

Verbal marking, intransitivity, and argument structure

The case of Budai Rukai

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This paper provides an intransitive analysis for an array of predicates which exhibit specific marking patterns in Budai Rukai. Contra previous lexical approaches, it is argued that a verbal prefix found on the predicates instantiates a functional head ν , which constructs an intransitive ν P. Its spell-out form is conditioned by its interaction with other higher functional categories, including tense, causative, passive, and complementizer. With respect to intransitivity, the resulting ν P does not admit an accusative object, and it exhibits unergative, unaccusative, and anticausative properties. Regarding argument structure, these predicates are mostly one-place predicates. The sole argument is the grammatical subject which usually denotes an affected theme or an experiencer.

Keywords: intransitivity, argument structure, functional category, Formosan, Austronesian

1. Introduction

This paper relates verbal marking to intransitivity and argument structure in Budai Rukai, a Formosan (Austronesian) language of Taiwan. A group of predicates in this language show unique marking patterns with respect to a verbal prefix *ka*. By examining its tense marking patterns and a variety of clausal constructions, the paper argues that *ka* instantiates a functional head ν (see Chomsky 1995), which projects a ν P. The morphological realization of ν is conditioned by tense and other functional categories, including causative, passive, and complementizer. The resulting ν P is intransitive, as it admits nominative subjects but not accusative objects. The predicates exhibit characteristics of intransitive verbs, including unergative, unaccusative, and anticausative. The subjects are thematically linked to the predicates in the way that they usually act as a theme or

experiencer. It is proposed that the structure bears on the mapping of the event participants in the argument structure.

1.1 Budai Rukai and some basic patterns

Budai Rukai is a predicate-initial language. Its verbal morphology exhibits agglutinative features and has synthetic characteristics. See Shelley (1978), Kuo (1979), Zeitoun et al. (1999), Chen (1999; 2008), Zeitoun (2000b), Sung (2011; 2015), among others, for more details. This paper takes that tense marking appears as prefixal elements and shows a two-way split between nonfuture and future (cf. Zeitoun et al. 1996; Zeitoun & Huang 1997; and Chen 2008).

The unique marking patterns can be illustrated by *twase* ‘leave; depart; take off’ and *thariri* ‘beautiful; nice; good’. Both appear with *ma* in nonfuture and with *lri* in future, as in (1) and (2). Notably, *ka* obligatorily appears in future sentences. The marking pattern has been found in several Formosan languages, as discussed in Zeitoun & Huang (2000). In this paper, predicates marked by *ka* are collectively termed *ka*-predicates.

- (1) a. *ma-twase ka Takanaw*.
 NFUT-leave NOM Takanaw
 ‘Takanaw left.’
 b. *ma-thariri ka kuni*.
 NFUT-beautiful NOM skirt
 ‘The skirt is beautiful.’
- (2) a. *lri-*(ka)-twase ka Takanaw*.
 FUT-KA-leave NOM Takanaw
 ‘Takanaw will leave.’
 b. *lri-*(ka)-thariri ka kuni*.
 FUT-KA-beautiful NOM skirt
 ‘The skirt will turn out to be beautiful.’

Ka does not appear on all predicates in Budai Rukai. For instance, *thingale* ‘know’ and *kane* ‘eat’ are not marked by *ka*, as in (3) and (4).

- (3) a. *wa-thingale senay ka kaingu=ini*.
 NFUT-know sing NOM grandmother=3SG.GEN
 ‘His/her grandmother knows how to sing.’
 b. *lri-thingale senay ka alisu*.
 FUT-know sing NOM girl/woman
 ‘The girl will know how to sing.’

- (4) a. *wa-kane=aku kuasane.*
 NFUT-eat=1SG.NOM a moment ago
 'I ate a moment ago.'
- b. *lri-kane=aku luasane.*
 FUT-eat=1SG.NOM a moment later
 'I will eat later.'

The marking of *ka* has been attributed to stativity and/or inchoativity, for Taromak Rukai in Li (1973) and Mantauran Rukai in Zeitoun (2000b), which is summarized in Table 1. Although both approaches adopt a lexical approach in maintaining a tight relationship between morphological form and verb meaning, *ka* is treated differently. According to Li (1973), *ka* shifts the aspectual meaning of a verb from stative to inchoative; in Zeitoun (2000b), *ka* serves as a morphological label, which identifies the stative property of a verb by marking that property on the verb morphologically. Using data from Budai Rukai, this paper argues that *ka* is not associated with stativity or inchoativity, but identifies intransitivity in this language.

Table 1. A comparison of Li (1973) and Zeitoun (2000b)

	Dialect	Verb root	Function of <i>ma</i>	Function of <i>ka</i>
Li (1973)	Taromak	stative, or	1. to mark	to derive an inchoative
	Rukai	nonstative	stative 2. to derive a stative	
Zeitoun (2000b)	Mantauran Rukai	stative	to mark stative (finite)	to mark stative (nonfinite or irrealis)

The remainder of this paper is organized as follows: §2 discusses predicate type and related characteristics; §3 gives a description of basic marking patterns; §4 provides a description of marking patterns and clausal structures; §5 presents a syntactic and semantic account; and §6 provides a conclusion and a brief discussion of future research.

2. Predicate type and related characteristics

Budai Rukai patterns with Taromak Rukai and Mantauran Rukai in that *ka* is frequently found on stative predicates, as exemplified by (5).

- (5) a. *sakwa ka-adraw kay angatu kay.*
 originally KA-big this tree here
 'This tree right here has been a big tree since the beginning.'
- b. *taw ka-thariri kay bariangalay.*
 first.time KA-pretty DEM lily
 'This lily looks pretty for the first time.'
- c. *ki-a-ka-dalame=su iniane.*
 PASS-NFUT-KA-love=2SG.NOM 3SG.OBL
 'You are loved by him.'

Some stative predicates, however, are never marked by *ka*, such as *kiragay* 'happy' and *thingale* 'know', as illustrated by (6a–b).¹

- (6) a. *kay ta-malr-ane=su kay icibang. na-i-kay ku*
 DEM NFUT-grab-NOMZ=2SG.GEN DEM first place CNTF-be-DEM ART
*tama=su, na-lri-(*ka)-kiragay.*
 father=2SG.GEN CNTF-FUT-KA-happy
 'You took the first place. If your father was alive, he would be happy.'
- b. *lri-(*ka)-thingale=aku lu lri-mua=su inu.*
 FUT-KA-know=1SG.NOM COMP FUT-go=2SG.NOM where
 'I will know where you will go.'

Also, *ka* is not restricted to stative predicates in Budai Rukai. It also appears on dynamic predicates, such as *cwake* 'break' and *twase* 'leave' in (7a–b), which involve an outcome or a change of state.

- (7) a. *mu-a-cili la ka-cwake ka kisi.*
 go-NFUT-fall then KA-break NOM bowl
 'The bowl fell and then broke.'
- b. *kay Kecelre, ma-twase sa ka geci. wa-eda~edale.*
 DEM Kecelre NFUT-leave COMP ART nine o'clock NFUT-RED~rain
mu-a-tavanane si malra ku lrenai, la ka-twase.
 go-NFUT-home and take ACC umbrella then KA-leave
 'Kecelre left home at nine o'clock. It was raining. So (he) returned home and took an umbrella, and then left.'

Table 2 lists a variety of predicates along with their marking patterns in nonfuture and future, which are sorted based on the classification for English verbs in Levin (1993).²

1. Note that *kiragay* 'happy' contains a prefix, *ki-*, whose function requires further research. I thank a reviewer and editor for pointing this out.

2. This paper follows Li (1973) and assumes that all *ka*-predicates are verbal. See Council of Indigenous Peoples (CIP) 2016 (Online aboriginal language dictionary) and Indigenous

The table shows that *ka*-marked predicates are not semantically uniform, as they range over stative and dynamic predicates. Also, even within the same predicate type, not all members are marked by *ka* (e.g. Type C through I). The semantic properties of these predicate types are roughly summarized in (8), based on the theory of situation type advanced in Smith (1997).³

- (8) a. Type A predicates (e.g. *cwake* 'break') are associated with a change of state or a result due to an external force in a process.
- b. Type B (e.g. *drekare* 'dry (up)') predicates describe a change of state which involves a process.
- c. Type C predicates (e.g. *busuku* 'drunk') express a situation in which a participant is influenced in a certain way and has no control over the action.
- d. Type D (e.g. *raleale* 'shout') predicates involve sound emission, manner of speaking, and nonverbal expressions, which all involve an activity.
- e. Type E (e.g. *twase* 'leave') predicates denote directed motions, which are inherently dynamic.
- f. Type F predicates encompass state-denoting (e.g. *salru* 'believe') and achievement-denoting (e.g. *kidringay* 'find') verbs.
- g. Type G predicates are stative, but can convey a situation in which the participant can initiate or take part in with some control (e.g. *lri-ka-lisi* 'will get mad').
- h. Type H predicates, like Type G, are stative but can convey a situation in which the participant can initiate or take part in with some control (e.g. *lri-ka-lrase* 'will hate (it)').
- i. Type I predicates (e.g. *ngacelre* 'stink') are atelic. The predicates can be considered static when they do not involve a process.
- j. Type J encompasses stative predicates which are realized as adjectives in languages such as English. They usually describe static properties, either transient or permanent (e.g. *elrenge* 'tall').

The data discussed so far indicates that both stative and dynamic predicates can be marked by *ka* in Budai Rukai, and that *ka* does not always correspond to a stative meaning, and vice versa. Also, when a state is involved, it could denote a static property or a state resulting from a change.

Languages Research and Development Center (ILRDC) 2019 (Indigenous language learning vocabulary list) for more information about Budai Rukai verbs. For verb classification in other Formosan languages, such as Mayrinax Atayal, see Huang (2000).

3. In this paper, the notion of state or stativity is taken to be associated with two temporal features, [+static] and [+durative] (Smith 1997). It is also assumed that situation type or eventuality depends on the composition of a sentence, including a predicate and its associated arguments, and not just isolated predicates.

Table 2. Types of predicates in Budai Rukai

	Root	Meaning	Nonfuture form	Future form
A. Break-type verbs				
1.	<i>cwake</i>	‘break (into pieces)’	<i>ma-cwake</i>	<i>lri-ka-cwake</i>
2.	<i>ngacace</i>	‘crack’	<i>ma-ngacace</i>	<i>lri-ka-ngacace</i>
3.	<i>titi</i>	‘shatter’	<i>ma-titi</i>	<i>lri-ka-titi</i>
B. Verbs of change of state				
1.	<i>lacungu</i>	‘brown; char’	<i>ma-lacungu</i>	<i>lri-ka-lacungu</i>
2.	<i>lreeme</i>	‘ripen’	<i>ma-lreeme</i>	<i>lri-ka-lreeme</i>
3.	<i>drekare</i>	‘dry (up)’	<i>ma-drekare</i>	<i>lri-ka-drekare</i>
4.	<i>depe</i>	‘wet’	<i>ma-depe</i>	<i>lri-ka-depe</i>
5.	<i>lrayci</i>	‘wilt; wither’	<i>ma-lrayci</i>	<i>lri-ka-lrayci</i>
C. Psych-verbs (amuse-type & admire-type)				
1.	<i>busuku</i>	‘drunk’	<i>ma-busuku</i>	<i>lri-ka-busuku</i>
2.	<i>samali</i>	‘surprised; shocked’	<i>ma-samali</i>	<i>lri-ka-samali</i>
3.	<i>ukuludru</i>	‘fearful; dangerous’	\emptyset - <i>ukuludru</i>	<i>lri-ukuludru</i>
D. Verbs of sound emission; manner of speaking; nonverbal expression				
1.	<i>raleale</i>	‘loud; shout’	<i>ma-raleale</i>	<i>lri-ka-raleale</i>
2.	<i>rariau</i>	‘call; make a sound’	<i>ma-rariau</i>	<i>lri-ka-rariau</i>
3.	<i>senay</i>	‘sing’	<i>wa-senay</i>	<i>lri-senay</i>
4.	<i>ulrakay</i>	‘laugh’	<i>wa-ulrakay</i>	<i>lri-ulrakay</i>
5.	<i>tubi</i>	‘cry’	<i>wa-tubi</i>	<i>lri-tubi</i>
E. Inherently directed motions				
1.	<i>twase</i>	‘leave; depart’	<i>ma-twase</i>	<i>lri-ka-twase</i>
2.	<i>kela</i>	‘come; arrive’	<i>wa-kela</i>	<i>lri-kela</i>
3.	<i>dadavace</i>	‘go; walk’	<i>wa-dadavace</i>	<i>lri-dadavace</i>
F. Declare verbs				
1.	<i>salru</i>	‘believe’	<i>ma-salru</i>	<i>lri-ka-salru</i>
2.	<i>kidringay</i>	‘find’	<i>ki-a-dringay</i>	<i>lri-kidringay</i>
3.	<i>thingale</i>	‘know’	<i>wa-thingale</i>	<i>lri-thingale</i>

Table 2. (continued)

	Root	Meaning	Nonfuture form	Future form
G. Psych-verbs (amuse-type)				
1.	<i>sulri</i>	‘disappointed’	<i>ma-sulri</i>	<i>lri-ka-sulri</i>
2.	<i>lisi</i>	‘bad; angry/mad (at)’	<i>ma-lisi</i>	<i>lri-ka-lisi</i>
3.	<i>kiragai</i>	‘happy; cheered’	<i>ki-a-ragai</i>	<i>lri-kiragai</i>
H. Psych-verbs (admire-type)				
1.	<i>dalame</i>	‘like; content (with)’	<i>ma-dalame</i>	<i>lri-ka-dalame</i>
2.	<i>lrase</i>	‘dislike’	<i>ma-lrase</i>	<i>lri-ka-lrase</i>
3.	<i>kiadili</i>	‘patient; enduring’	<i>Ø-kiadili</i>	<i>lri-kiadili</i>
I. Verbs of smell emission				
1.	<i>baalre</i>	‘stink; smell’	<i>ma-baalre</i>	<i>lri-ka-baalre</i>
2.	<i>ngacelre</i>	‘stink; smell’	<i>ma-ngacelre</i>	<i>lri-ka-ngacelre</i>
3.	<i>sangu-lisi</i>	‘smell-bad; reek’	<i>sangu-a-lisi</i>	<i>lri-sangu-lisi</i>
4.	<i>sangu-lreme</i>	‘sweet smelling; fragrant’	<i>sangu-a-lreme</i>	<i>lri-sangu-lreme</i>
J. Adjectival predicates				
1.	<i>adraw</i>	‘big’	<i>ma-adraw</i>	<i>lri-ka-adraw</i>
2.	<i>elrenge</i>	‘tall’	<i>ma-elrenge</i>	<i>lri-ka-elrenge</i>
3.	<i>thariri</i>	‘good; beautiful’	<i>ma-thariri</i>	<i>lri-ka-thariri</i>
4.	<i>edrekane</i>	‘short’	<i>Ø-edrekane</i>	<i>lri-ka-edrekane</i>

In order to reach the conclusion in § 5 that a structural analysis captures the properties of verbal marking in terms of intransitivity and argument structure, the next section gives an overview of tense marking patterns and shows that the marking of *ka* is sensitive to other syntactic categories. Specifically, *ka* appears in a position lower than tense, negation, and modal.

3. Basic marking patterns

3.1 The paradigm and tense marking patterns

As shown in the paradigm in Table 3, Budai Rukai exhibits a two-way tense split between nonfuture and future (cf. Zeitoun & Huang 1997; Chen 2008), and has

at least six marking patterns. Predicates can be put into two groups according to whether they show *ka*-marking in the future form.⁴

Table 3. Budai Rukai tense marking patterns

Predicate	Meaning	Nonfuture form			Future form	
Group I						
a.	<i>thariri</i>	‘beautiful’	<i>ma-</i>	<i>thariri</i>	<i>lri-</i>	<i>ka-</i> <i>thariri</i>
b.	<i>mani</i>	‘be’	<i>a-</i>	<i>mani</i>	<i>lri-</i>	<i>ka-</i> <i>mani</i>
c.	<i>tikiane</i>	‘small’	\emptyset -	<i>tikiane</i>	<i>lri-</i>	<i>ka-</i> <i>tikiane</i>
Group II						
a.	<i>apece</i>	‘sleep’	<i>wa-</i>	<i>apece</i>	<i>lri-</i>	<i>apece</i>
b.	<i>sangu-lreme</i>	‘fragrant’	<i>sangu-</i>	<i>a-</i> <i>lreme</i> ^a	<i>lri-</i>	<i>sangulreme</i>
c.	<i>a-lebe</i> ^b	‘low’	<i>a-</i>	\emptyset - <i>lebe</i>	<i>lri-</i>	<i>alebe</i>

a. *Sangu-lreme* (lit. ‘smell sweet’) is composed of two morphemes, *lreme* ‘ripe (of a fruit)’, and *sangu*, which concerns the sense of smell. The marking pattern shows that nonfuture tense morphophonologically appears in the second position in a multimorphemic verbal complex.
b. *Alebe* is a verb formed by the verbalizer *a-* and the root *lebe* ‘low level; bottom’.

Nonfuture shows more variety and can be realized as a prefix or infix (Group I: *ma*, *a*, \emptyset ; Group II: *wa*, *a*, \emptyset), whereas future is more uniformly marked (either by *lri* or its variant *i*), as illustrated by (9) through (14).

- (9) Group I-a:

a. *ma-thariri ka alisu.*
NFUT-beautiful NOM girl
‘The girl is beautiful.’

b. *lri-ka-thariri ka alisu.*
FUT-KA-beautiful NOM girl
‘The girl will be beautiful.’

- (10) Group I-b:

a. *a-mani ka lasu.*
NFUT-INDF NOM guy
‘It is this guy.’

4. Much of the descriptive facts of verbal marking patterns in § 3 have been explicated in previous works. See Zeitoun et al. (1996) and Zeitoun & Huang (1997; 2000) for a typological approach, which relates the marking of *ka* to finiteness and mood. For Budai Rukai, see Chen (1999; 2008; 2011), Zeitoun (2000a), and Sung (2011; 2015), among others. See Li (1973) for Tanan Rukai, and Zeitoun (2007; 2015) for Mantauran Rukai.

- b. *lri-ka-mani ka lasu.*
 FUT-KA-INDF NOM guy
 'It will be this guy.'

(11) Group I-c:

- a. *Ø-tikiane ka lribange.*
 NFUT-small NOM window
 'The window is small.'
- b. *lri-ka-tikiane ka lribange.*
 FUT-KA-small NOM window
 'The window will be small.'

(12) Group II-a:

- a. *wa-apece ka Takanaw.*
 NFUT-sleep NOM Takanaw
 'Takanaw slept/is asleep.'
- b. *lri-apece ka Takanaw.*
 FUT-sleep NOM Takanaw
 'Takanaw will sleep.'

(13) Group II-b:

- a. *sangu-a-lreme ka bariangalay.*
 smell-NFUT-fragrant NOM lily
 'Lilies are fragrant.'
- b. *lri-sangu-lreme kay bariangalay.*
 FUT-smell-fragrant DEM lily
 'This lily will be fragrant.'

(14) Group II-c:

- a. *a-Ø-lebe ka lribange.*
 VBZ-NFUT-low NOM window
 'The window is positioned low.'
- b. *lri-a-lebe ku takapiane.*
 FUT-VBZ-low NOM value
 'The value will lower.'

A temporal expression fixes the time frame of the eventuality conveyed by a sentence, and tense is marked according to the established time frame based on the two-way split. For instance, the nonfuture *ma-* is compatible with *kuiya* 'yesterday' but not *luiya* 'tomorrow,' whereas the opposite is true for the future tense. Contrast (15) and (16).

- (15) a. *ma-icelrenge ka lrenege.*
 NFUT-black NOM stone
 'The stone was/is black.'
- b. *ma-icelrenge ka lrenege kuiya.*
 NFUT-black NOM stone yesterday
 'The stone was black yesterday.'
- c. **ma-icelrenge ka lrenege luiya.*
 NFUT-black NOM stone tomorrow
 (Lit. *'The stone was/is black tomorrow.')
- (16) a. *lri-ka-icelrenge ka isiw=li.*
 FUT-KA-black NOM hair=1SG.GEN
 'My hair will be/turn black.'
- b. **lri-ka-icelrenge ka isiw=li kuiya.*
 FUT-KA-black NOM hair=1SG.GEN yesterday
 (Lit. *'My hair will be/turn black yesterday.')
- c. *lri-ka-icelrenge ka isiw=li luiya.*
 FUT-KA-black NOM hair=1SG.GEN tomorrow
 'My hair will be/turn black tomorrow.'

3.2 Negation

In negative sentences, negation appears in the sentence-initial position, preceding all tense-marked predicates, as shown in (17) and (18).

- (17) a. *kai ma-twase ka Takanaw.*
 NEG NFUT-leave NOM Takanaw
 'Takanaw didn't leave.'
- b. *kai ma-thariri ka kuni.*
 NEG NFUT-beautiful NOM skirt
 'The skirt is not beautiful.'
- (18) a. *kai lri-ka-twase ka Takanaw.*
 NEG FUT-KA-leave NOM Takanaw
 'Takanaw will not leave.'
- b. *kai lri-ka-thariri ka kuni.*
 NEG FUT-KA-beautiful NOM skirt
 'The skirt will not turn out to be beautiful.'

As a related note, although negation usually precedes tense in Budai Rukai, future tense can float past negation, as shown in (19a–b).⁵ *Ka*, however, must stay adjacent to the predicate root, as exemplified by (20a–b).

- (19) a. *lri kai ka-twase ka Takanaw.*
 FUT NEG KA-leave NOM Takanaw
 ‘Takanaw will not leave.’
 b. *lri kai ka-thariri ka kuni.*
 FUT NEG KA-beautiful NOM skirt
 ‘The skirt will not turn out to be beautiful.’
- (20) a. **lri-ka kai twase ka Takanaw.*
 FUT-KA NEG leave NOM Takanaw
 b. **lri-ka kai thariri ka kuni.*
 FUT-KA NEG beautiful NOM skirt

Pronominal subjects are enclitics in Budai Rukai. When they appear in a sentence, they can be attached to the predicate, as in (21a), or to negation, as in (21b), but never to *ka*, as in (21c).

- (21) a. *lri kai ka-twase=aku.*
 FUT NEG KA-leave=1SG.NOM
 b. *lri kai=naku ka-twase.*⁶
 FUT NEG=1SG.NOM KA-leave
 c. **lri kai ka=aku-twase.*
 FUT NEG KA=1SG.NOM-leave
 ‘I will not leave.’

The examples show that negation is positioned higher than the main predicate in the sentence. Whereas the future tense can precede negation, *ka* must stay lower than negation and be adjacent to the predicate root. Also, *ka* cannot host a pronominal enclitic.

5. The minimal pairs in (18) and (19) do not have a distinct semantic difference when uttered as isolated sentences. However, when interpreted contextually, the ordering difference seems to correlate with a difference in terms of scope between negation and future tense, such that a preceding element has scope over the one that follows. Roughly speaking, (18a) negates the statement of Takanaw’s leaving as a future event, whereas (19a) describes the statement of Takanaw’s not leaving as a future event. More data is needed to illustrate the difference. See Chen (2011) for a related discussion.

6. The first-person pronoun shows phonological variation depending on the syllable-final sound of the host. In (21b), it is realized as *-naku* due to the high front vowel [i]. See Zeitoun (2000a).

3.3 Modality

Modality can be conveyed by a prefixal element that forms a verbal complex with the predicate and tense. For instance, *maka* is used to express a speaker's belief about the conveyed proposition with respect to the possibility or probability of its actual occurrence. In terms of linear order, a modal precedes nonfuture tense, but follows future tense, as in (22a–b).⁷

- (22) a. *maka-ma-twase ka Takanaw.*
 MOD-NFUT-leave NOM Takanaw
 'Takanaw can leave.'
 b. *lri-maka-ka-twase ka Takanaw.*
 FUT-MOD-KA-leave NOM Takanaw
 'Takanaw will be able to leave.'

A modal cannot intervene between the root, and nonfuture or *ka*, as in (23).

- (23) a. **ma-maka-twase ka Takanaw.*
 NFUT-MOD-leave NOM Takanaw
 b. **lri-ka-maka-twase ka Takanaw.*
 FUT-KA-MOD-leave NOM Takanaw

When a modal construction is negated, negation appears sentence-initially and precedes the tensed verbal complex, as in (24a–b).

- (24) a. *kai maka-ma-salru ka lasu.*
 NEG MOD-NFUT-believe NOM guy
 'He couldn't believe (it).'
 b. *kai lri-maka-ka-salru ka lasu.*
 NEG FUT-MOD-KA-believe NOM guy
 'He won't be able to believe (it).'

4. Marking patterns and clause structure

This section provides a description of some clausal structures, which are causatives, complementizer phrases, coordination, the passive, imperatives, and resultatives. The marking patterns observed in these constructions indicate that

7. The combination of *maka* and nonfuture in (22a) signifies epistemic modality and conveys a proposition that, given the speaker's knowledge about the situation, Takanaw can leave because a sufficient condition has been met. The sentence does not mean that Takanaw already left. In future, as in (22b), the sentence expresses that it is likely that Takanaw will leave at a future time. I thank one reviewer for the suggestion on epistemic modality.

ka appears in a position lower than all the involved functional categories, in addition to tense, negation, and modal as discussed in §3.⁸

4.1 Causative

Causatives are formed with a causative prefix. It dictates the marking of *ka* in both nonfuture and future. Contrast (25a–b) and (26a–b).

- (25) a. *pa-ka-twase ki iniane ka tina=ini.*
 CAUS(NFUT)-KA-leave OBL 3SG.OBL NOM mother=3SG.GEN
 ‘His mother made him leave.’
 b. *lri-pa-ka-twase ki iniane ka tina=ini.*
 FUT-CAUS-KA-leave OBL 3SG.OBL NOM mother=3SG.GEN
 ‘His mother will make him leave.’
- (26) a. **pa-twase ki iniane ka tina=ini.*
 CAUS(NFUT)-leave OBL 3SG.OBL NOM mother=3SG.GEN
 b. **lri-pa-twase ki iniane ka tina=ini.*
 FUT-CAUS-leave OBL 3SG.OBL NOM mother=3SG.GEN

Ka cannot be separated from the predicate by the causative, as in (27a), and it does not alternate with *ma* in nonfuture, as in (27b).

- (27) a. **ka-pa-twase ki iniane ka tina=ini.*
 KA-CAUS-leave OBL 3SG.OBL NOM mother=3SG.GEN
 b. **pa-ma-twase ki iniane ka tina=ini.*
 CAUS-NFUT-leave OBL 3SG.OBL NOM mother=3SG.GEN

4.2 Complementizer phrases

Complementizer phrases (CPs) in Budai Rukai are formed with clause-initial complementizers. They function as subordinating conjunctions or independent clauses. This section discusses four types of CPs. Just like the causatives, CPs dictate the marking of *ka* in both nonfuture and future, regardless of whether a conveyed eventuality is realized or not. In all types of CPs, only future tense is marked.

8. Descriptions of various Rukai clausal structures have been explicated in the literature. For instance, see Li (1973) for Tanan Rukai; Kuo (1979), Chen (1999; 2008), Zeitoun (2000a) and Sung (2011; 2015) for Budai Rukai; and Zeitoun (2007) for Mantauran Rukai. See also Li et al. (1997) for a cross-dialectal overview.

4.2.1 *La* ‘and (then); therefore; so (that)’

The complementizer *la* is a general connective which combines two conjuncts. Example (28) shows that *ka* is obligatory and nonfuture is not marked.

- (28) *kai=naku wa-thingale lu ka aneane, [CP la *(ka)-mani=su].*⁹
 NEG=1SG.NOM NFUT-know COMP ART who COMP KA-INDF=2SG.NOM
 ‘I didn’t know who (it was), and so that it was you.’

On the one hand, the two conjuncts connected by *la* may convey a causal relation. Examples (29a) and (29b) illustrate the case in which the CP conveys an outcome or result regarding the matrix clause. Example (29c) shows that nonfuture tense cannot be marked in a CP.

- (29) a. *kai wa-aga ka alisu [la ka-silraw].*
 NEG NFUT-cook NOM girl COMP KA-hungry
 ‘She didn’t cook, and so she was/got hungry.’
 b. *kai wa-aga ka alisu [la lri-ka-silraw].*
 NEG NFUT-cook NOM girl COMP FUT-KA-hungry
 ‘She didn’t cook, and so she will get hungry.’
 c. **kai wa-aga ka alisu [la ma-silraw].*
 NEG NFUT-cook NOM girl COMP NFUT-hungry
 (Intended) ‘She didn’t cook, and so she was/got hungry.’

On the other hand, the two conjuncts can be temporally related. The CP in (30a) contains an untensed predicate, which has a nonfuture meaning such that the mother left right after she sang. By contrast, the future tense in (30b) functions as a relative tense, such that the mother may leave at any time after she sang (See Chen (2008; 2011) for more detail).

- (30) a. *wa-senay [la Ø ka-twase] ka tiatina.*
 NFUT-sing COMP KA-leave NOM mother
 ‘The mother sang and left.’

9. The predicate *mani* is an indefinite root, which is of Group I-b: (NFUT) *a-mani*, (FUT) *lri-ka-mani* (see Table 3 in §3.1). The tense marking patterns are illustrated by Examples (i) and (ii), which function as clefts.

- (i) *a-mani=aku ka wa-kane-nga ku abay.*
 NFUT-INDF=1SG.NOM DET NFUT-eat-PFV ACC millet cake
 ‘It was/is I who ate the millet cake.’
 (ii) *lri-ka-mani=aku ka lri-kane ku abay.*
 FUT-INDF=1SG.NOM DET FUT-eat ACC millet cake
 ‘It will be I who will eat the millet cake.’

- b. *wa-senay [la lri-ka-twase] ka tiatina.*
 NFUT-sing COMP FUT-KA-leave NOM mother
 ‘The mother sang and would then leave.’

4.2.2 *Lu* ‘as; if; when’

Lu forms CPs which convey probable or sufficient conditions, which can be based on past experiences or traditional wisdom, as in (31a), or a habitual/factual situation with several instances of similar events, as in (31b). *Ka* is required in all nonfuture situations.

- (31) a. [*lu ka-salray madu*], *kwalria~lri madu.*
 COMP KA-lazy one RED~fatigue one
 ‘If one gets lazy, one feels fatigued (due to the difficulties).’
 b. [*lu ka-lisi ka lrikil(i)=ini*], *pu-a-driadringay ka lasu.*
 COMP KA-bad NOM bicycle=3SG.GEN CAUS-NFUT-fix NOM guy
 ‘When his bicycle breaks, the guy fixes it.’ (Context: The guy fixes his own bike.)

The contrast of (32a) and (32b) indicates a consistent marking pattern in a CP, that nonfuture cannot be marked on the predicate.

- (32) a. [*lu ka-twase=su*], *malra kikay.*
 COMP KA-leave=2SG.NOM take DEM
 ‘When/if you leave, take this.’
 b. **lu ma-twase=su malra kikay.*
 COMP NFUT-leave-2SG.NOM take DEM

4.2.3 *Sa* ‘when’

The main function of *sa* is to introduce a clause that provides a temporal reference, as exemplified by (33).

- (33) *wa-thingale=su pacase [sa ka vavalake=su].*
 NFUT-know=2SG.NOM write COMP ART child=2SG.NOM
 ‘You knew how to write when you were a child.’

Sa can also introduce factual, or realized situations. This latter use separates *sa* from *lu*, given that both can express a condition, as in (34a–b). The examples also show that *ka* is obligatory.

- (34) a. [*sa ka-twase*], *paela nakuane.*
 COMP KA-leave tell 1SG.OBL
 ‘When you leave, let me know.’

- b. [sa ka-twase ka tina=ini], wa-tubi ka vavalake.
 COMP KA-leave NOM mother=3SG.GEN NFUT-cry NOM child
 ‘When his/her mother left, the child cried.’

Examples (35a–b) show the consistent pattern that nonfuture is not marked in CPs.

- (35) a. *[sa ma-twase], pelaela nakuane.
 COMP NFUT-leave tell 1SG.OBL
 b. *[sa ma-twase ka tina=ini], wa-tubi ka vavalake.
 COMP NFUT-leave NOM mother=3SG.GEN NFUT-cry NOM child

4.2.4 Sana ‘whenever; if’

Sana is a conditional subordinator. Its meaning varies depending on the predicate in the phrase. Like other complementizers, *sana* requires the marking of *ka*, as shown in (36a–b).

- (36) a. [sana ka-salray], kwalria~lri ka lasu.
 COMP KA-lazy RED~fatigue NOM guy
 ‘Whenever the guy gets lazy, he feels fatigued.’
 b. [sana ka-lisi ka lrikil(i)=ini], pu-a-driadringay ka lasu.
 COMP KA-bad NOM bicycle=3SG.GEN CAUS-NFUT-fix NOM guy
 ‘When his bicycle breaks, the guy fixes it.’

4.3 Other constructions

4.3.1 Coordination

Coordinate constructions are formed by *si*. The conjunct that immediately follows *si* shows two restrictions as have been seen in CPs: *Ka* is obligatory, and nonfuture is not marked. An untensed conjunct receives a default temporal meaning depending on the tensed conjunct. Consider (37) and (38).¹⁰

- (37) a. wa-kane-nga si ka-twase ka ngiau.
 NFUT-eat-PFV CONJ KA-leave NOM cat
 ‘The cat ate and left.’
 b. wa-vai turamuru si ka-cwake ka lrenege.
 NFUT-sun very CONJ KA-break NOM stone
 ‘It was so sunny that the stone broke.’

10. A reviewer points out that the interpretation of the second conjuncts of (37a–b) supports the idea that *ka* is not involved in temporal interpretation.

- (38) a. **wa-kane-nga si ma-twase ka ngiau.* (cf. (37a))
 NFUT-eat-PFV CONJ NFUT-leave NOM cat
 (Intended) ‘The cat ate and left.’
 b. *wa-kane-nga si lri-ka-twase ka ngiau.*
 NFUT-eat-PFV CONJ FUT-KA-leave NOM cat
 ‘The cat just ate and will leave.’
 c. *lri-kane si ka-twase ka ngiau.*
 FUT-eat CONJ KA-leave NOM cat
 ‘The cat will eat and leave.’
 d. *lri-kane si lri-ka-twase ka ngiau.*
 FUT-eat CONJ FUT-KA-leave NOM cat
 ‘The cat will eat and will leave.’

4.3.2 Passive

The passive voice is signified by the prefixal morpheme *ki* in Budai Rukai (See Zeitoun 2000a; cf. Zeitoun & Teng 2009). The active/passive alternation is illustrated by (39a–b), where the recipient of the catching action, *la-kange*, is an accusative object in the active, but a nominative subject in the passive.

- (39) a. *Ø-pwalra ku la-kange ka lasu.*
 NFUT-catch ACC PL-fish NOM guy
 ‘The guy caught several fish.’
 b. *ki-a-pwalra ki lasu ka la-kange.*
 PASS-NFUT-catch OBL guy NOM PL-fish
 ‘These fish are caught by him.’

While most *ka*-predicates are one-place predicates, some are two-place predicates and can be passivized. Consider (40) and (41). The passive shows the general pattern that *ka* is obligatory. However, it differs from CPs and coordination in one important respect; the passive allows both nonfuture and future to be marked, as in (41a–b).¹¹

11. Note that nonfuture tense follows the passive, but future precedes it. A reviewer asks whether future *lri* is a preverbal auxiliary. The evidence that *lri* is a prefix and not an auxiliary can be drawn from the marking patterns of pronominal enclitics. For instance, the second person *su* must be attached to the whole verbal complex, and not to future; cf. (i) and (ii). This shows that future cannot host an enclitic. Negation, however, can host *su* in both nonfuture and future, as shown in (iii.a) and (iii.b). When future precedes negation, *su* is attached to negation, as in (iv). The patterns suggest that future may be prefixal even when preceding negation.

(i) *lri-ki-ka-dalame=su ki umawmase.*
 FUT-PASS-KA-like=2SG.NOM OBL people
 ‘You will be loved by people.’

- (40) a. *ma-dalame=su ki ngituumane ku la-laymay?*
 NFUT-like=2SG.NOM OBL what kind ART PL-clothing
 'What kind of clothes do you like?'
 b. *lri-ka-dalame=su ki ngituumane ku la-laymay?*
 FUT-KA-like=2SG.NOM OBL what kind ART PL-clothing
 'What kind of clothes will you like?'
- (41) a. *ki-a-ka-dalame ki umawmase ka Balenge.*
 PASS-NFUT-KA-like OBL people NOM Balenge
 'Balenge is loved by people.'
 b. *lri-ki-ka-dalame ki umawmase ka Balenge.*
 FUT-PASS-KA-like OBL people NOM Balenge
 'Balenge will be loved by people.'

The usual nonfuture form *ma* never emerges in the passive, as in (42).

- (42) a. **ki-ma-dalame ki umawmase ka Balenge.*
 PASS-NFUT-like OBL people NOM Balenge
 b. **ma-ki-dalame ki umawmase ka Balenge.*
 NFUT-PASS-like OBL people NOM Balenge

Also, the passive cannot intervene between *ka* and the root, as in (43).

-
- (ii) **lri=su ki-ka-dalame ki umawmase.*
 FUT=2SG.NOM PASS-KA-like OBL people
- (iii) a. *kai=su ki-a-ka-dalame ki umawmase.*
 NEG=2SG.NOM PASS-NFUT-KA-like OBL people
 'You are not loved by people.'
 b. *kai=su lri-ki-ka-dalame ki umawmase.*
 NEG=2SG.NOM FUT-PASS-KA-like OBL people
 'You will not be loved by people.'
- (iv) *lri kai=su ki-ka-dalame ki umawmase.*
 FUT NEG=2SG.NOM PASS-KA-like OBL people
 'You will not be loved by people.'

This raises the question as to why future and nonfuture are realized in different positions in relative to passive and negation. Either *-a-* (as in (39b)) is not a realization of nonfuture tense, or there are two levels of T (one for NFUT and one for FUT) and only one gets merged in T°. The current approach assumes that there can be only one T in a structure, and T can be realized in various ways, as a prefix or within a verbal complex. The position preceding negation is assumed to be one for higher functional categories. It is possible that FUT in Example (iv) starts low in T and raises to its current position, which can be modal or mood.

- (43) a. **a-ka-ki-dalame ki umawmase ka Balenge.*
 NFUT-KA-PASS-like OBL people NOM Balenge
 b. **lri-ka-ki-dalame ki umawmase ka Balenge.*
 FUT-KA-PASS-like OBL people NOM Balenge

4.3.3 Imperative

An affirmative imperative is expressed by adding the suffix *-a* to a non-tensed verbal complex, (44). A negative imperative can be formed with the auxiliary *madha*, as in (45a–b). The *ka*-marker is marked in both affirmative and negative imperatives. Imperatives are formed by mood, and since there is no tense, the sentences do not involve temporal interpretation.

- (44) *ka-twas(e)-a.*
 KA-leave-IMP
 ‘Leave.’
- (45) a. *madha ka-twase.*
 NEG.IMP KA-leave
 ‘Don’t leave.’
 b. *madha ka-rimuru.*
 NEG.IMP KA-forget
 ‘Don’t forget.’

4.3.4 Resultative

Resultatives are composed of two predicates. The main predicate can be expressed by an action verb, such as *malra* ‘take; catch; get; hold; grab’. When used independently, it conveys a meaning of laying hold of something, especially with one’s hands, as in (46).

- (46) *wa-malra ku kange ka Takanaw.*
 NFUT-take ACC fish NOM Takanaw
 ‘Takanaw took/caught a fish.’

When used as the main predicate in a resultative, *malra* functions as a light verb with a less transparent meaning. The second predicate is interpreted as a result state, and is not marked for tense. Consider (47a–b).

- (47) a. *wa-malra ka-lrungu ku tikange ka Takanaw.*
 NFUT-take KA-bend ACC pipe NOM Takanaw
 ‘Takanaw bent the pipe.’
 ≠ ‘Takanaw took the pipe and bent it.’

b. **wa-malra ma-lrungu ku tikange ka Takanaw.*
NFUT-take NFUT-bend ACC pipe NOM Takanaw

As a related note, a resultative like (47a) is similar to a causative, but it hints at additional information about the manner in which an action is carried out.¹²

5. Syntactic and semantic properties

Based on § 3 and § 4, it is proposed that the various constructions share a minimal structure, $[ka-\sqrt{\text{root DP}}]_{\text{SC}}$, which consists of a predicate and subject, and is essentially a SMALL CLAUSE (SC) (See Williams 1975, 1980; Chomsky 1981; Stowell 1981, among others). They are summarized in Table 4.

Table 4. Budai Rukai *ka*-phrases as small clauses

Clause type			Category ^a
Future	<i>lri-</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	FUT
Causative	<i>pa-</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	CAUS
CP	(i) <i>la</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	COMP
	(ii) <i>lu</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	COMP
	(iii) <i>sa</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	COMP
	(iv) <i>sana</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	COMP
Coordinate	<i>si</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	CONJ
Passive	<i>ki-</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	PASS
Imperative	(i) <i>madha</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	MOOD
	(ii)	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	-a MOOD
Resultative	<i>malra</i>	$[ka-\sqrt{\text{root DP}}]_{\text{SC}}$	v

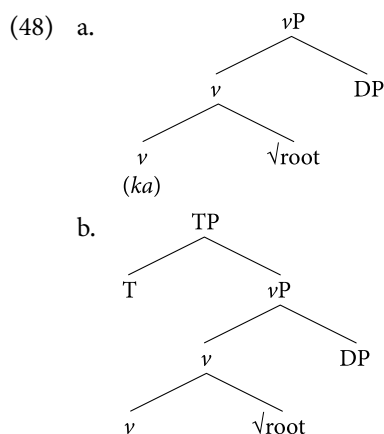
a. The labels under “Category” only serve an expository purpose.

12. To specify *taking* and *bending* as two separate events, (47a) can be rephrased as a coordinated construction by turning the second conjunct into a causative, as in (i).

(i) *wa-malra ku tikange ka Takanaw si pa-ka-lrungu.*
NFUT-take ACC pipe NOM Takanaw and CAUS-KA-bend
‘Takanaw took the pipe and bent it.’

5.1 The ν P structure and the spell-out rule

With the proposed structure [ka - $\sqrt{\text{root}}$ DP], ka is a functional category of ν , which projects the predicative relation as ν P, as shown in (48a) (See Bowers 1993). DP is the sole argument external to the matrix projection of a predicative head (See also Stowell 1981; Williams 1983; Higginbotham 1985; Kratzer 1996; Rothstein 2001, among others). The nonfuture forms (i.e., ma , a , and \emptyset in Table 3) are a result of ν combined with T under TP, as in (48b). This structural analysis accounts for some fundamental aspects noted in previous descriptive approaches, such as Zeitoun & Huang (2000).¹³



Treating ka as ν has another structural consideration. Budai Rukai has an array of morpho-phonologically dependent verbs, which have a monosyllabic structure of a consonant plus a vowel. When forming a verbal compound, these verbs incorporate other elements, such as a direct object, and appear prefixal. One example is the action verb *tu* ‘do; make’, as illustrated in (49a–b) (See Chen 2022 for more detail).

13. Ignore tense and assume that a predicative root is of type $\langle e, t \rangle$ and a DP is of type $\langle e \rangle$. Based on the compositional nature of the structure, ka is, then, of type $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$. Its semantic function is to take a predicative complement of type $\langle e, t \rangle$, and then to produce a syntactic element with type $\langle e, t \rangle$. This syntactic element then merges with a DP subject of type $\langle e \rangle$. The result of the syntactic operations is a saturated proposition that bears a truth value $\langle t \rangle$. Through this approach, ka is semantically comparable to a copula, which takes a subject-related predicative complement, such as the English *be* (cf. Higgins (1973); Rothstein (1983); Heim & Kratzer (1998); and Winter (2016)).

- (49) a. *ara-kay ku angatu tu-apwi ka Takanaw.*
 use(NFUT)-DEM ACC wood do/make-fire NOM Takanaw
 'Takanaw uses/used wood to start fire.'
- b. *tu-a-lalake ka alisu.*
 do/make-NFUT-child NOM woman/girl
 'The woman gave birth to a child.'

Ka is not used as a verb *per se*, but it is marked in a position where *tu* appears as a light verb. (50a–b) illustrate this distributional similarity, based on which *ka* can categorically be taken to instantiate *v*, just like *tu*.

- (50) a. *lri-tu-lisi iniane ka ta-ya-(a)ne=su.*
 FUT-do-bad 3SG.OBL NOM NFUT-say-NMLZ=2SG.GEN
 'What you say will hurt/do harm to him.'
- b. *lri-ka-lisi ka ama.*
 FUT-KA-bad/mad NOM father
 'Dad will be mad.'

The marking patterns can be generalized as a spell-out rule, as given in (51). (51a) accounts for nonfuture forms, and (51b) future forms.

- (51) The spell-out rule for *ka*-predicates in Budai Rukai
- When tense is nonfuture and no element intervenes, T and *v* are realized as one morpheme, as *ma*, *a*, or \emptyset .
 - Otherwise, *v* is spelled out as *ka*.¹⁴

The rule hinges on the condition whether *v* can get close enough to T. In passives and causatives, for instance, PASS and CAUS structurally intervene and prevent *v* and nonfuture T from being realized as one single morpheme in nonfuture context, which exemplifies the otherwise condition in (51b). The spell-out form in CPs requires further consideration, which is addressed in § 6.

The idea of T and *v* realized as one morpheme has a few implications, which can be sketched as follows. On the one hand, the rule could be formulated as a mechanism of *v*-to-T head movement with conditions (see Travis 1984; Pesetsky & Torrego 2001, among others), such that *v* moves to T as the default, unless T is filled by a marked tense feature, such as [fut]. On the other hand, the rule could be considered under the approach of fusion (Bobaljik 1995) within the framework of Distributed Morphology (Halle & Marantz 1993). According to Bobaljik (1995), a vocabulary item is atomic and has no internal complexity. When a vocabulary item expresses features which are associated with more than one syntactic node, those nodes have to be fused before insertion. The various nonfuture tense forms,

14. One editor points out this is the same as English *do*-support.

ma-, *a-*, and \emptyset -, can be such vocabulary items that are associated with two syntactic nodes, T and *v*. To maintain the focus on intransitivity and argument structure, this paper will not delve into the specifics.¹⁵

5.2 Case marking

It is argued that *ka*-predicates are intransitive verbs, due to their case marking pattern. Nominal elements in Budai Rukai are generally marked for four cases: nominative, accusative, oblique, and genitive. For transitive verbs, such as *kane* ‘eat’ in (52a) and *malra* ‘take’ in (52b), their direct objects are marked for accusative by *ku*. The grammatical subjects are marked for nominative. Intuitively, the direct objects denote entities affected by the events conveyed by the predicates in a certain way. For instance, *urasi* ‘sweet potato’ is consumed in (52a), and *valu* ‘honey’ is displaced in (52b).

- (52) a. *wa-kane ku urasi ka kayngu.*
 NFUT-eat ACC sweet potato NOM grandmother
 ‘The grandmother ate a/the sweet potato.’
 b. *wa-malra ku valu, si baai ki tina=ini ka Cegaw.*
 NFUT-take ACC honey and give OBL mother=3SG.GEN NOM Cegaw
 ‘Cegaw took the honey and gave it to his mother.’

The case marking pattern can be illustrated by the psych-verbs *dalame* ‘like’ and *lisi* ‘mad’. In (53a–b), they take only one participant, whereas in (53c–d), they take two. The marking pattern shows that *ka*-predicates cannot assign accusative case, which is taken to mean that *ka*-predicates are intransitives.

- (53) a. *alaw lri-ka-dalame ka alisu?*
 perhaps FUT-KA-like NOM girl
 ‘Perhaps she will like (it)?’
 b. *la ka-lisi ka lasu.*
 then KA-mad NOM guy
 ‘And then he got mad.’
 c. *ma-dalame laylay ka alisu si ka-dalame ki/*ku ngiaw.*
 NFUT-like run NOM girl and KA-like OBL/ACC cat
 ‘She likes running and likes cats.’
 d. *lu ungulu ku bava, lri-ka-lisi ki/*ku talragi=ini ka lasu.*
 if drink ACC alcohol FUT-KA-mad OBL/ACC friend=3SG.GEN NOM guy
 ‘If the guy drinks alcohol, he will get mad at his friend.’

15. I thank one reviewer for pointing out the connection of (51) to these possible solutions.

5.3 Argument structure and structural considerations

5.3.1 Argument structure

The absence of a complement in the νP structure of (48) bears on the argument structure of the resulting sentences. The sole argument can be associated with various thematic roles, depending on the semantics of the *ka*-predicates. It can express an undergoer of a directed motion, as in (54a); a theme affected by an action without a causer specified, (54b); a theme held by a static property, (54c); or an agent with or without volition, (54d).

- (54) a. *lri-ka-twase ka Takanaw.* (=2a) (Type E-1)
 FUT-KA-leave NOM Takanaw
 ‘Takanaw will leave.’
- b. *lri-ka-cwake ka kisi.* (Type A-1)
 FUT-KA-break NOM bowl
 ‘The bowl will break.’
- c. *lri-ka-thariri ka kuni.* (=2b) (Type J-3)
 FUT-KA-beautiful NOM skirt
 ‘The skirt will be beautiful.’
- d. *lri-ka-raleale ka la-umawmase.* (Type D-1)
 FUT-KA-shout NOM PL-person
 ‘The people will shout.’

Most *ka*-predicates are one-place predicates. They cannot take an extra element even if it is marked as an oblique expression. Examples (55a–d) show that the attempt of adding an oblique element to express a cause, a location, or a reason gives rise to ungrammaticality.

- (55) a. **lri-ka-cwake ki tawpungu ka kisi.*
 FUT-KA-break OBL dog NOM bowl
 (Intended) ‘The bowl broke because of the dog.’
- b. **lri-ka-cwake ki cukwi ka kisi.*
 FUT-KA-break OBL table NOM bowl
 (Intended) ‘The bowl broke on the table.’
- c. **lri-ka-thariri ki ina ka kuni.*
 FUT-KA-beautiful OBL mother NOM skirt
 (Intended) ‘The skirt will be pretty because of Mom.’
- d. **lri-ka-thariri ki bariangalay ka kuni.*
 FUT-KA-beautiful OBL lily NOM skirt
 (Intended) ‘The skirt will be pretty because of the lily.’

Some *ka*-predicates are frequently seen in sentences with two nominal expressions, such as psych-verbs (See §5.2). In terms of argument structure and thematic roles, the oblique element generally denotes a non-affected participant. As shown in (56a–c), the oblique DP denotes a recipient or goal of the expressed emotion.

- (56) a. *anaiyasi kane-su, na-i-ka-lisi.*
 if eat=2SG.NOM CNTF-FUT-KA-bad
 ‘If you had eaten, (the situation) would’ve been bad.’
 b. *lri-ka-lisi=aku.*
 FUT-KA-mad=1SG.NOM
 ‘I will be mad.’
 c. *lri-ka-lisi=aku ki lasu.*
 FUT-KA-mad=1SG.NOM OBL guy
 ‘I will be mad at him.’

Examples (57a–d) provide more evidence for the proposal that, unlike the accusative-marked DPs as in (52a–b), oblique elements are non-affected situation participants.

- (57) a. *kai lri-ka-dalame ka alisu.* (Type H-1)
 NEG FUT-KA-like NOM girl
 ‘She will not like (it).’
 b. *lri-ka-dalame ki acilay ka takurawru.*
 FUT-KA-like OBL water NOM frog
 ‘The frog will like water.’
 c. *lri-ka-lrase ka alisu.* (Type H-2)
 FUT-KA-dislike NOM girl
 ‘She will dislike (it).’
 d. *na-ma-dalam=aku musuane, ai lri-ka-lras=aku*
 PFT-NFUT-like=1SG.NOM 2SG.OBL but FUT-KA-dislike=1SG.NOM
 musuane.
 2SG.OBL
 ‘I used to like you, but (now) I will dislike you.’

Lastly, *twase* ‘leave; depart’ (Type E-1) is the only motion verb found to be marked by *ka*. It can be used as a one-place predicate, as in (58a), or a two-place predicate, as in (58b). The oblique DP denotes a location, which is a non-affected event participant.

- (58) a. *ani ka-twase-nga ku tina=ita?*
 why KA-leave-PFV NOM mother=1PL.GEN
 ‘Why did our mother leave?’

- b. *sa ka-twase ki cekele ka lasu, kadrúa ku vaga=ini.*
 when KA-leave OBL village NOM guy NEG ART word=3SG.GEN
 'When he left the village, he didn't say anything.'

5.3.2 Structural considerations

It is argued that the various thematic roles associated with the subject DP and the oblique DP are related to the ν P configuration of each *ka*-predicate. There are three types: Type I ν P has a sole argument whose role can be agent, theme, or experiencer, as exemplified by (59a–b).

- (59) a. *la ka-raleale ka kisace.*
 COMP KA-shout NOM police
 'And then the police shouted.'
 b. *lri-ka-salru ka Takanaw.*
 FUT-KA-believe NOM Takanaw
 'Takanaw will believe.'

Type II ν P has one obligatory and one optional argument, as exemplified by (60a–b). The obligatory argument is the subject, which functions as agent or experiencer, whereas the optional oblique argument denotes a non-affected theme or goal.

- (60) a. *lri-ka-lisi (nakuane) ka Takanaw.*
 FUT-KA-mad 1SG.OBL NOM Takanaw
 'Takanaw will be mad (at me).'
 b. *la ka-twase (ki daane=ini) ka Takanaw.*
 COMP KA-leave OBL house=3SG.GEN NOM Takanaw
 'Then Takanaw left (his house).'

Type III ν P has only one argument, which functions as an affected theme or patient, as illustrated in (61a–b). An agent or cause could be contextually supplied, but it cannot be syntactically specified within the structure.

- (61) a. *lri-ka-cwake ka kadilrungane.*
 FUT-KA-break NOM clay pot
 'The clay pot will break.'
 b. *la ka-ngacace ka angatu.*
 COMP KA-crack NOM wood
 'And the wood cracked.'

Type I and II ν Ps, on the one hand, and type III ν P, on the other, correspond to an intransitive distinction between unergative and unaccusative (See Perlmutter 1978; Burzio 1986). If type II ν P is considered an extended version of type I ν P, then Budai Rukai presents a case in which an optional object can appear in an

unergative construction as an oblique argument.¹⁶ The current analysis crucially relies on the assumption that *v* is used to syntactically categorize a root, and is semantically related to eventuality (See Ramchand 2008; Irwin 2012; Marantz 2013, among others). It follows that predicative roots are not predetermined as transitive or intransitive, and the syntax of the unergative and unaccusative patterns is mediated through *v*, as instantiated by *ka*. This is in line with an approach that takes an intransitive construction as the result of the interaction between a functional category and its predicative complement, as in Marantz (1997; 2013) and Alexiadou & Anagnostopoulou (2004), among others.¹⁷

5.3.3 Interim discussion

The *v*P analysis presented so far differs from the traditional view that little *v* is usually associated with marking of accusative case and licensing of agentive subjects. Given that *ka*-predicates do not admit accusative objects and do not always take agentive subjects, there are two considerations regarding the role of *ka* in the structure.

On the one hand, *ka* could be considered to be non-active voice, which projects a VoiceP in the sense of Kratzer (1996).¹⁸ This can be ruled out by the fact that *ka* appears in passives, as discussed in § 4.3.2.¹⁹ On the other hand, the analysis could adopt an approach which ties morphosyntax and semantics more directly, such as Ramchand (2008) and Travis (2010). Assume that the interpretation of a sentence involves event-structure decomposition of subevents, which can be a causing subevent (which involves a causer), a process-denoting subevent (with an undergoer or experiencer), or a result-denoting subevent (with a holder of a result state) (Ramchand 2008). Then, *ka* can be said to form various types of structures, of which the presence or absence of a certain subevent is formally identified in

16. One editor suggests that all the intransitive predicates may turn out to be unaccusative. As for psych verbs, they have been considered in some work to involve an unaccusative VP containing the stimulus with the experiencer introduced in [Spec, ApplP]; see Cuervo (2003).

17. Budai Rukai data supports a weaker version of the Uniformity of Theta Assignment Hypothesis (UTAH) (Baker 1988; 1996), in the sense that comparable thematic relationships between predicates and arguments can be presented by comparable structural relationships. Even so, the fact that *ka* is marked in either an unergative or unaccusative structure indicates that the functional category is underspecified such that its selected subject does not have a uniform thematic role across *ka*-phrases.

18. I thank one reviewer for bringing Kratzer (1996) to my attention.

19. This suggests that Budai Rukai verbal structure can be realized as a layered structure with different types of functional heads between the verbal root and T. In light of VoiceP in Kratzer (1996), a passivized *ka*-predicate such as *ki-ka-dalame* 'be liked' has the approximate structure: [_{VoiceP} *ki* [_{vP} *ka* [_{VP} *dalame*]]].

subevental decomposition. The facts that *ka* does not assign accusative case and prefers non-agentive subjects indicate that *ka* formally signifies the lack of a causing subevent in the minimal eventuality, but remains nonselective with respect to other subevents such as process or result. Extending the analysis to account for all types of *ka*-predicates, *ka* not only signifies the lack of a causing subevent for telic predicates (e.g. *break*-type verbs and verbs of change-of-state), but also for atelic predicates (e.g. *declare* verbs, psych-verbs, and adjectival predicates).²⁰ Note that telic predicates have natural endpoints, whereas atelic predicates do not (Smith 1997). To superimpose causation on the minimal eventuality described by a *ka*-predicate, a causative head (e.g. *pa-*) must be supplied in the structure, which is discussed in § 5.4.

With respect to argument structure, the contrast between accusative DPs and oblique DPs in (52) and (53) indicates a difference related to situation type and affectedness. According to Beavers (2011), affectedness associated with a theme argument is accounted for by the Affectedness Hierarchy, according to which degrees of affectedness can be characterized by the relation of the theme argument to the specification of change in a scalar structure. Predicates of high degrees of affectedness entail a definite target state or result (e.g. *break*); those of lower degrees entail an unspecified target state or result (e.g. *widen*); and those with a theme which only has potential for change, or is unspecified for change, do not have a result (e.g. *hit*; *see*) (pp.358–359). (52a), for instance, can thus be said to convey a high degree of affectedness; it encodes a specific target state reached by the accusative-marked *urasi*, such that it was entirely consumed. By contrast, the oblique element is always unspecified for change.

5.4 Lack of causation

Sentences formed by *ka*-predicates generally lack causation in Budai Rukai. This can be particularly illustrated by the *break*-type verb *cwake* ‘break’. In (62a), the sole DP argument denotes an undergoer, not a causer. (62b) indicates that a causer cannot appear in the sentence as an oblique expression, and (62c) shows that a causer cannot appear as the subject. To convey causation, the predicate appears in a causativized form, as in (62d).

20. According to Alexiadou et al. (2006) and Alexiadou (2010), roots are associated with three types of cause: external cause, internal cause, and unspecified cause. The marker *ka* identifies the lack of an *external* cause in the minimal eventuality, and thus *ka*-predicates are usually used without a volitional intervention of an agent. Other types of cause, however, may be implied in semantic decomposition, which are interpreted as a process or a result in the sense of Ramchand (2008). This accounts for the use of some *ka*-predicates in conveying inchoative or a change of state, which can be said to involve an internal cause or unspecified cause.

- (62) a. *lri-ka-cwake ka batuku.*
 FUT-KA-break NOM egg
 'The egg will break.'
- b. **lri-ka-cwake ki vavalake ka batuku.*
 FUT-KA-break OBL child NOM egg
 (Intended: 'The egg will break because of the child.')
- c. **lri-ka-cwake ka vavalake.*
 FUT-KA-break NOM child
 (Intended: 'The child will break something.')
- d. *lri-pa-ka-cwake ki batuku ka vavalake.*
 FUT-CAUS-KA-break OBL egg NOM child
 'The child will break the egg.'
 = 'The child will cause the egg to break.'

The contrast between (62a) and (62d) shows that the minimal eventuality construed by a *ka*-predicate lacks causation. A causative head (e.g. *pa-*) must be supplied in the structure to superimpose causation, through which a causer argument can be syntactically introduced in the structure.

Along with the characteristics and structural considerations discussed in § 5.2 and § 5.3, the lack of causation indicates that *ka*-predicates exhibit anticausative characteristics, which are typical properties of intransitives. The syntactic and semantic properties are summarized in Table 5.

Table 5. Syntactic and semantic properties related to *ka*-predicates

Properties		<i>ka</i> -predicates
a. admitting a subject (case)		yes (NOM)
b. thematic-role of the subject	agent; undergoer; experiencer (<i>twase</i> 'leave'; <i>dalame</i> 'like')	theme (<i>drekare</i> 'dry'; <i>cwake</i> 'break')
c. optional oblique argument	yes	no
d. transitivity	intransitive	intransitive
e. clause structure	unergative	unaccusative
f. admitting a causer argument	no	no

5.5 Non-conforming forms

Before concluding, one thing should be mentioned about the marking patterns of *ka*-predicates. Data shows that some predicates appear untensed and without *ka* in a matrix clause, in which case the spell-out rule of (51) would not account for them. These are considered non-conforming forms.

Although untensed and without *ka*, the predicates do not appear in their bare form and must undergo reduplication. Since the resulting interpretation is generally static, these non-conforming forms are marked for aspect. The contrast between (63a) and (63b) indicates that the reduplicated form only admits a static interpretation, such that it describes an intrinsic property of the flower, whereas the tensed form is compatible with a static meaning or a change of state; the latter is a dynamic interpretation.

- (63) a. *lraw~lrapungu ka bengelay.*
 RED~white NOM flower
 'This flower is white.' ≈ 'This is a white flower.'
 ≠ 'This flower turned white.'
- b. *lri-ka-lrapungu ka isiw=li.*
 FUT-KA-white NOM hair=1SG.GEN
 'My hair will turn white/gray.' or 'My hair will be white/gray.'

As a related note, reduplicated color terms can have a non-predicative or non-attributive use. As shown in (64), they simply denote types of color.

- (64) *ma-dalame=aku ki ice~celrenge si du~duli.*
 NFUT-like=1SG.NOM OBL RED~black and RED~red
 'I like the color black and the color red.'

Untensed predicates which are intuitively dynamic verbs also convey static properties when reduplicated, as illustrated by *cwake* 'break' in (65a). The tensed version in (65b), by contrast, is compatible with an interpretation of state, or a change of state.²¹ As a comparison, (65c) as a CP only conveys a change of state and suggests a sequence of events. A stative meaning is infelicitous in this context.

- (65) a. *cwa~cwake kay batuku kay.*
 RED~break DEM egg DEM
 'This egg is broken.' ≈ 'This is a broken egg.'

21. A reviewer asks about the slightly different semantic contributions *ma* and *ka* make; since they are analyzed as the small clause projecting *v*, it is not clear how such distinctions are obtained. In this paper, *ma* is taken to be a composite of T and *v*. The semantic distinction between (65b) and (65c) is mainly due to *la*. Nonfuture tense is underspecified for the relation between the event time and the reference time, and it does not trigger an aspectual shift. Descriptively speaking, the onset time of the breaking event in (65c) coincides with the reference time provided by *la*, which gives rise to an inchoative, change-into-state, reading.

- b. *ma-cwake kay batuku kay.*
 NFUT-break DEM egg DEM
 i. 'This egg is broken.' ≈ 'This is a broken egg.'
 ii. 'This egg broke.' ≠ 'This is a broken egg.'
- c. *la ka-cwake kay batuku kay.*
 COMP KA-break DEM egg DEM
 'And (then) this egg broke.' ≠ 'And (then) this is a broken egg.'

Reduplication in Budai Rukai thus functions as an aspectual operator, which imposes stativity on the situation described by the predicate (See de Swart 1998). By contrast, *ka* does not impose any aspectual information.²²

6. Conclusions and future research

This paper has proposed an intransitive analysis for an array of predicates which exhibit specific marking patterns. Contra the lexical approaches of Li (1973) and Zeitoun & Huang (2000), it is argued that the prefixal marker *ka* found on these predicates instantiates a functional head *v*, which constructs intransitive *v*P. Its spell-out form is conditioned by its interaction with other higher functional heads, including T, CAUS, PASS, and COMP, which is generalized as a spell-out rule. With respect to intransitivity, the resulting *v*P does not admit an accusative object, and exhibits unergative, unaccusative, and/or anticausative properties. Regarding argument structure, *ka*-predicates are mostly one-place predicates; the sole argument is the grammatical subject which usually denotes an affected theme or an experiencer.

The analysis has some limitations which call for further research. First, the analysis does not explain why *v* is realized for some predicates, but not for the others (*lri-ka-samali* 'will be surprised' vs. *lri-ukuludru* 'will be fearful'). Given

22. The semantic contrast suggests a division between individual-level and stage-level predicates (see Carlson 1977; Kratzer 1995). An individual-level predicate usually denotes a permanent property, whereas a stage-level predicate conveys a more transient property. It is taken that reduplication in Budai Rukai is the realization of a functional head, which can be Asp in the sense of Travis (2010). It identifies a semantic effect on situation type and is not a grammatical aspect, as opposed to the progressive, which is also signified by reduplication in Budai Rukai. According to the theory of Inner Aspect in Travis (2010), Asp of such a kind is both close to VP (=√root) and presumably within *v*P. If this is the case for Budai Rukai, it begs the question whether sentences like (63a) and (65a) have a *v* layer, if a uniform analysis of a full-fledged structure of *v*P-AspP-VP is desired. The analysis requires further research. Also see Richardson (2003) for an analysis for Russian with two types of AspPs; the lower AspP is under *v*P and associated with semantic or lexical aspectual phenomena.

the descriptions in (8) and the discussion of *ka* signifying the lack of a causing subevent in §5.3.3 and §5.4, all the predicates could be amenable to semantic classes which focus on a particular part of an eventuality, such as state, change of state, or process. Intuitively, the choice could be idiosyncratic and attributed to historical reasons. The reconstruction of early Austronesian prefixes in Blust (2003; 2013) provides a possible solution.²³ According to the reconstruction, there are different types of **ka-*; some are attached to verbal roots, conveying meanings related to inchoative, stative, or manner, and some to nominal roots, indicating notions such as past time. This paper concerns verbal structure and has argued that *ka* does not specify aspectual information. This leaves the allative **ka-*, which means ‘to (someone or some place)’, to be one relevant candidate for the idiosyncrasy. The allative **ka-* appears in PAN examples such as **ka-wanaN* ‘right side’ and **ka-wiRi* ‘left side’ (Blust 2003: 444). Its function can be particularly related to the motion verb *ka-twase* ‘leave’ in Budai Rukai. However, aside from the fact that *twase* is verbal, which does not refer to a position or location, *ka-twase* describes a motion away from a reference point (e.g. the speaker) and not towards it. Also, the allative notion seems to be an isolated case, since it is not applicable to any other *ka*-predicate in Budai Rukai. The issue remains to be explored.

Another issue involves tense marking in nonfuture CPs. The contrast between (66a) and (66b) indicates that a nonfuture CP is unmarked for tense, whereas future is marked and functions as a relative tense (§4.2.1; see also Chen 2008; 2011). Since a complementizer (C) is higher than T, it does not intervene between T and *v*. The spell-out rule of (51) should apply and produce a nonfuture CP like (66c), which is, however, not the case.

- (66) a. *wa-senay* [_{CP} *la* Ø *ka-twase*] *ka tiatina*.
 NFUT-sing COMP KA-leave NOM mother
 ‘The mother sang and left.’
 b. *wa-senay* [_{CP} *la* *lri-ka-twase*] *ka tiatina*.
 NFUT-sing COMP FUT-KA-leave NOM mother
 ‘The mother sang and would then leave.’
 c. **wa-senay* [_{CP} *la* *ma-twase*] *ka tiatina*.
 NFUT-sing COMP NFUT-leave NOM mother

Also note that a CP with an overt C can appear independently in Budai Rukai, which is frequently seen in narratives. The interpretation of the untensed (67) indicates that the conveyed event is anchored to a nonfuture time reference, established antecedently by a preceding sentence or in the context. Again, the CP is not marked for nonfuture tense.

23. I thank one reviewer for bringing this reference to my attention, as well as the connection to the motion verb.

- (67) $la_{[\text{fin}]} \emptyset_{T[\text{fin}]} ka-drekare ka \quad vaalru.$
 COMP KA-dry NOM stream
 ‘And the stream dried up.’

The marking patterns and temporal interpretation discussed in this paper suggest that T interacts closely with C in Budai Rukai. One possible solution is to postulate that Budai Rukai complementizers bear a temporal feature,²⁴ which is noted as [fin] on C in (67). Nonfuture T receives the value [fin] from C, which in turn prevents T and ν from being realized as one morpheme. Another possibility is that C and T are able to not divide in nonfuture context. Aldridge (2021) discusses a syntactic constraint between C and T in Philippine and Formosan languages, and DP movement is used as evidence to argue that feature inheritance (C-T Inheritance) does not take place in these languages. The analysis argues that the case feature of C is not inherited by a lower head (such as T), thus resulting in only one landing option for DP movement, which is [Spec, CP] (See also Aldridge 2017). If C and T in Budai Rukai do not divide in simple nonfuture CPs, it follows that ν does not have T to begin with, and is thus spelled out as *ka*. The spell-out rule in (51) could be extended to incorporate this idea, but the analysis requires further research.

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24. A reviewer pointed out that C can be associated with finiteness in typologically different languages. For example, in Swedish, the finite perfect auxiliary *har* ‘has’ or *hade* ‘had’ is optional in a subordinate clause, and the clause can be with just a perfect participle. In contrast, omission of the finite perfect auxiliary in a main clause is sharply ungrammatical. Contrast (i) and (ii).

(i) *Jag tror att [han (har) gått hem].*
 I think that he has gone home
 ‘I think he has gone home.’

(ii) *Han *(har) gått hem.*
 he has gone home
 ‘He has gone home.’

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List of abbreviations

1	first person	INDF	indefinite
2	second person	MOD	modality
3	third person	NEG	negation
ACC	accusative	NFUT	nonfuture
ART	article	NMLZ	nominalizer
C/COMP	complementizer	NOM	nominative
CAUS	causative	OBL	oblique
CNTF	counterfactual	PASS	passive
COMP	complementizer	PFV	perfective
CONJ	conjunction	PL	plural
CP	Complementizer Phrase	RED	reduplication
DEM	demonstrative	SC	SMALL CLAUSE
DET	determiner	SG	singular
FUT	future	T	Tense
GEN	genitive	TP	Tense Phrase
IMP	imperative	VBZ	verbalizer







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