 because it exhibits all the properties exhibited by itself. The indices for the two transitive agents — the oblique agent and the genitive agent — are 0.57 and 0.42, respectively. The indices

reflect not only the fact that the transitive agent is not involved in focalization or relativization, but also that a different pattern of case marking is found: alternation between oblique and genitive pronouns instead of involvement of the unmarked-case pronouns. Finally, the indices for the patientive and peripheral adjuncts are exactly the same — 0.14. These not only capture the observation that both participant types only interact with topicalization, but they also confirm their syntactic status as adjuncts. Essentially, both are case-marked entirely differently from the PSA, and neither can be argued to be centrally involved in the situation expressed by the clause.

Based on Arka's classification of participants according to the core index, as illustrated below, the patientive adjunct would be considered an oblique, instead of a core argument. On the other hand, the two transitive agents would both fall under the category "Semi Core" — an argument that is characterized by some core properties and hence has intermediate status. Although the genitive agent shows a slightly lower core index, which is attributable to its "omissibility" in discourse, the two types of transitive agent can be considered morphosyntactically equivalent in the sense that (i) they are equally unmarked when realized as lexical noun phrases, and (ii) they are equally involved as obligatory controllers.

Core index:	Types of coreness/obliqueness:	
0.80-1.00	1:	Prototypical Core
0.60 -0.79	2:	Marginal Core
0.40-0.59	3:	Semi Core
0.20-0.39	4:	Marginal Oblique
0.00-0.19	5:	Prototypical Oblique

Figure 4.1: Core index and classification of arguments (Arka 2017)

The core index offers a way for one to evaluate the implications of voice alternation in Kanakanavu regarding the status of the arguments involved. One of the most significant observations, as reflected in the core index difference between the PSA and the patientive adjunct, is the drastic loss of core properties when a participant is coded as an adjunct instead of a PSA, which is in sharp contrast to the retention of some PSA properties when a participant is coded as the transitive agent. Along with observations made regarding the

correlations between voice categories and basic (in)transitive clauses in Section 4.2, therefore, this suggests that the two voice constructions do differ in transitivity and cannot be considered fully symmetrical. On the one hand, the agent-voice construction is the default strategy for intransitive situations, and even when a patientive participant is involved, it is cast as oblique, leaving the clause with only one core argument — the PSA. In contrast, patient-voice clauses always imply that there is both an agent and a patient involved. If one considers the agent to be a full-fledged core argument, then the patient-voice construction would be analyzed as the canonical transitive construction in Kanakanavu. Even if the gradient nature of the argument role properties is emphasized, the patient-voice construction would still be analyzed as more transitive than the agent-voice construction: the former contains the PSA (with core index 1) and an agent (with core index 0.57 or 0.42), whereas the latter contains the PSA plus a patientive adjunct, which is only characterized by a core index of 0.14.

4.4 Voice alternation: discourse, semantic and grammatical motivations

The discussion so far has addressed the first research question — What are the syntactic implications for the participants involved when one voice construction is selected over the other? — by demonstrating that non-PSA arguments have different syntactic statuses across the two constructions. In particular, patientive arguments receive rather different treatments. When the patient-voice construction is selected, the patient is coded as the PSA, a prototypical core argument of the clause; when the agent-voice construction is selected, however, the patientive argument is cast as oblique, lacking any functional or formal prominence. This section aims to tackle the second research question — What motivates speakers to select one voice construction over the other? The question is addressed by delving into a varieties of factors that may come into play. Section 4.4.1 discusses the effect of information-flow properties of discourse referents, which may show different interactions with their animacy

features as well. Section 4.4.2 further shows that the animacy hierarchy may come into play in conditioning voice selection, a rarely attested phenomenon across Austronesian languages. Finally, Section 4.4.3 examines *wh*-questions as a syntactic construction where sensitivity to PSA status of questioned constituents may lead to voice alternation. This section, therefore, presents voice alternation as a complex phenomenon that is sensitive to discourse-pragmatic, semantic-ontological and grammatical factors.

4.4.1 Animacy and information flow in discourse

In Kanakanavu, there are two strategies whereby speakers introduce referents into the discourse. One strategy involves the **presentative construction**, where the existential predicate *'úna* is used. The presentative construction is typically used when the referent being introduced is considered by the speaker to be accessible or identifiable to the hearer (Chafe 1994; Du Bois and Thompson 1991). Animate/human referents, especially those that can be identified in the physical environment of the discourse, can be considered more salient than inanimate/non-human ones, and they are often introduced via the presentative construction. An example is in (164a), where the speaker introduces the researcher making the actual recording on the spot into the discourse. Inanimate/non-human referents that are possessed by animate/human referents already introduced in prior discourse, on the other hand, may also be introduced this way. This is exemplified by the possessed noun phrase *cicíl=in* 'their nearby-place' in (164b), where the possessive pronoun refers to protagonists of the narrative from which the example was excepted.

(164) The presentative construction and introduction of accessible referents into discourse

a. ’úna nipókari kua:, pakísia.
’una ni-puu-kali kua pakisia
EXIST PRF-utter-speech 1SG.OBL Southern.Min

‘There was a Southern Min person (referring to the researcher currently making the recording) who invited me.’ (1009-MKN:8-9)

b. ’úna=kán, cicíl=in.
’una=kani cicil=in
EXIST=EVI near.by.place=3.POSS

‘There was a place close to them.’ (Literally: There was their nearby-place.) (1009-MKN:122-123)

Referents that are inanimate and/or nonhuman tend to be introduced into the discourse with verbal predicates instead, and the introduction typically involves the referent to be coded as a patientive adjunct in an agent-voice clause. After initial introduction, the referent may then be re-encoded as either a PSA (in agent voice or patient voice) or an agent (in patient voice), depending on how they interact with other referents in discourse.

An example can be seen in (165), which contains two clauses excerpted from a folk story where two (personified) animal protagonists — the Civet and the Pangolin — trick each other. The first trick involves the Civet deliberately eating all the bananas that they’ve found, without sharing any with the Pangolin. In (165a), the speaker introduces an inanimate referent — ripe bananas — for the first time into the discourse. Here, it is realized as a patientive adjunct noun phrase — *mavángu sua tavunvún* ‘(some) ripe bananas’ — in the agent-voice construction, with the agent-voice verb *nimútua* /ni-ma-utua/ ‘find (agent voice perfect)’. Once the bananas have been introduced into the discourse, they become given or accessible to the addressee (DuBois 1987; Chafe 1994; Ariel 2001), and as the story progresses, the speaker begins to code them as the PSA. In (165b), the speaker describes how the greedy Civet keeps eating the bananas they

have found; here, the bananas serve as the patient PSA of a patient-voice clause.

(165) Inanimate discourse referent 'ripe bananas' coded as a patientive adjunct or a patient PSA

a. 'úna=kán taniára, sua ~~u~~nco:, tamkaráranm ia, nimú~~tu~~a=kan na ~~u~~nco:,
'una=kani taniara, sua tamkararanm ia,
EXIST=EVI day CTRV civet TOP

nimú~~tu~~a=kán, m:, maví:ng~~u~~, sua ~~u~~nco, tav~~u~~nvú~~n~~.
ni-m-~~utu~~a=kani **ma-vangu** **sua** **tavunuvun**.
PRF-AV-find=EVI AV.STAT-ripe CTRV banana

'One day, the Civet, (they) found **some ripe bananas**.' (1018-AKN:21-29)

First mention - Agent Voice, patientive adjunct

b. takacicínin ké, k~~u~~mú~~n~~ sua, 'ési maváng,
takacicin-in ke, k<um>~~uunu~~ sua **'esi** **mavangu**,
by.one.self-PV.IPFV 3SG.GEN <AV>eat CTRV PROG ripe

'They ate **the ripe (bananas)** by themselves.' (1018-AKN:106-109)

Subsequent mention - Patient Voice, patient PSA

Another example is in (166) below, which includes excerpts from a narrative about the late Pani, a Kanakanavu community member who once encountered a Hundred Pacer Snake and became seriously ill after being bitten by it. When the snake, a non-human referent, is first introduced into the narrative, it is realized as a(n indefinite) lexical noun phrase — *vunai* '(a) snake' — coded as a patientive adjunct in agent voice (166a).[17] Notice that it is marked by the comitative case marker *mata*. After the snake has been introduced, the speaker then goes on to describe the different interactions it has with the protagonist Pani by employing the patient-voice construction. Pani first accidentally steps on the snake on his way to hunt down

[17]The first-introduced participant can be characterized as indefinite, new or low in accessibility, depending on the theoretical framework to which one subscribes.

a flying squirrel, where the snake is coded as a patient PSA — *tamu* 'Hundred Pacer Snake' — as in (166b). Then, it bites Pani on the foot, where it is then encoded as an agent pronoun, as in (166c).

(166) Nonhuman discourse referent 'Hundred Pacer Snake' coded as a patientive adjunct or a PSA patient

a. nimatú'usu mata vunái,
ni-ma-tu'usu **mata vunai**
PRF-STAT-contact COM snake
'(He) encountered **a snake**.' (1009-MKN:80)
First mention - Agent Voice, non-PSA patient

b. nelácana ké sua, támu lumlac~~u~~kú~~c~~u~~ku~~.
ni-alacana ke sua **tamu** l<um>ac~~u~~ku~~c~~u~~ku~~
PRF-accidental 3.GEN CTRV Hundred.Pacer.Snake <AV>step
'He accidentially stepped on **the Hundred Pacer Snake**.' (1009-MKN:161-162)
Subsequent mention - Patient Voice, PSA patient

c. pasitu'usé=cu nía, sua 'acípin.
pasi-tu'usu-ai=cu **'inia** sua 'acip=in
mouth-contact-PV.PFV=COS 3.OBL CTRV foot=3.SG.POSS
'**It** bit him on the foot. (Literally: It bit his foot)' (1009-MKN:163-164)
Subsequent mention - Patient Voice, transitive agent

The interaction between animacy and discourse status also plays a role in how certain discourse referents with peripheral roles may be encoded as the PSA in patient-voice clauses instead of adjuncts. An example can be seen in how speakers may express motion events in patient-voice clauses. Motion events typically involve a semantic theme (or the "figure" in some analytical frameworks) moving in space. When expressed in agent voice, the semantic

theme is realized as the PSA, whereas any additional locative participant is consistently coded as an adjunct. This can be seen in examples of agent-voice verb forms derived from the stem *u-kusa* 'go (toward)' in (167) below. Here, evidence that the theme moving through space is the PSA comes from its pronominal form obligatorily occurring in the unmarked case, as in (167a). Locative participants may occur in the oblique case when realized as a pronoun (167a) or as a *na*-marked lexical noun phrase (167b).

(167) Motion event expressed in agent-voice verbs derived from stem *u-kusa* 'go (toward)'

a. mukúsa=ku nía,
m-u-kusa=ku **'nia**,
AV-motion-toward=1SG 3.OBL

'I went there.' (1011-MKN:114) Inanimate goal - Agent voice

b. mukúsa na ˜ u nco, to'onaín.
m-u-kusa **na** **ta-'una-a=in**
AV-motion-toward LOC LOC.NMLZ-exist-LOC.NMLZ=3SG.POSS

'(He) went to his place (the place in which he lives).' (1023-PKP:90-91)
Inanimate goal - Agent voice

The same motion event is sometimes expressed in patient-voice verbs derived from the same stem, such as the perfective patient-voice verb *ukúse* /u-kusa-i/ or its imperfective counterpart *ukus~~ú~~n* /u-kusa-~~un~~/. This often happens when the location towards which the semantic theme moves is in fact a human/animate referent that has been introduced in prior discourse, as can be seen in (168). The goal participants in both examples below represent the PSA. In (168a), it is realized as the lexical noun phrase — *tamkaráram* — and it is unmarked for case, different from the *na*-marked goal participant in (167b) above. In (168b), it is realized as a zero participant, representing a topical discourse referent. Notice that the patient-voice verb used here may be interpreted as 'approach', in addition to 'go (towards)'.

(168) Motion event expressed in patient-voice verbs derived from stem *u-kusa* ‘go (toward)’

a. makasúa=cu, (TSK) **ukúse** sua ~~u~~nco, kaniarúme sua
makasua=cu u-kusa-i sua kaniarume sua
like.that=COS locomotion-toward-PV.PFV CTRV pangolin CTRV
tamkaráram,
tamkararam,
civet

‘Then, the Pangolin went towards / approached the Civet.’ (AKN-1018:190-193)

Animate goal - Patient voice

b. ukus~~ú~~n=cu ké kán,
u-kusa-~~u~~n=cu ke kani
motion-toward-PV.IPFV=COS 3.GEN EVI

‘She would go towards / approach (him).’ (1033-AKN:141)

Animate goal - Patient voice

Another situation type in which the animacy of patientive participants interacts closely with voice alternation is *speech events*. In natural discourse, speech verbs often occur in agent voice, whereby a semantic agent (“speaker”) is presented as simply speaking. This can be seen in the usage of the agent-voice verb *makâsi* ‘say’ in (169). Here, the speech content is realized as a direct quote that follows (line 2):

(169) 1007-MKN:31-32

1 makâsi=kán nanák~~u~~.
makaasi=kani nanak~~u~~
say=EVI woman

‘The woman said:’

2 té=cu=káni tavalú'u palítulu vú'u.
tia=cu=kani tavala'u pali-tulu vuu'u
FUT=COS=EVI know pick-three pomelo

'Could (you) pick three pomelos?'

When a speech event is presented as involving not just an agent (speaker) but an addressee that has been introduced in prior discourse as well, it tends to be expressed in patient voice. This can be seen in (170) below, where the patient-voice counterpart of *makâsi* 'say' — *pakasín* /pakasi-in/ 'say (patient voice imperfective)' is used. Here, the speech content also follows immediately (line 2), but the patient-voice verb is used with both an agent (the speaker: Naparamaci's mother) and a patient (the addressee "Naparamaci", realized as a zero argument):

(170) 1016-AKN:152-162

1 pakasín=kán, cinén sua uenco, sua, m- manúin, nap- –
pakasi-in=kani cina=in sua manu=in
say-PV.IPFV=EVI mother=3.POSS CTRV child=3.POSS
napalamáci misé.
napalamaci mise
N. QUOT

'His mother said to her child, Naparamaci.'

2 uh, nu té=kamu, marucócua ia, marucocua ia, mukusá
nuu tia=kamu marucocua ia m-u-kusa-a
if FUT=2.PL travel.in.pair TOP AV-motion-toward-IMP
nía,
'inia
3.OBL

'If you will travel together, then go there!'

4.4.2 The animacy hierarchy and animate/human patients in discourse

Another type of interaction between animacy, voice and the coding of discourse referents concerns the relative position of the patient on the **animacy hierarchy** (Silverstein 1976; DeLancey 1981; Aissen 1997; Malchukov 2008) vis-à-vis its corresponding agent in a transitive situation. This is seen when transitive situations are presented as involving agents and patients that are both animate/human and already introduced into the discourse.

Patientive referents that are higher on the animacy hierarchy than the agent are typically encoded as patientive adjuncts. Otherwise (i.e. when they are lower than the agent or the two have the same position on the hierarchy), they are typically encoded as the patient PSA. The animacy hierarchy explains the seemingly symmetrical nature of voice exemplified in the introduction of this chapter, where the situation SEE is expressed either in agent voice or patient voice. As can be seen in the data repeated below, the agent-voice clause (171a) involves the agent acting on a patient that is higher on the animacy hierarchy: the former is in the third person whereas the latter is in the first person; in contrast, the patient-voice counterpart involves the opposite configuration: the agent is in the first person whereas the patient is a third-person participant.

(171) Perception event SEE expressed in agent voice and patient voice

a. cumac~~u~~’~~u~~́la ’akúa mamálang.
c<um>a-c~~u~~’~~u~~la ’ikua ma-marang~~u~~.
<AV>IPFV-see 1SG.OBL RED-old

‘The elders were looking at me.’ (1002-UKN:65) (3 > 1) - Agent voice

b. c~~u~~’~~u~~́le kúa, tinúa=máku.
c~~u~~’~~u~~la-i ’ikua t<in>ua=maku
see-PV.PFV 1SG.OBL hunting.trap=1SG.GEN

‘I looked at my hunting trap.’ (1011-MKN:189) (1 > 3) - Patient voice

An example where a speaker alternates in the voice construction selected in natural discourse that is conditioned by the animacy hierarchy can be seen in (172), which, again, is excerpted from the folk story involving the Civet and the Pangolin. In (172a), both protagonists are realized as third-person nominals, in which case the patient is not higher than the agent on the hierarchy. Here, the patient-voice verb *timanún* ‘listen (patient voice imperfective)’ is employed when the speaker describes how the Civet was not listening to the Pangolin, the latter coded as the PSA of the clause. When the Pangolin finally complains, the direct quote in (172b) describes how the Civet (third-person pronoun) does not treat the Pangolin (first-person nominal) well. The agent-voice verb *samamanungu* ‘treat well’ is used, and the Pangolin is coded as a patientive adjunct.

(172) Animacy hierarchy and voice alternation in discourse

a. ’án ké:, timan~~u~~́n sua ~~u~~nco, tam- uh:, kaniarúme misé.
ka’an~~u~~ ke timana-~~u~~n sua kaniarume mise.
NEG 3SG.GEN listen-PV.IPFV CTRV pangolin EVI

‘He wasn’t listening to the pangolin. (1018-AKN:170-171)

(3 > 3) - Patient voice

b. ’án:, samaman~~ú~~ng ’ikúa.
ka’an~~u~~ sa-ma-man~~u~~ng~~u~~ ‘ikua
NEG manner-STAT-good 1SG.OBL
‘(Pangolin saying to themselves:) “(They) don’t treat me well!“’ (1018-AKN:183-184)
(2 > 1) - Agent voice

More examples of the agent-voice construction employed for expressing situations where the patient is higher on the animacy hierarchy than the agent can be seen in (173), where the situations involve a second-person agent (173a, b) or a third-person agent (173c, d) acting on a first-person patient.

(173) Agent voice and transitive situations involving a higher-animacy patient acting on a lower-animacy agent

a. por~~u~~sú~~vu~~ mámia ’ikúa. misé.
puu-r~~u~~su~~vu~~ mamia ’ikua mise
utter-lie only 1SG.OBL QUOT
‘(You) keep lying to me!’ (AKN-1018:188) (2 > 1) - Agent voice

b. no mekáka=kámu=in kúa ia,
no m-ia-aka-aka=kamu=in ’ikua ia,
if AV-CAUS-RED-bad=2PL=COND 1SG.OBL TOP
‘If you all harm me, …’ (1009-MKN:64-65) (2 > 1) - Agent voice

c. kipápa kúa kesácu,
ki-paapa ’ikúa kesácu,
get-lead 1SG.OBL police
‘The policemen followed me.’ (1013-MKN:55) (3 > 1) - Agent voice

d. tia sumasangáne káni ’ikúa misé.
tia s<um>a-sangánai káni ’ikúa misé.
FUT <*um*>RED-fight.back EVI 1SG.OBL EVI

‘ “(It) wanted to fight me back”, I thought.’ (KNV-1011:186-192)

(3 > 1) - Agent voice

(174) below, in contrast, shows more examples of the patient-voice construction employed, when the patient is not higher on the animacy hierarchy than the agent. Here, the situations involve either a first-person agent acting on a third-person patient (174a, b) or both participants being in the third person (174c, d):

(174) Patient voice and transitive situations not involving a higher-animacy patient acting on a lower-animacy agent

a. té=maku ~~n~~ungú~~tu~~n,
tia=maku ~~n~~ungu~~tu~~-~~un~~,
FUT=1SG.GEN trace-PV.IPFV

‘I was going to follow (it/the wild pig)’ (1011-MKN:152) (1 > 3) - Patient voice

b. pâ’ane kúa.
pa’an-ai ’ikua
shoot-PV.PFV 1SG.OBL

‘I shot (at it/the wild pig).’ (MKN-1011:162) (1 > 3) - Patient voice

c. (TSK) ukúse sua ~~u~~nco, kaniarúme sua tamkaráram,
u-kusa-ai sua kaniarume sua tamkararam,
locomotion-toward-PV.PFV CTRV pangolin CTRV fox

‘The Pangolin walked towards the Fox.’ (AKN-1018:191-193)

(3 > 3) - Patient voice

d. tia paná'~~un~~ ké.
tia pana'~~u-un~~ ke
FUT shoot-PV.IPFV 3.GEN
'He was going to shoot (him).' (MKN-1009:188) (3 > 3) - Patient voice

4.4.3 Focalization and *wh*-questions

Voice alternation may also be triggered by syntactic constructions that require a certain participant to be realized as the PSA. As discussed in section 4.3.1 above, focalization and relativization are such constructions. Here, a specific type of focalization — *wh*-questions — is presented to illustrate the effect of syntactic PSA-sensitivity may lead to voice alternation. In Kanakanavu, focalization is one of the conventionalized strategies for forming *wh*-questions. The questioned constituent may or may not appear clause-initially. Interestingly, this depends on whether the questioned constituent has a peripheral semantic role or not. Locative participants, for example, are simply replaced with the *wh*-word *nánu* 'where' in situ:

(175) Questioned locative participants

a. nimalá=kámu nánu vutúkulu misé.
ni-m-ala=kamu **nanu** vutukulu mise
PRF-AV-take=2PL Q.LOC fish QUOT
'**Where** did you catch the fish?' (1014-MKN:74)

b. nimit~~u~~vúng=kásu nán.
ni-m-iti-v~~u~~ngu=kasu **nanu**
PRF-AV-ANTICAUS-hide=2SG where
'**Where** have you been hiding?' (1018-AKN:312)

The PSA of the clause, in contrast, is questioned with the initial question word *néni* 'who/what'. This can be seen in (176) below, where the PSA in agent voice (176a) and in patient voice (176c) are questioned, as in (176b) and (176d), respectively.

(176) Questioned PSA

a. tia miôlu nánnak~~u~~.
tia mia'ulu **na-n~~u~~nak~~u~~**
FUT pound.grains RED-woman
'The women will pound grains.' (Elicited)

b. nén tia miôlu.
neni tia mia'ulu
Q FUT pound.grains
'Who will pound grains?' (Elicited)

c. nipâli ké tútu.
ni-paali ke **tutu**
PV.PRF-sun.dry 3.GEN seed
'They have sun-dried the seeds.' (Elicited)

d. nén nipâli ké
neni ni-paali ke
Q PV.PRF-sun.dry 3.GEN
'What did they sun-dry?' (1036-AKN:226-227)

When a non-PSA argument — i.e. the agent or patientive adjunct — is questioned, voice alternation is required, where the questioned argument is coded as the PSA. An example where voice alternation is evidenced in discourse for coding the transitive agent as the PSA can be seen in (177) below. Here, two clauses are found from the same narrative, in which a

legendary hero — *Naparamaci* — embarks on a journey to shoot down the sun with a bow and arrow. In (177a), the speaker describes the moment when the hero is about to shoot the sun by using the patient-voice verb *paná'~~un~~* /pana'-~~un~~/ 'shoot (patient voice imperfective). Here, the hero is encoded as a genitive agent pronoun, and the sun, a lexical PSA. After he finally shoots down the sun, flashbacks are introduced later in the narrative, where some ignorant villager is quoted, who asks about the identity of the sun-shooting hero before the journey begins. While the hero has been encoded as an agent earlier, when his identity is questioned, the speaker switches to using the agent-voice verb *mopaná'~~u~~* /mu-a-pana'~~u~~/ 'shoot (agent voice imperfective), as in (177b). With the event (re-)expressed in the agent-voice construction, the questioned agent then occurs as the PSA and can appear in initial position. Note that, as a topical patientive referent, the sun is expected to be coded as the PSA in the basic clause, according to the pattern introduced in Section 4.4.1 above. The example in (177b), therefore, can be considered a case where a syntactic factor overrides a disocurse-pragmatic one, which is seen in a construction type that deviates from the basic clause.

(177) Questioned PSA coreferential with transitive agent in prior discourse

a. tia, paná'~~un~~=cu ké sua u nco, taniár~~u~~ misé.
tia **pana'-~~un~~**=cu **ke** sua taniar~~u~~ mise
FUT shoot-PV.IPFV=COS 3.GEN CTRV sun QUOT

'He was about to shoot the sun.' (1016-AKN:370-372)

b. nén tia mopaná'~~u~~ taniár~~u~~,
neni tia **mu-a-pana'~~u~~** taniar~~u~~
Q FUT AV-IPFV-shoot sun

'Who is going to shoot the sun?' (1016-AKN:632)

An example of a patientive adjunct re-coded as the PSA in a *wh*-question can be seen in the elicited data in (178) below. In (178a), an agent-voice clause is used to express the event EAT,

with the patient participant coded as a patientive adjunct. In (178b), a derivationally related patient-voice verb is used, whereby the patient participant is re-coded as the PSA of the clause and appears as the question word *néni* clause-initially. Notice that the agentive participant, which occurs as the PSA in agent voice (178a) is re-coded as a transitive agent in patient voice in (178b).

(178) Questioned PSA corresponding with patientive adjunct in agent-voice declarative clause

a. nik~~u~~mú~~n~~=ku úlu.
ni-k<um>~~uu~~n=ku **ulu**
PRF-<AV>eat=1SG rice
'I have eaten rice.' (Elicited)

b. nén nikú~~n~~=aku?
neni ni-k~~uu~~n=maku
Q PV.PRF-eat=1SG.GEN
'What have I eaten?' (Elicited)

Again, due to the non-specific referential status of the patientive participant involved, its coding as a patientive adjunct is expected. This is overridden here by the syntactic requirement that the questioned constituent be the PSA, a property of the *wh*-question/focalization construction.

4.5 Conclusion

This chapter has demonstrated that identifying the grammatical status of arguments in the Kanakanavu verbal clause is not a straightforward task. In addition to the challenges presented by the existence of two verbal voice constructions that can be used to express semantically transitive situations, exploring the coding and behavioral properties of each argument role

also requires consideration of not only the semantic properties of the expressed situations (which have been discussed in Section 4.2 via examining the relationships between voice constructions and canonical (in)transitive clauses), but the syntactic and discourse behaviors of the participants involved as well. The detailed investigation in Section 4.3, which concerns the interactions between each grammatical role with syntactic constructions on the one hand and interpretation in discourse on the other, has yielded a rather complex picture, as coreness/argumenthood of an argument in the Kanakanavu verbal clause is argued to be a gradient phenomenon, which is captured by Arka's (2017) core index. However, the investigation strongly suggests that when expressed in the agent-voice construction, semantically transitive situations are presented by speakers as involving a patient that is non-prominent on both formal and functional grounds. Formally speaking, there is ample evidence showing that the patient is cast as oblique in agent voice: it is encoded as the patientive adjunct, which shows patterns in case-marking patterns and interactions with syntactic constructions that are identical to those of peripheral adjuncts, which are not at all shared with the prototypical core argument — the PSA. The differential treatment of the patient has also been demonstrated in Section 4.4 to show complex interactions with discourse-pragmatic, semantic-ontological and grammatical factors.

A categorical approach to the difference across the two voice constructions in Kanakanavu, which treats both the PSA and transitive agent as core arguments, but the patientive adjunct as an oblique argument, would suggest that the different argument roles show ergative alignment. The agent-voice construction, which involves the PSA as the only core argument, can be argued to involve S — the sole argument of an intransitive clause. On the other hand, the patient-voice construction can be argued to involves two core arguments: A (the more agent-like argument of the clause) and P (the more patient-like argument of the clause) (Comrie 1978, 1981; Dixon 1979, 1994), the latter being realized as the PSA. The schematic structure of the two voice constructions in (153) above can therefore be revised as:

(179) (Revised) structures of the agent-voice and patient-voice constructions

a. Agent voice/intransitive: $\text{Verb}_{\text{AV/ITR}}$ + S_{PSA} (+ $\text{adjunct}_{\text{peripheral}}$/$\text{adjunct}_{\text{patientive}}$)

b. Patient voice/transitive: $\text{Verb}_{\text{PV/TR}}$ + A + P_{PSA} (+ $\text{adjunct}_{\text{peripheral}}$)

Under this analysis, the Kanakanavu voice system would be clearly asymmetrical in that (i) voice alternation implies transitivity alternation and (ii) the patient is the preferred argument for the transitive PSA. The analysis of voice alternation as transitivity alternation is further supported by two more observations. First, in addition to introducing intransitive situations, the agent-voice construction can be argued to serve **antipassive functions** as well. As discussed in Section 4.4.1, patientive referents are cast as obliques in agent-voice clauses, instead of realized as the PSA of patient-voice clauses, due to their status as non-salient referents being first introduced into the discourse. This aligns with the canonical function of antipassives — demoting the patient argument of a transitive clause to oblique status, and the motivations typically concern the referential features of the patient (Cooreman 1994; Bickel 2010). It has often been pointed out that it is unusual for antipassives and intransitive verbs to be morphologically identical (Foley 2008; V. Chen 2017). This is indeed the case for Kanakanavu, since the agent-voice construction has been analyzed as both the basic intransitive construction and a construction that serves antipassive functions. However, at least functionally speaking, the usage of the agent-voice construction for indefinite/newly-introduced inanimate/nonhuman participants can be considered a direct parallel to the canonical functions of antipassives. This functional parallel between the agent-voice construction and antipassives has been a central support for ergative analyses of many Western Austronesian voice systems, where discourse referentiality commonly plays a significant role (e.g. Mithun 1994; S. Huang 2002; Aldridge 2004; Liao 2004; S. Huang and Tanangkingsing 2011). In addition, although antipassives have been increasingly found in non-ergative languages (Janic 2013), usage of the agent-voice construction as an antipassive in Kanakanavu crucially has implications for argument (re-)coding, which is an identifying feature of antipassives in ergative systems as indicated by Mithun

(2021).

Further support for the ergative analysis of the system also comes from the alternating case-marking phenomenon for the transitive agent, as has been introduced in Section 4.2.2 above. Notably, the oblique-genitive pronominal case alternation does not interact with voice, nor does it have a significant impact on argument status (as discussed in Section 4.3.3), since both the oblique-marked and genitive-marked transitive agent can serve as the obligatory controller in complex-clause constructions. Kanakanavu can therefore be analyzed as a language that exhibits **differential agent marking** (in the pronominal domain) (Fauconnier 2011). Differential agent marking has been shown to be more commonly found in ergative systems (Bossong 1985; Malchukov 2017), where tense-aspect, which plays an important role in conditioning pronominal agent case in Kanakanavu, is also a commonly attested conditioning factor (Arkadiev 2017).[18]

One potential argument against treating voice alternation as transitivity alternation in Kanakanavu can be motivated by the animacy hierarchy serving as one of the conditioning factors for voice selection in discourse, as discussed in Section 4.4.2. The reason is that the animacy hierarchy is found to condition direct-inverse voice alternation, prototypically found in Algonquian languages (Arnold 1996). Direct-inverse voice systems are typically described as involving more than one transitive construction, and the relative position of the agent and patient on the animacy hierarchy conditions whether a transitive clause receives direct-voice or inverse-voice marking. The involvement of the animacy hierarchy in Kanakanavu is typologically rare across Austronesian languages, but the parallel to direct-inverse voice systems may motivate an analysis of the agent-voice construction as transitive when a patientive participant is involved. Under this analysis, therefore, Kanakanavu would exhibit one intransitive construction but two transitive constructions, which does not correlate categorically with verbal voice:

[18]Other conditioning factors that have been discussed in the literature include (i) person combination across the agent and patient, (ii) saliency of the agent and/or patient and (iii) polarity of the clause (Malchukov and de Swart 2008; Arkadiev 2017).

(180) Analysis of Kanakanavu exhibiting two transitive constructions

a. Agent voice/intransitive: Verb_{AV} + S_{PSA} (+ $\text{adjunct}_{\text{peripheral}}$)

b. Agent voice/transitive: Verb_{AV} + A_{PSA} + $\text{P}_{\text{adjunct}}$

c. Patient voice/transitive: Verb_{PV} + A + P_{PSA} (+ $\text{adjunct}_{\text{peripheral}}$)

Notably, the analysis in (180) above would be non-ideal because the animacy hierarchy is found to play a role in a very specific context in Kanakanavu — when both the agent and the patient are animate and highly prominent in discourse. In contrast, the animacy hierarchy is the major semantic-ontological factor that determines grammatical voice marking in direct-inverse voice systems. To base a transitivity analysis of Kanakanavu voice constructions solely on the effect of the animacy hierarchy would therefore overshadow the other motivations for voice alternation, which collectively suggest the intransitive status of the agent-voice construction, whether a patientive participant is involved or not. The animacy hierarchy is, accordingly, better characterized as one of the motivations for semantically transitive situations to be expressed grammatically as intransitive or transitive, whereby patientive participants may be coded differentially as the patient PSA in a patient-voice/transitive clause or a patientive adjunct in an agent-voice/intransitive clause.

Although little attention has been paid to the possible connections between direct-inverse and Austronesian voice systems, recent research has shown that the two types of voice systems may in fact fall on a continuum (Haude and Zúñiga 2016). The connection, however, is generally discussed regarding Austronesian languages that can be demonstrated to exhibit more than one transitive construction (e.g. Tagalog). It would be, therefore, important to further explore the extent to which the animacy hierarchy interacts with transitivity in other Western Austronesian languages in order to identify more interesting typological variation that may link Austronesian and direct-inverse voice systems.

Chapter 5

Conclusion

This dissertation has sought to fill two specific research gaps in the study of Kanakanavu voice. Previous research has seen various proposals regarding the number of voice distinctions made in the language, ranging from 2 to 4. There has also been no consensus reached regarding what are the syntactic implications of voice, with limited attention having been paid to how voice interacts with the coding properties of arguments on the one hand, and their behavioral properties on the other.

This study is in line with Teng and Zeitoun (2016) and Wild (2018) in arguing for a binary voice opposition in Kanakanavu. However, the discussion has also provided an account for the suffix *-ai*, whose properties crosscuts the two research gaps mentioned above. While *-ai* is unusual in the Formosan context in serving as a voice marker in the indicative mood, no previous studies have studied its usage in a systematic way. By combining morphological, syntactic and discourse evidence, this dissertation shows that despite the rarity of functionally similar cognates across Formosan languages, *-ai* plays rather fundamental roles in the grammar of Kanakanavu, on both morphological and syntactic levels. Analyzed as the perfective patient-voice marker, *-ai* is involved in the basic perfective-imperfective distinction that is maintained in all patient-voice verbs. Patient-voice verbs marked by *-ai* also reveal a surprising syntactic feature of Kanakanavu: the transitive/grammatical agent alternates in case when realized as a

pronoun — it occurs in the oblique case in the perfective (with the verb marked by *-ai*), but in the genitive case in non-perfective clauses.

This study has aimed to contribute to the study of not only the Kanakanavu voice system, but how exploring the suffix *-ai* may further understanding of the formal and functional diversity displayed by Formosan languages. In particular, although ergativity has been one of the features identified across Formosan voice systems — along with accusativity and symmetricality — differential agent marking and animacy-hierarchy-conditioned voice selection are among the most rarely discussed phenomena. One puzzle that remains concerns the employment of the oblique pronominal case for encoding a core argument (transitive agent), despite the case being otherwise used for oblique arguments (including the patientive and peripheral adjuncts). This is a phenomenon that has not been widely attested across Austronesian languages, although at least one other Formosan language — Puyuma — has been described to exhibit a potentially similar phenomenon (Teng 2009). What typological and/or historical implications the "deceptive" oblique case has is beyond the scope of the current study, hence left for future research.

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