Expressing possibility in Daakaka and Saliba-Logea

20th February 2019

Abstract

In this paper, we offer the first detailed description of expressions of possibility in the Oceanic languages Daakaka and Saliba-Logea. We show that in these languages basic expressions of possibility are bi-clausal. This suggests that, depending on their intended scope, typological studies of modal expressions may need to consider grammaticalized bi-clausal structures which have typically been excluded in studies of this domain based on their structural complexity. Relevant features to consider bi-clausal constructions as basic grammaticalized expressions of possibility include their frequency, semantic specificity, and paradigmatic relationship with other modal expressions. The findings presented here are based on the analysis of original corpus data and targeted fieldwork.

1 Introduction

Many languages can express possibility by a variety of constructions ranging from highly grammaticalized to structurally complex, as for example in English:

(1) a. Mary may have won.
   b. Maybe Mary won.
   c. It is possible that Mary won.

Our understanding of modal expressions has been shaped by a focus on single, structurally simple expressions as in (1-a) and (1-b). By contrast, bi-clausal constructions expressing possibility as in (1-c) do often not make it into typological treatments of modal expressions or are treated as secondary. While the reasons for this are generally not made explicit, the rationale seems to be that bi-clausal structures tend to belong to the realm of lexical expressions rather than grammatical ones. In this paper, we will present data from two Oceanic languages, Daakaka and Saliba-Logea, to show that in these languages, bi-clausal structures are in fact the most grammaticalized option for unambiguously expressing at least certain types of possibility.

In Daakaka, possibility is expressed by subordinating verbs such as kuowilye, ‘know’:

(2) nye na-m kuowilye [ka na=0 vŷ an tiye suw-uk] kyun
   1SG 1SG-REAL KNOW COMP 1SG=POT go kill REF.PRON-1SG.POSS just

1AAbbreviations: 1EXCL: first person exclusive; 1INCL: first person inclusive; 1INF: first infinitive; 1PC: first person paucal; 1Pl: first person plural; 1SG: first person singular; 1: first person; 2DU: second person dual; 2PC: second person paucal; 2SG: second person singular; 3OBJ: third person object; 3PC: third person paucal; 3PL: third person plural; 3SG: third person singular; 3: third person; ABS: absolutive; ADV: adverb; AD: addressee; AFF: affix; AGR: agreement; AL: alienable; ANA: anaphoric; ART: article; ASR: assertive; AUX: auxiliary; CARIT: caritative case; CAUS: causative; CL3: possessive class three (Daakaka); CM: conjugation marker; COMP: complementizer; COP: copula; DEF: definite; DEM: demonstrative; DER: derivation; DISC: discourse marker; DIST: distal; EP: epenthetic; FUT: future; GEN: genitive; INSTR: instrumental; INTRJ: interjection; INCL: inclusive; IRRE: irrealis; LING EVID: linguistic evidence; LOC: locative; M.PROP: modal proprietary; MED: medial distance; COMP: complement-
In Saliba-Logea, the noun *gonowa*-,'possibility, ability' is used as a predicative noun, with the content of the possibility being realized as a separate clause or sequence of clauses:

\[(3) \textit{gonowa-m metakobo ku dobi ku unui-he-mate}\]

ability-2SG.PSS TOP then 2SG.SBJ go.down 2SG.SBJ catch-CAUS-die

'you are able to go down, to catch it and kill it (lit. "Your ability exists to...")'

(BudoiNualele_01CY_0496)

With the present study we build on and extend the current understanding of modal expressions in Oceanic languages and cross-linguistically by showing that, in some languages, basic expressions of possibility are bi-clausal and do not have synonymous mono-clausal alternatives. This suggests that, depending on the intended scope, typological studies of modal expressions may need to consider certain grammaticalized bi-clausal structures which have typically be ignored in leading studies in this field. Relevant features in assessing the degree of grammaticalization of bi-clausal structures include their frequency, semantic specificity, and their paradigmatic relation to other modal expressions. Our findings are based on the analysis of original data from text corpora and from targeted fieldwork. In the following we present a detailed account of the semantic properties of the possibility expressions in the two languages in support of these claims.

### 2 Background

#### 2.1 The typology of modal expressions

Typological investigations of modal expressions have largely focused on auxiliaries such as English *can* or *may*, particles and adverbs such as *maybe* and inflectional affixes such as Turkish *meli* (*OBBLIGATORY*). Bi-clausal structures, by contrast, have generally been excluded from typological studies on modal expressions.

Table 1 gives an overview of the modal expressions that have been treated so far in representative parts of the typological literature.

The table shows that there is considerable variation in the range of expressions each account considers. Some of the differences in treatments are down to terminological decisions. For example, modal clitics are often treated as a special case of modal particles, as in the following Ngiyambaa example from Donaldson 1980:276:2

---

<table>
<thead>
<tr>
<th>mood</th>
<th>AFF</th>
<th>PART</th>
<th>AUX</th>
<th>clitic</th>
<th>ADV</th>
<th>per.</th>
<th>der.</th>
<th>tags</th>
<th>case</th>
<th>nouns</th>
<th>sub.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bybee'94</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Palmer'01</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hengeveld'04</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>de Haan'06</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>Narrog'16</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>?</td>
</tr>
</tbody>
</table>

Table 1: Modal expressions discussed in different studies; per.: periphrastic; der.: derivation; sub.: subordinating structures.
(5) Indu-dhan giryambyi
t2sg-rprt sick:past
‘You are said to have been sick.’

In some accounts, such as Narrog (2016), modal particles are treated on a par with modal adverbs such as maybe.

Most accounts cover some kinds of periphrastic constructions such as the following example from Quechua:

(6) Miku-na ka-rka-ni
eat-oblig be-past-1
‘I must eat’ (Cole, 1982: 151) (Hengeveld (2004: 1199) suggests the following literal translation: ‘I was characterized by unrealized eating.’)

Other differences concern rather marginal phenomena that some authors may have considered too rare or not sufficiently understood to include them. This probably applies to modal derivations, modal tags and modal case. Modal derivations are a productive morphological process to create a predicate meaning, for example, ‘want to do X’ from a verb root meaning ‘do X’, as illustrated by the Ngiyambaa example in (7):

(7) padhu dhinga: dha-l-i-ninda ga-ɾa.
I.nom meat:abs eat-cm-purp-carit be-pres
‘I want to eat meat.’ (Donaldson 1980: 281, in the glosses we have used the colon ‘:’ instead of the plus sign ‘+’)

Modal tags are syntactically flexible elements that modify the commitment of the speaker, such as English I think, I guess.

Modal case is a relatively rare phenomenon, where modality can be marked as an affix to a noun like a case marker. In the following Kayardild example, one such marker is u, glossed as m.prop (modal proprietive). In combination with different modal markers on the verb, it can express different types of modality.

(8) dangka-a burldi-ju yarbuth-u thabuju-karra-ngun-u wangal-ngun-u
man-nom hit-POT bird-m.prop brother-gen-instr-m.prop boomerang-instr-m.prop
‘The man will/can hit the bird with brother’s boomerang.’ (Evans, 2003: 208)

Nouns such as Saliba-Logea gonowa- ‘possibility’ as major expressions of modality have hardly been treated at all. As Narrog (2016: 92f.) notes, ‘according to the available descriptions, nouns as the pivot for non-epistemic modal constructions are comparatively rare. This relative scarcity may of course be an artifact of description [...].’

The following Finnish example from Sulkala & Karjalainen (1992: 318) is also cited by Narrog (2016: 93) to show a modal noun:

(9) Sinun on pakko tulla.
you.gen be(3sg) compulsion come.1INF
‘You have to come.’ (lit. ‘Yours is the compulsion to come.’)\(^3\)

Like the structures from Saliba-Logea, (9) can only be analyzed as a bi-clausal structure. This is probably why accounts such as Palmer (2001), which explicitly exclude sentence-embedding modal verbs

\(^3\)The glosses have been modified to fit the Leipzig Glossing Rules: The original source gives be-3sg and come-1INF, even though there is no separation into morphemes in the original line.
from their work, also do not consider modal nouns as in (9). Narrog (2016) differs from most previous
approaches in taking bi-clausal structures also into account and notes that in particular the difference
between modal auxiliaries and full subordinating verbs expressing modality is not always clear and may
sometimes be hard to assess. Another source that acknowledges the importance of bi-clausal structures
in the expression of modal meanings is Givón (1994), who notes that languages may not possess modal
auxiliaries or other simple modal expressions. Among the structures that express meanings such as
deontic necessity instead, he notes for examples conditionals in Korean, as illustrated in (10):

(10) i ch’aek-un an ilk-o-myon, an twe-n-ta
    this book-TOP NEG read-COMP-if NEG be.good-PRES-PRT
    ’You must read this book’ (lit. ’If you don’t read this book, it won’t be ok.’) (originally from Kim
    1986)

A similar structure can be found in Mandarin Chinese, where bi-clausal structures expand the system
of modal auxiliaries and other expressions:

(11) (Ma) i-veta mine ande (ma) ara
    ir 3sg-do like:his then ir  good
    ’He [sic] may/should do this.’ (More literally: ’If he does like this, then it will be good.’)

The most systematic investigation of this type of structure to date comes from an article titled Japanese
modals are conditionals (Akatsuka, 1992) and subsequent work on Japanese modals (e.g. Narrog, 2009).
Thus, the fact that bi-clausal structures may be the main way for a language to express general modal
meanings has not gone entirely unnoted. By an large, however, bi-clausal structures are not generally
covered by typological surveys on modal expressions.

We here discuss the influential study by Bybee et al. (1994) in more detail to illustrate how typological
accounts of modal expressions systematically exclude structures like the ones we will discuss. In their
own words, Bybee et al. (1994) ’restrict [their] study to verbal grams and further to focus [their] study
on inflectional categories [as opposed to derivational ones]’. They apply the following four criteria to
their selection of morphemes:

1. The gram must belong to a closed class (with an arbitrary limit of 12 items).
2. The gram must have a fixed position in relation to the verb (within the clause, to exclude adverbs,
   quantifiers and similar).
3. The gram must be lexically general. ’This criterion is met if the gram occurs with all verbs or with
   all the members of a large semantic class of verbs, such as stative verbs, […]’(Bybee et al., 1994:39)
4. The gram must have predictable meaning in most contexts (excluding unproductive and idiosyn-
cratic expressions).

The criterion in (1) is meant explicitly to exclude verbs, nouns and adjectives. And while Bybee et al.
(1994) acknowledge that there is a certain fuzziness to the restrictions they place on their selection of
morphemes, it is clear that main verbs and nouns are not considered the objects of their study. They
categorize the expressions they include in their study as follows (Bybee et al., 1994:42): affix, auxiliary,
particle, zero, reduplication, stem change, stress change, tone change. (Bybee et al., 1994) never discuss
the option of investigating bi-clausal structures. It is clear from their discussion, especially in the
context of criterion (2), that they are looking for verbal morphology, or modifiers within the verb phrase.

The authors frequently state that their study is concerned with ‘grammatical morphemes’ or ‘grams’. All the above criteria are apparently meant to ensure the ‘grammaticality’ of the expressions under investigation. The authors do not consider the possibility that a bi-clausal structure may be highly grammaticalized.

Of course, such structures are acknowledged as a possible diachronic origin of more grammaticalized modal expressions. Similar diachronic trajectories have been traced in detail for expressions such as Old English *cunnan* ‘know’, which is the source for Modern English *can* (Bybee, 2003). Bybee *et al.* (1994), too, find primarily verbal origins for the grams they investigate (also compare van der Auwera & Plungian, 1998). Crucially, however, they only consider these verbs in their diachronic relation to the modal grams they describe. They do not entertain the possibility that, in some languages, full verbs or nouns plus an additional clause may be the only way to express modal meanings, and that these structures may qualify as highly grammaticalized. Moreover, they do not observe nominal origins of modal expressions such as the one described here for Saliba-Logea.

Synchronically, based on the criteria and discussion in Bybee *et al.* (1994), any researcher working with the available grammatical descriptions of Saliba-Logea and Daakaka (Mosel, 1994; Margetts, 1999; von Prince, 2015), would have to exclude the expressions we are going to discuss from their survey.

We suggest that a possible reason for the wide-spread exclusion of bi-clausal structures from the typology of modal expressions is that, in some languages, bi-clausal structures contrast with more highly grammaticalized mono-clausal structures. As a result, a verb or noun that constitutes an independent clause as in *(it is) possible (that)* will be more commonly considered as a lexical expression of modality rather than a grammatical one. However, structural complexity is only one correlate of grammaticalization. Other hall-marks of grammatical markers are (e.g. Hopper, 2003):

1. relatively high frequency,
2. a low degree of semantic specificity, and
3. a small number of paradigmatic alternatives.

We are going to argue that, in Daakaka and Saliba-Logea, the bi-clausal structures we describe are the most grammaticalized way to express at least non-epistemic possibilities. In particular, we will suggest the following:

- In terms of frequency, the structures we describe behave like highly grammatical items.
- In terms of semantic specificity and compositionality, the structures we describe meet criteria (3) and (4) by Bybee *et al.* (1994)
- The distinction between open vs. closed classes is more complicated than assumed in Bybee *et al.* (1994), especially in languages with relatively small vocabularies. We need to think more clearly about what we consider as paradigmatic alternatives.

We fully acknowledge that there can be good reasons for excluding bi-clausal structures from a typological study on modal expressions. But we would like to suggest that it might be more productive in some cases to use a language-specific definition such as the expression should be the most grammaticalized way to serve this function in the language rather than relying on an absolute limit on structural complexity. Furthermore, investigating the variation of the syntactic complexity of highly grammaticalized expressions cross-linguistically might in itself be an interesting endeavor.

Before closing this section, we should also comment briefly on the role on verb moods such as irrealis and subjunctive in subordinate clauses. Within the typological literature on modality, it has been acknowledged that verb mood has a certain role to play in the expression of possibility. Palmer (2001), in particular, comments on the central role of verb moods as modal expressions, both in subordinate and in main clauses. Moreover Palmer (2001: chapter 4) comments on the role of subordinate clauses
in reporting beliefs and attitudes (but notably not as expressions of non-epistemic possibilities).

By contrast, Bybee et al. (1994) consider subjunctives as little more than a syntactic reflex of clauses embedded under certain matrix predicates and categorically dismiss the usefulness of the notion of irrealis mood (also see Bybee 1998). More importantly, however, neither Palmer (2001) nor Bybee et al. (1994), nor, to our knowledge, other comparative studies of modal expressions consider the combination of a particular matrix predicate with a particular embedded mood to constitute a complex expression of modality. Yet, in Daakaka, this is precisely what we propose: the verbs kuowilye and wese mean other things in other contexts and the potential and distal moods they combine with do not by themselves express possibility. This interdependence between matrix and complement has been observed for other languages, such as Navajo (Bogal-Allbritten, 2016). But it has not played a central role in the wider debate on modal expressions.

At the same time, bi-clausal expressions of possibility have not been excluded from all the typological literature. Note that, so far, we have only commented on the typological literature on modality. When we turn to the literature on embedded structures, we do find detailed discussions of bi-clausal modal expressions. We will briefly review the state of the art in this area in the following section.

2.2 Typology of embedded structures

While bi-clausal structures have been relatively neglected in the typological literature on modal expressions, in the typological literature on complementation, modal verbs have been discussed from early on (e.g. Givón, 1980; Noonan, 1985; Cristofaro, 2003). Most of these accounts assume that the form of the embedded structure determines its interpretation: If the subject of the modal verb is also the subject of the complement clause, the structure is supposed to express participant-internal modalities. In this section, we will briefly sketch existing accounts on correlations between form and function of subordinating modal expressions and specify more concretely which of these positions we will address.

The seminal work by Noonan (1985) is representative of the basic intuition:

In general, the stronger the semantic bond between the events described by the matrix and complement predicates, the greater the degree of syntactic integration there will be between the two clauses. (Noonan, 1985:101)

Noonan (1985) cites in particular the logical dependency between the embedding verb and its complement as a measure of semantic integration. These dependencies concern factors such as time, truth value and participants. To illustrate this idea, consider the following two examples:

(12) Mary is (currently) able to work.

(13) Mary knows that John will work.

In (12), the embedded clause is dependent on the matrix predicate in terms of time, truth value and participants: we cannot very well say *Mary is able now to work tomorrow; when we say Mary is NOT able to work, that implies that she does not work. And Mary’s abilities only apply to her own actions, so we cannot say Mary is able for John to work or similar. By contrast, in example (13), the state of Mary knowing is fully independent from the event of John working. To the extent that the embedded clause is dependent on the matrix clause, the corresponding information (temporal reference, polarity, participants) may be optionally or obligatorily unexpressed, depending on the language. We will comment on the option of omitting redundant information in the structures from Saliba-Logea and Daakaka, since some of their properties are rather unexpected in this regard.

Later work more explicitly addresses the relation between the specific meaning of modal predicate and the syntactic realization of its arguments.

Thus, Cristofaro (2003: 110) follows Noonan (1985) in stipulating the following:
Different complement relations pertain to different layers of clause structure.

With respect to modal embedding verbs, she makes a distinction between possibilities (or necessities) that are attributed to certain individuals on the one hand (participant-internal); and possibilities (or necessities) that hold of entire states of affairs (participant-external). She correlates this semantic difference to the structural difference illustrated by the following example:

(14) a. It is necessary [that I go].
   b. I must [go].

In the first case, the complement clause is coreferential with the subject pronoun *it* of the one-place predicate *be necessary*. In the second case, the subject of the two-place predicate *must* is also the one who will *go*. In other words, in (14-a), the subject of the matrix verb is different from the embedded clause, because the embedded clause has the subject *I*, the subject of the matrix clause, *it*, corresponds to the embedded clause itself. In (14-b), however, the subject of the necessity predicate is identical with the subject of the action that is said to be necessary.

According to Cristofaro (2003), expressions of obligations and permissions are generally ambiguous between the two readings—that either an individual may bring about a certain state of affairs (participant-internal), or that a certain state of affairs is permitted or required to come about (participant-external). By contrast, abilities are considered to allow only for one reading: the subject has an inherent possibility to bring about a certain situation.

In this sense, the semantic difference between deontic and ability readings is said to correlate with the structural difference between a one-place modal predicate with a clausal subject such as (14-a) as opposed to a two-place predicate with an individual subject such as (14-b). In some languages, this correlation is said to be firmly encoded in grammar:

The difference between expression [sic] of obligation and permission on the one hand and expressions of ability on the other is reflected syntactically in some languages. (Cristofaro, 2003:101)

Thus, in the following example from Acehnese, the modal verb *jeuet* 'can' only receives a personal suffix if it expresses ability. When expressing permission, the suffix is not allowed. This, according to Cristofaro (2003:101) can be 'taken as evidence that the condition of the permission is construed as holding for the dependent SoA as a whole.'

(15) a. *h’an=jjeuet=textbfjih [jii=jak]*
   *NEG=can=Gloss3 3=go*
   'He cannot walk yet' (Durie, 1985:289)
   b. *h’an jeuet(*=textbfgeuh) [geu=jak u=keude]*
   *NEG can(‘=Gloss3) 3=go to=to-town*
   'He cannot go to town' (Durie, 1985:289)*

Like Cristofaro (2003), Hengeveld (2004) also stipulates a correlation between interpretation of an expression and its formal realization. In participant-oriented (participant-internal) facultative modalities, the subject is the person with the ability. In event-oriented (participant-external) modalities, the subject is often clausal (*I am able to work vs. It can take three hours to get there*). For example, Hengeveld (2004:1194) states that deontic (participant-external) modality is often expressed by impersonal structures like the following, although other options are also available in some languages:

(16) *Bura-da ayakkabları çıkar-mak var.*
   *DEM-LOC shoes take-off-INF exist*

*The glosses were adjusted to reflect general conventions:*
'One has to take of his [sic] shoes here.' (lit. 'There is taking off of shoes here.') (originally from Schaaik, 1985)

Schmidtke-Bode (2014) diagnoses a similar correlation between form and function in expressions of possibility. Like Cristofaro (2003) and Hengeveld (2004), he concludes that deontic (participant-external) interpretations are available for modal predicates with clausal subjects, although he asserts that, far more frequently, clauses are subjects of epistemic expressions.

The logical possibility of subject clauses expressing abilities is not discussed in Schmidtke-Bode (2014). Other expressions of abilities or other possibilities hardly find their way into the discussion. The strongest expectations that we find in the literature are the following:

(17) a. Structures with clausal subjects should express epistemic or participant-external modality, not ability.
    b. Structures with personal subjects such that the subject of the modal predicate is coreferential with the subject of the embedded clause can express ability and maybe deontic modality.

More generally, it is a common assumption in the literature on modal semantics that the range of interpretations of modal expressions is constrained by their syntactic structure (e.g. Hacquard, 2009; Wolf, 2014). While in most debates on modal semantics, these assumptions play a rather minor role, we are going to comment systematically on apparent counter-examples to the above expectations, in order to enrich the discourse on the relation between syntax and semantics.

2.3 Conclusions

We have seen that bi-clausal expressions of possibility have received considerable attention in the descriptive literature on Japanese, and, to a lesser extent, other East-Asian languages; and in the typological literature on embedded clauses. More generally, there is some work in formal semantics and syntax that looks at the correlation between structural realization and interpretation of modal expressions. In the typological literature on modal expressions, however, bi-clausal structures have received only very little attention and have often been excluded systematically.

In this article, our primary objective is to give a first comprehensive descriptive account of expressions of possibility in Daakaka and Saliba-Logea. But simultaneously, we would like to take the opportunity to highlight that the phenomena we describe might be part of a more widespread linguistic strategy, the prevalence of which might have been obscured by the traditional focus on single-morpheme expressions of modal meanings. And we would like to invite a debate around how we define grammaticality, how we use this notion to restrict the range of expressions under consideration in typological studies, and to what extent existing practices are optimal for typologically balanced sampling.

2.4 Modal expressions in Oceanic

The discussion on modal meanings in Oceanic languages has focused primarily on the distinction between realsis and irrealis mood and evidentiality (e. g. Barbour 2011; Palmer 2007; Cleary-Kemp 2014). By contrast, the question of how different types of possibility are expressed is relatively understudied in this group of languages.

Within the discourse about possibility expressions in Oceanic languages, bi-clausal structures have previously been recognized as the main way to express possibilities in some languages, even as this diagnosis has suffered from a lack of clarity about the distinction between full verbs and auxiliaries (Dixon 1988: 279 Lichtenberk 2016: 332).

A wide range of verb meanings has been identified as sources for modal expressions in Oceanic. Among the sources for expressions of ability, we find 'be a match for', 'be appropriate, be adequate', 'be
enough, be sufficient’ (Lichtenberk, 2016: 336). Musgrave (2007: 92) also reports a verb meaning know as an expression of ability in Neve’ei, very similar to the Daakaka structures with kuowilye. Frequently, the same expression can be used not only for participant-internal modalities, but also for participant-external ones.

The differences between the two readings often correspond to differences in form. Generally speaking, personal subjects correlate with participant-internal possibility or ability while clausal subjects correspond to participant-external possibility. These correspondences between form and meaning confirm previous generalizations by Noonan (1985), Cristofaro (2003) and others. The following examples illustrate these alternations. In the first example of each pair, the subject of the modal predicate refers to an individual. The interpretation is that the modal expression refers to the inherent ability or need, in the case of (20), of this individual subject. In the second example of each pair, the subject is a third person singular, which can in these contexts only refer to the proposition expressed by the subsequent clause. The interpretation is one of participant-external possibility. The difference can also be illustrated by more literal translations, for example for (18): The first clause can be translated as ‘are you able to carry a bag of copra?’ The second one means ‘is it possible that you carry a bag of copra?’.

The examples also show that, in each case, the event that is deemed possible or necessary comes with its own TAM marking which is morpho-syntactically separate from the expression of ability or necessity itself. This suggests that they are indeed bi-clausal structures.

(18) Toqabaqita (Lichtenberk, 2008: 994) (emphasis by the authors):

a. Qo talaqa-na qoki ngali-a baeka kafara?
   2sg.NFUT fit-3OBJ 2sg.FUT carry-3OBJ bag copra
   ‘Can you carry a bag of copra?’

b. Qe talaqa-na qoki ngali-a baeka kafara?
   3sg.NFUT fit-3OBJ 2sg.FUT carry-3OBJ bag copra
   ‘Is it physically possible for you to carry a bag of copra?’

(19) Manam (Lichtenberk, 2016: 339f.) (emphasis by the authors):

a. ţan̓ari i-tubutūbu, tago u-bōadu m-éneʔ-i
   canarium.nut 3sg.REAL-be.wet 1sg.IRR-climb-3SG.OBJ
   ‘The canarium nut tree is wet; I am not able to climb it.’

b. ţan̓ari i-tubutūbu, tago i-bōadu m-éneʔ-i
   canarium.nut 3sg.REAL-be.wet NEG 3SG.REAL-be.able 1SG.IRR-climb-3SG.OBJ
   ‘The canarium nut tree is wet; it is not possible for me to climb it.’

(20) Boumaa Fijian, explicitly described as bi-clausal by Dixon (1988: 280)

a. Era dodonu me-ra la’o
   3pl necessary should=3pl go
   ‘They must go.’

By clausal subjects we refer both to structures in which the subject is given directly by a clause as in That she had remembered his name surprised him, and structures in which the subject position is occupied by a pronoun that is coreferential with a clause as in It surprised him that she remembered his name.

In this article, we are only concerned with expressions of possibility, not necessity. In the context of internal modalities, necessity would translate as a physical or emotional need instead of ability. It has been observed in Nauze (2008) and Narroq (2016: 98, 100) that, cross-linguistically, expressions of participant-internal necessity are rather rare. We wonder, however, whether this meaning is not often subsumed by verbs translated as want, as seems to be the case in Daakaka.

This observation aims purely at the morpho-syntactic structure of these expressions. It may very well be that the value of the embedded TAM marking is in some cases determined by the embedding verb, and in this sense, not independent from it. Nevertheless, mono-clausal structures in Oceanic languages typically only have one predicate marked for TAM (with the exception of certain serial verb constructions).

In Lichtenberk (2016), the glosses are slightly changed: In (a), talaqa is glossed as ‘be.able’, and in (b), it is glossed as ‘be.possible’, in line with the difference in interpretation.

The original is unglossed. The glosses were adapted from (Lichtenberk, 2016: 336), highlights by the authors.
b. *E dodonu me-ra la’o.*

3SG necessary should=3PL go

“They must go.”

We will also comment on these correspondences between form and meaning and show that they are not always as neat as portrayed here.

2.5 Methodology

For our study, we have primarily relied on corpus data from language documentation projects. For Saliba-Logea, we used Margetts *et al.* (2017), comprising close to 150,000 word tokens, with close to 70,000 glossed morphemes. For Daakaka, we relied on von Prince (2013). We also have access to data from new fieldwork on the language, based on storyboard elicitations. The storyboards we used are TFS Working Group (2011a); Rolka & Cable (2010); TFS Working Group (2010); Vander Klok (2013); TFS Working Group (2011b); [author redacted] (compare [author redacted], also see Burton & Matthewson 2015). In total, the corpus data for Daakaka comprise about 76,000 word tokens, with about 68,000 glossed morphemes. All the data were imported into the corpus platform ANNI (Krause & Zeldes, 2016; Zipser & Romary, 2010), using Druskat (2018), for optimal search and analysis options. Glosses were unified and, where necessary, adjusted to the current state-of-the-art.

The translations are taken directly from the corpus data. Their exact interpretations are primarily determined by the context and cautiously informed by the authors’ expertise on both languages.

3 Expressing possibility in Daakaka

3.1 Overview

There are a number of ways in which possibility can be expressed in Daakaka. The simplest way to do so is through potential mood. Daakaka has a system of seven markers that encode tense, aspect, modality and polarity (TAMP). They are shown in table 2.

<table>
<thead>
<tr>
<th></th>
<th>encilitc</th>
<th>proclitic</th>
<th>monosyllabic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pos. Realis</td>
<td>=m</td>
<td>mw=</td>
<td>mwe/mV</td>
</tr>
<tr>
<td>Neg. Realis</td>
<td>to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pos. Potential</td>
<td>=p/=∅</td>
<td>w=</td>
<td>wV</td>
</tr>
<tr>
<td>Neg. Potential</td>
<td>=n</td>
<td>n=</td>
<td>nV</td>
</tr>
<tr>
<td>Distal</td>
<td>=t</td>
<td>t=</td>
<td>tV</td>
</tr>
<tr>
<td>Open Polarity</td>
<td>doo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change of State</td>
<td>bwet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Table of TAM and polarity markers in Daakaka

These markers are an obligatory part of the close-knit verbal complex that forms the core of finite clauses, as illustrated below.

<table>
<thead>
<tr>
<th>SBJ.AGR</th>
<th>(=)TAMP</th>
<th>(AUX)</th>
<th>(REDUP-)</th>
<th>Verb</th>
<th>(RES)</th>
<th>(=TR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>na, …</td>
<td>=m, …</td>
<td>du.pwr</td>
<td>…</td>
<td>…</td>
<td>…</td>
<td>=ne</td>
</tr>
</tbody>
</table>

Table 3: Structure of the verbal complex in Daakaka

The positive potential marker is used in directive utterances such as (21):
(21) Ko-p = tas we!
    2SG=POT sit first
    ‘Sit down please!’

Narrog (2016: 94) offers the following account of the relation between modal expressions and mood markers:

In some areas of the world, as in Australia and the Pacific, languages often have no direct expression of deontic and dynamic modalities at all, while they have richly developed mood paradigms. Scholars of these languages sometimes indicate that moods may be functional equivalents to modality. Specifically, hortatives or imperatives may express deontic necessities, and potential or irrealis moods circumstantial or participant-internal possibility. [...] However, [...] these moods typically remain performative, and are therefore qualitatively different from non-epistemic modalities [...].

The Daakaka potential marker is not restricted to expressing directive or other non-assertive speech acts. In combination with the assertive particle ka, it occurs frequently in assertions, where it expresses a reference to future events or to possibilities of the present and future as shown in the following examples.

(22) barvinye swa ka we luk teve-sye m-ada em
    grass one ASR POT grow side.of-3S.POSS CL2-1D.IN.POSS house
    'a grass will grow next to our house' (2523)

(23) Ka w-i Ros o ka w-i Yokon.
    ASR POT= COP ROS of ASR POT=COP Yokon
    [Context: Mata discovers that someone stole her yam. She asks her friend Lising who the thief is. ] 'It might be Rose or it might be Yokon.' (SB_Daakaka_RedYam_Seebu.21)

In unembedded contexts, the potential marker only rarely encodes possibility, however. Daakaka also has a modal tag, vyen ‘I think’, to specify some level of uncertainty.

But the most prominent way to express possibility involves bi-clausal structures with the verbs kuowilye ‘know’ and wese ‘suffice’. The two differ in their distribution and meaning in ways that will be explored below in more detail.

3.2 Kuowilye, ‘know’

The verb kuowilye means ‘know’, both in the sense of familiarity with an individual or object and in the sense of propositional knowledge. Its object can be a noun phrase, as shown in (24):

(24) si to kuowilye s-an daa
    1PC.INCL NEG.REAL KNOW CL3-3SG.POSS language
    ‘we don’t know his language’ (2354)

When expressing propositional knowledge, kuowilye typically takes a finite clause as its object, headed by the realis complementizer na:10

(25) mwe kuowilye [na lisepsep mwe ane]
    REAL KNOW COMP lisepsep REAL eat
    ‘She knew that the lisepsep had eaten him.’ (1610)

10There are two complementizers in the language, the complementizer na for realis contexts, and the complementizer ka for non-real is contexts (compare von Prince, 2015).
In addition to knowledge, kuowilye can also express abilities and possibilities. In this case, too, the activity whose possibility is asserted can be given by a noun phrase as in (27):

(27) mo kuowilye sap-an
    REAL know dance=NMLZ
    ‘she can dance’ (lit. ‘she knows dancing’) (Q2011:89d)

More frequently, the object of the possibility expressed by kuowilye is denoted by an embedded clause. In this case, the embedded clause is headed by the irrealis complementizer ka, which can also be omitted, and is in potential mood. The optional use of the complementizer clearly marks the clause as embedded. The same structure is also used in the context of other embedding verbs such as dimyane ‘want’ or tuwuli-esi ‘try’. Furthermore, note that the predicate of the embedded clause is marked by the potential mood marker. Apart from a small set of specific serial verb constructions, Daakaka allows for only one TAM-marked predicate per clause (von Prince, 2015).

(28) nye na3 = m kuowilye [ka na3 = ⌣] vyan tiye suw-uk kyun]
    1SG 1SG-REAL know COMP 1SG=POT go kill RELPRON-1SG.POSS just
    ‘but I can beat him by myself’ (3101)

(29) Ma tiye yen em ane vyanten, [...] ko3 = m kuowilye [ka ko3 = p mer].
    REAL kill in house TR man 2SG-REAL know COMP 2SG=POT dead
    ‘It hurts people on the inside, you can die.’ (1847)

As these two cases show, the subject of kuowilye can be a personal subject that is then necessarily coreferential with the subject of the embedded clause. In (28), this subject is the first person singular, in (29), it is the second person singular.\footnote{Even though kuowilye is a control predicate in these cases, the expression of the controlled subject by the subject agreement marker is obligatory; this situation is cross-linguistically relatively rarely reported (Stiebels, 2007).}

It is also possible for kuowilye to take impersonal subjects, although this is much rarer. In the few instances we have found that have an impersonal subject, it is probably not clausal. For example, the following sentence is from an account of a traditional sport in which villages used to compete against each other. The impersonal subject here could refer either to one of the previously mentioned participating villages; or to the event of the competition itself.

(30) mwe kuowilye ka wa tilya vyanten milipsyes sikya sungavi
    REAL know say POT take man six touch ten
    ‘It [the village/ the competition] can take six to ten men’ (2698)

The verb kuowilye can express various kinds of possibility. It frequently denotes participant-internal possibilities, that is, possibilities conditioned by the inherent properties of the subject:

(31) ko to kuowilye kuo-kuo=an
    2SG NEG-REAL know REDUP-TUN=NMLZ
    ‘you can’t [swim] fast’ (1412)

(32) Mwe meu mo kuowilye ka wa sikya dom ves?
    REAL live REAL know COMP POT touch year how.much
    ‘How long can it live?’ (0117) (lit. ‘it lives it can reach how many years’)

Kuowilye can also express participant-external possibility, such as circumstantial possibility – the cir-
cumstances or conditions allow for an event to happen; or deontic possibility, in the sense that a certain event is compatible with a given set of rules.

The first type is illustrated in the following two examples. Note that, in (33), the subject of kuowilye is obviously personal, but the possibility expressed is not participant-internal: This is about a certain bird that may sing either to the right or to the left of the road when a person is on their way to accomplish a certain goal. If they hear the bird’s song to their right, this indicates that they will be lucky and accomplish their goal. As such, we are here talking about favourable circumstances, not about abilities.

While this constellation has not been ruled out by the typological literature (e.g. Cristofaro, 2003), it does show that form-meaning correspondences are not always as neat as portrayed by Lichtenberk (2016) (see section 2.4).

(33) mw=i s-am laki te ko-i m kuowilye [ko-i=p syakilyene sewe sa ko-m vyan
REAL-COP CL3-2SG.FOSS luck DISC 2S-REAL know 2S-POT find what TOP 2S-REAL go
ane] TR

’it means you’re lucky and you may find what you’re after’ (4968/9)

(34) ka we vyan w=i doma te ___ mo kuowilye [ka we ___ vyan doma, kueli me
COMP POT go POT-COP today DISC REAL know ASR POT go today return come
doma tetes kyun.] today again just

’another one, if for example he wants to go today, he can go today and return today again’ (1027)

Deontic readings of kuowilye with a personal subject are presented below. In (35), the speaker describes the kinship conditions that determine how people are supposed to behave towards one another. These conditions do not only depend on the kinship relation but also on the marital status of everyone involved. When a man marries, his relation to some of his female relatives changes. The reading we get is clearly about a set of social rules, not inherent capacities of the subject.

(35) [...] te ___ mo kuowilye [ka ___ we pyos-pyos ane]
DISC REAL know COMP POT REDUP-joke TR

’then he can joke with her’ (5102)

The sentence in (36) describes taboos surrounding certain places. Again, kuowilye does not refer to the inherent ability of people to enter those places, but to their clearance. So this reading, too, is a deontic one.

(36) te mw=i or yo swa na vyan ten kevene ya to kkuowilye [ka ya-n
DISC REAL=COP place taboo one COMP person every 3PL NEG.REAL know COMP 3PL=NEG.POT
vyan] go

’it’s a sacred place where not everybody can go’ (0691)

In contrast to wese, which we will describe in the following section, kuowilye cannot express epistemic possibility. In the following example, which was elicited as a translation from Bislama, the version with wese was offered, and a replacement of wese with kuowilye was rejected.

(37) Ma wese/*kuowilye ka t=i vyan ten minyes sa ma liye dom.
REAL suffice/*know COMP DIST=COP person different TOP REAL take yam

’It may have been someone else who took the yam.’ (Q2017:5.1.1)
3.3  Wese, ‘enough, suffice’

The second major expression of possibilities in Daakaka is wese, which also means be enough, suffice. This meaning is illustrated in the following examples. In (38), we see wese with a pronominal subject, referring to a coconut:

(38)  *en-tak* to wese, na-p min-tase tuswa mon we
       def=prox neg.real enough 1sg=pot drink-again one also first
       ‘this [coconut] is not enough, I shall drink another one first’ (0231)

In the following sentence, wese is used as a serial verb of quantification. The subsequent clause is probably best analyzed as an purpose clause, since wese appears to be strictly intransitive.

(39)  temeli mwe yas mwe wese [ka we te vislee]
       child real strong real enough comp pot cut bow.and.arrow
       ‘the boy was strong enough to make a bow and arrows’ (3371)

When wese expresses more general abilities, possibilities and the like, the subject can be personal or clausal. The following example shows a personal subject with wese expressing a participant-internal possibility, as would be expected for a personal subject.

(41)  …s-an pon-pon=an mwe golit na mwe golit, ra to wese
       …cl3-3sg.poss redup-whistle=nmlz real writhe comp real writhe 1pl.incl neg.real enough
       [ra=n ka]
       1pl.incl=neg.pot say
       ‘its whistling is so convoluted, we can’t imitate it’ (6118)

In (42), the subject is clausal and the possibility expressed is clearly participant-external: it is not the internal ability, or lack thereof, that determines that the people that are the subject of the embedded clause cannot enter their village; instead, the obstacle is the still-hot lava. Also note that we are again dealing with a complementizer and TAM marking on the predicate of the bracketed phrase, which clearly mark it as clausal, and as subordinate — similar to what we have seen before with *kuowilye*.

(42)  to wese [ka ye=n me vyan tevy-an wuvoy toowe or]
       neg.real enough comp 3pc=neg.pot come go side.of-3sg.poss lava cover place
       ‘They could not go [inside the village], because lava covered the place.’ (0996)

In contrast to the expectations about correspondences between form and meaning outlined in section 2.2, wese also occurs with clausal subjects in cases in which the possibility it expresses is very likely participant-internal, rather than external. The following sentence is from a description of a certain kind of insect which has a pupa stage during which it forms a cocoon. It is a generic description of this kind of cocoon. We therefore have to assume that the sentence talks about the general, intrinsic fragility of these cocoons, rather than a specific set of circumstances which may lead to their coming open.
As stated in section 2.1, this observation contradicts prior generalizations from Cristofaro (2003) and others, saying that predicates of possibility with a clausal subject generally refer to participant-external possibilities. We will see another possible counter-example to this generalization below in (80).

In contrast to kuowilye, wese also has a clearly epistemic reading, which is illustrated by the following examples. In (44), the subject of wese is clearly clausal. In the other two examples, there are no morpho-syntactic clues to diagnose whether the subject is clausal or whether the matrix subject is coreferential with the embedded subject.

(44) ma wese na bween-tye mwe lyoo, ma sengep milye an
real enough comp container-of.it real break real be.open on.top 3sg.poss
‘It’s cocoon can break, it opens at the top,...’ (6004)

As stated in section 2.1, this observation contradicts prior generalizations from Cristofaro (2003) and

In contrast to kuowilye, wese also has a clearly epistemic reading, which is illustrated by the following examples. In (44), the subject of wese is clearly clausal. In the other two examples, there are no morpho-syntactic clues to diagnose whether the subject is clausal or whether the matrix subject is coreferential with the embedded subject.

(44) ma wese webung w=i sii, w=i viyer ma ge-te, mu ku-kyu
real enough day pot=cop three pot=cop four real like=med real redup-surround
‘it might have been three or four days, [the lava] surrounded him’ (0978)

Newer fieldwork suggests that epistemic wese requires a higher degree of certainty than afforded by English might or may. For example, in the storyboard by Rolka & Cable (2010), Tom is looking for his cat. There are three baskets and the cat is hiding in one of them. In this situation, it is fine to say, in English, Tom thought that the cat may be in the small basket. But the corresponding sentence with wese was rejected by Daakaka speakers with the explanation that, in this situation, Tom would not have reason to believe that the small basket was a more likely hiding place than the other two baskets.

Unlike kuowilye, wese is not a control predicate. This means that the subject of the embedded clause does not have to be coreferential with the subject of wese. Quite often, the subject of wese will be an inanimate object, even though in the translation, it is more natural to take the animate subject of the embedded clause as the subject of a corresponding possibility predicate. This is illustrated by the following examples.

The example in (47) describes a pillow created from parts of a tree fern. After processing them, it says, people can rest their head on the finished product.

(47) ...ma wese na vyanten ma wilva yan
real enough comp man real rest.head on
‘people can rest their head on it’ (lit. ‘[the woven pillow] is sufficient for people to rest their head on’) (2863)

In a similar fashion, the example in (48) describes the boat that the two protagonists of the story, a rat and kingfisher, have fashioned out of a pawpaw:

(48) ...vyan mwe wese na ka ye-p saa te ye=m lingi vyan yen tes
go real enough comp comp 3d-pot float disc 3d=real put go in sea
‘Then they could float [on the pawpaw boat] and they put it on the sea.’ (lit. ‘Then [the boat they

The literal translation is, of course, also an acceptable sentence of English, which expresses essentially the same meaning as the free translation. Unlike the free translation, however, it comes with an added implicature that, while the pillow can be used as a head rest, but might not be the optimal way to support one’s head while sleeping. This implicature is absent from the original text.
had made] was sufficient for them to float’) (4988)

From the closely related, neighboring language Dalkalaen, we find the following example, in a story where two boys spot the reflection of some bananas in the water and mistakenly believe they could take the bananas out of the water. They keep trying, but:

(49) vii en=ti to wese ne me.
  banana DEM=PROX NEG-REAL enough NEG.POT come
  ‘they couldn’t get the bananas out.’ (lit. ‘the bananas couldn’t come.’) (SB_Dalkalaen_Bananas_Amos.10)

These examples illustrate that wese often expresses the internal possibility of an inanimate object to be used in a certain way, or an affordance of this object.

Even though kuowilye is used far more often as an expression of possibility than wese, wese is used very often in negative contexts. Meanings that are expressed by kuowilye in the positive versions are sometimes expressed by wese in their negated version. This is illustrated by the following example which was produced during an elicitation of the TFS Working Group (2011a) storyboard. In this story, Mary’s friends come to ask her whether she can come with them to play. But she has a number of chores to do first and so refuses.

(50) A: Meri ko=m kuowilye ko=p usili kenma si=p vyan bangbang?
  Mary 2SG=REAL know 2SG=POT follow 2DU.EXCL 2PC=POT go play
  ‘Mary, can you come with us to play?’

  B: To wese ka na=p usili kama, ka na=p kase belet.
     NEG-REAL enough COMP 1SG=POT follow 2DU  ASR 1SG=POT wash plate
     ‘I can’t come with you, I have to wash the dishes.’

In some cases, negated wese expresses a meaning similar to never:

(51) pyan em ane san kuokuo=an or mwe pyang-pyang kyun pwer, to wese
  under house TR 3SG.POSS shut=NMLZ place REAL REDUP-hot just stay NEG-REAL enough
  meas ne ate taem tuswa, tevy-an mwe saa pwer milye
  cold NEG.POT bite time one side.of-3SG.POSS REAL hang stay on.top
  ‘inside its cocoon, it’s warm, it can never be cold, because it hangs up high’ (6000)

(52) te na ye=m du yene meo to wese ka na bangbang myane
  DISC COMP 3PC=REAL stay now namalau NEG-REAL enough COMP NEG.POT play with
  tyu
  chicken
  ‘and as the two are now, the megapode never plays with the chicken’ (1384)

3.4 Conclusions

In the previous sections, we have seen that both kuowilye and wese enter into bi-clausal structures when expressing possibilities. The second clause contains a TAM-marked predicate and can always be introduced by the irrealis complementizer ka, which clearly shows that these structures are not mono-clausal. In the case of kuowilye, the embedded clause functions as its object. In the case of wese, the embedded clause can either be the subject of this verb, or a purpose clause.

We have also established that both kuowilye and wese show a wide range of interpretations. In particular, kuowilye covers both participant-internal and participant-external meanings. Both meanings are also attested for wese, which has the additional meaning of epistemic possibility. We would like to add that, apart from certain epistemic readings of wese, both verbs are clearly restricted to possibility interpretations to the exclusion of necessity interpretations. Various flavours of necessity can be
expressed by the verb *ka* ‘say, want, think’, *dimyane* ‘want’, and the Bislama loan *mas* (from English ‘must’, but with a much wider range of applications).

Even if we only count the occurrences of *kuowilye* when it is translated as *can, could, may, might* or *will*, we find that it is among the one hundred most frequent tokens in the corpus. *Wese* as an expression of possibility is less frequent, but still well within the two hundred most frequent tokens, along with several pronouns and aspectual particles. Modally interpreted *kuowilye* is at the 94th percentile of token frequencies; modally interpreted *wese* is at the 90th percentile. This means that these elements are radically more frequent than we would expect of a purely lexical expression of possibility such as English *possible*.

Table 4 summarizes the frequencies of both items. It also shows that the modal uses of both items are far more frequent than the non-modal uses, further strengthening the impression that the modal uses are highly grammaticalized.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>kuowilye</em></td>
<td>185</td>
<td>112</td>
<td>13</td>
<td>94</td>
</tr>
<tr>
<td><em>wese</em></td>
<td>79</td>
<td>56</td>
<td>29</td>
<td>90</td>
</tr>
</tbody>
</table>

We can also see from this table that modal *wese* is proportionally more frequent in its negated form compared to *kuowilye*: a little more than half of all modal occurrences of *wese* are negated, while only about seven percent of all modal occurrences of *kuowilye* are negative.

Thus, in terms of semantic specificity and in terms of frequency, modal uses of *kuowilye* and *wese* with their corresponding complement clauses look like highly grammaticalized expressions. The question whether they belong to a closed class, or to a small paradigm, is harder to assess, because it depends heavily on what we count as paradigmatic alternatives. Daakaka has several hundred verbs (von Prince, 2017). But among those, only a small number have been observed to take complement clauses. Furthermore, among complementizing verbs, only seven have been observed to take complement clauses in potential mood, comparable to infinite complement clauses in English. Apart from *kuowilye* and *wese*, these are *dimyane* ‘want’, *tuwuli-esi* ‘try’, *ka* ‘say, want’ and *nyurnyurane* ‘plan’. If we were to only count these items as paradigmatic alternatives, *kuowilye* and *wese* would pass Bybee et al. (1994)’s test for belonging to a closed class (see section 2.1). Crucially, this picture differs dramatically from languages such as written English: There are dozens of predicates with non-finite clausal complements that are frequent enough to show up repeatedly even in a corpus as small as our Daakaka corpus, including *want, try, need, seem, be able, begin, like, continue, appear, expect, tend, fail, wish, decide, intend, start, refuse, manage, agree, be allowed, be forced* and many others (based on a preliminary survey of the British National Corpus).

These observations serve to illustrate that 1) whether a word class is closed or open, big or small, depends crucially on the definition of its distribution (e.g. verbs vs. transitive verbs vs. embedding verbs etc.), and 2) there may be stark differences between languages in the size of (parts of) their lexica, which makes the reliance on paradigms as a way to identify cross-linguistically similar categories even more difficult.

Concluding this section, we have shown the following:
1. Both *wese* and *kuowilye* have frequencies far above average lexical items and comparable to certain pronouns, aspectual particles and other grammatical items.
2. Both expressions have a wide variety of modal interpretations and are not restricted to one specific kind of possibility.
3. The only other expression of possibility is the potential marker. Far more frequently, however, this
marker expresses future assertions, imperatives and a range of other meanings that are not restricted to possibility.

4. The two expressions can be argued to be part of a small and closed paradigm.

It seems therefore fair to say that the two sentence-embedding predicates *kuowilye* and *wese* are the most highly grammaticalized way to express general possibilities in Daakaka.

4 Expressing possibility in Saliba-Logea

4.1 Overview

Saliba-Logea is the term for two closely related Oceanic language variants that are spoken on the eponymous islands of Saliba and Logea respectively (also known as Sariba and Rogeia). We will refer to Saliba-Logea here as one language. Both islands belong to Papua New Guinea and the language is part of the Papuan-Tip cluster. Even though Saliba-Logea is also an Oceanic language of Melanesia and shares many structural properties with Vanuatu languages like Daakaka, its TAM system is very different. Most importantly, TAM marking in Saliba-Logea is optional in many contexts, especially in assertions about the actual past or present. The main subject of our investigation is the predicative noun *gonowa-* which will be discussed in the following section. In the present section, we will describe alternative ways of encoding possibility in the language and how they differ semantically from expressions with *gonowa-*.

The optionality of TAM marking is illustrated by the following example:

(53) *pologi wa hesau ye unui*

*frog ANA a 3SG.SBJ catch*

'He caught one of the frogs.' (FrogStory_01AW_0156)

While most of the utterances that are unmarked for modal or temporal reference are about the actual past or present, they can also refer to merely possible or hypothetical situations. This is illustrated by the following example, where the unmarked, bracketed part indicates a future possibility. The second part is introduced by *kabo*, which expresses immediateness (past or future) and often occurs in event sequences (Margetts, 1999:14):

(54) [*ku boita] meta *kabo ka-m kao kayakayauna yo pane-m ne kayakayauna*

*2SG.SBJ die TOP then POSS2-2SG.POSS face which and smell-2SG.POSS ART which*

'*You may die/if you die], then how would you look and how would you smell?' (lit. ‘...which [would be] your face’ and which [would be] your smell) (Boneyawa_11BG_0079)

Possibility can be expressed more specifically by a number of lexemes. One of them is *bena*, which can express intentions and obligations as in (55), but also occurs in purpose clauses and false-belief reports as in (56).

(55) *ka gado [bena ku unui-he-mate]*

*1EXCL.SBJ want POT 2SG.SBJ catch-CAUS-die*

'we want you to catch it and kill it' (BudoiNualele_01CY_0492)

(56) ... *yo-na nuwatu [bena bwaityatu]*

*POSS1-3SG.POSS thought POT kundu.drum*

'*A woman heard the sound of the waves and] thought it was kundu drums.' (Bagodu_01AH_0014)

The most common way to express epistemic possibility is the word *nuwana* ‘maybe’. Like *gonowa-* ‘possibility/ability’ it is of nominal origin: *nuwa-* means ‘heart’ or ‘mind’. The noun is obligatorily
inflected for the person and number of its inalienable possessor, unless it is incorporated into the verb in external possessive constructions (cf. Margetts, 1999:235). It is attested with all person/number distinctions. Example (57) shows nuwa- 'heart/mind' with a first person singular possessor, (58) shows a third person singular possessor.\footnote{Expressions such as ‘my mind forgot’ are not unexpected in an Oceanic language, because mental states, emotions and medical conditions are often expressed by psycho-collocations or experiential collocations, which require a specific combination of a possessed body-part noun and a predicate (compare Matisoff 1986, Verhoeven 2007, [redacted 1]).}

(57) kalita wa nuwa-gu wa ye luluhi
sea.water ANA mind-1sg.POSS ANA 3sg.SBJ forget
‘I forgot the sea water.’ (lit. ‘My mind forgot the seawater.’) (Bagodu_01AH_0054)\footnote{The phrase [kalita wa] is a topicalized object here.}

(58) nuwa-na wa ye luluhi
mind-3sg.POSS ANA 3sg.SBJ forget
‘She forgot.’ (lit. ‘Her mind forgot.’) (Bagodu_01AH_0056)

The form nuwana ‘maybe’ thus corresponds etymologically to the third-person singular form nuwana 'her/his/its mind/heart'. It is therefore possible to analyze a structure like the following as literally saying ‘its mind exists that I didn’t anchor properly’:

(59) nuwana nige ya loli komakomani
maybe NEG 1sg.SBJ anchor carefully
‘maybe I didn’t anchor properly’ (WakonaYeKahaihai_01DN_0026)

However, in its function as a marker of epistemic possibility, nuwana only occurs in the third-person singular form. It is therefore not clear whether in modal expressions with nuwana ‘maybe’ the form still constitutes a predicative noun in a bi-clausal construction, or whether it has been reanalyzed as a modal adverb or particle modifying the verb in a mono-causal clause construction.

There is a further expression of possibility which, like nuwana ‘maybe’ and gonowa- ‘possibility, ability’ centres around a noun that can be directly possessed. The noun kabi generally refers to the inherent nature of the possessor, as in (60):

(60) ye laki-laki meta you nige kabi-gu ye kata
3sg.SBJ REDUP-big TOP 1sg NEG nature-1sg.POSS 3sg.know
‘He grows up and he doesn’t know me [as his father].’ (lit. ‘…and he doesn’t know my nature’) (Adoption_01AO_0050)

This noun is homophonous with a verb meaning 'hold, grab, reach', as in (61):

(61) hesau ye tolo sae na ye kabi sae wa nige gonowa-na
a 3sg.SBJ stand(up) go.up and.then 3sg.SBJ touch go.up ANA NEG ability-3sg.POSS
‘One [of them] climbs on top [of the timber] and reaches up, but he can’t [reach the shirt].’ (Abs-Rei1_02DO_0009)

In the vast majority of occurrences, kabi is inflected for an inalienable possessor and occurs in a fixed expression with the verb kata ‘know’ to encode knowledge of or familiarity with a referent or a proposition. In these constructions kabi ‘nature’ occurs as the object of kata ‘know’, the direct possessor of kabi ‘nature’ encodes the referent or proposition known and the subject of kata refers to expe-riencer of ‘knowing’. The formula can be described as $x$ knows the kabi of $y$. A literal translation of (62) below would be ‘we know the nature of the customs’ and (63) ‘I know your nature’.

\footnote{14}The phrase [kalita wa] is a topicalized object here.
While all person-number distinctions are attested, the most frequent form is a third-person-singular possessor:

Apart from expressing familiarity with specific objects or facts, kabi- ... kata can also express practical knowledge, or the learned ability to do something. In this sense, kabi- ... kata is also an expression of possibility. In this function, the construction differs from nuwana and gonowa-, however, in that the ability to which it refers is not generally specified by a separate clause, but by another noun, as illustrated below:

If the knowledge referred to is of an activity or skill this can be expressed by a directly possessed nominalized verb, as in (67), where bosa ‘basket’ is the possessor of halusi ‘weave’:

4.2 Gonowa-

The most general and most frequent way to express non-epistemic possibilities is with the lexeme gonowa- ‘possibility, ability’, which is used as a predicative noun. The content of the possibility is realized as a separate clause which typically follows the non-verbal predicate with gonowa-. The inflection on gonowa- again indicates the person and number features of its possessor. The syntactic relation between the clause containing gonowa- and the subsequent clause is not clear, since Saliba-Logea does not appear to differentiate formally between main clauses, complement clauses, relative clauses and adverbial clauses (Margetts, 1999:17). Functionally though, the clause specifying the content of the possibility can be identified as the (semantic) subject of the predicate gonowa-.

Noun phrases in Saliba-Logea can function as predicates without a copula and without derivational morphology. The main patterns are briefly summarized below. Clauses consisting only of an NP can
be translated as existential clauses:

(69) *taubada hesau ma-natu-na*
    old.man a with-child-3SG.POSS
    'There was man was with his child.' (lit. 'An old man with his child') (Boneyawa_07BC_0006)

(70) *kulu-na unai pasa*
    hair-3SG.POSS PP.3G flower
    'In his hair were flowers.' (lit. 'In his hair flowers') (Bagodu_01AH_0073)

Clauses consisting of a noun phrase with a possessor can be translated as 'POSSESSOR has/ had NP':

(71) *[meta ena ka-gu kaha] ya uyo-ma*
    TOP if POSS2-1SG.POSS sibling 1SG.SBJ return-to.SPKR
    'If I have a sister/ friend to go with me I'll come back.' (lit. 'if my friend, then I'll come back')
    (Fishing_01BQ_0571)

(72) *nige ka-di kai*
    NEG POSS2-3PL.POSS food
    'they had no food' (lit. 'Not their food') (BwalaDoini_01CO_0153)

Considering these patterns, a structure of *gonowa*-POSSESSOR CLAUSE can be paraphrased as 'the possibility of POSSESSOR to CLAUSE exists' or 'POSSESSOR has the possibility to CLAUSE.'

The clause encoding the content of the possibility can also precede the *gonowa*-clause as in (61), repeated from above. This pattern seems to be more common with negated possibility but is not restricted to this context.

(61) *hesau ye tolo sae na ye kabi sae wa nige gonowa-na*
    a 3SG.SBJ stand(up) go.up and.then 3SG.SBJ touch go.up ANA NEG ability-3SG.POSS
    'One [of them] climbs on top [of the timber] and reaches up, but he can’t [reach the shirt].' (AbsRel1_02DO_0009)

The noun *gonowa-* is also used to express similarity or equality. In these contexts, it is generally reduplicated as *gono-gonowa-*.

15 The possessor suffix of *gonowa-* can be singular or plural:

(73) *magai ne kewa-na ne koya tupi-di gono-gonowa-na hinage kalita*
    place ART TOP-3SG.POSS ART mountain hill-3PL.POSS REDUP-same-3SG.POSS also sea.water
    *luwa-na ne unai*
    inside-3SG.POSS ART PP.3G
    'there are landscapes under water with mountains and valleys just like above water' (lit. 'the place here on top [has] mountains, the same [holds] under water.') (Diving_01DP_0163)

(74) *gono-gonowa-na doha teina kaiwa yo pasa ta kuma-i tenem kalita*
    REDUP-same-3SG.POSS like near.SPKR tree and flower 1INCL.SBJ plant-TR that.DIST sea.water
    *luwa-na ne ka-di kao gono-gonowa-di*
    inside-3SG.POSS ART POSS2-3PL.POSS face REDUP-same-3PL.POSS
    '[They are] the same as these trees and flowers we have planted, those ones underwater look the same.' (Diving_02DP_0099)

(75) *mahabu yo boneyawa gono-gonowa-di*
    mahabu and funny.story REDUP-same-3PL.POSS
    'mahabu and boneyawa mean the same thing' (Mahabu_01AH_0011)
The only clear examples of gonowa- expressing similarity or equality involve the reduplicated form gonogonowa-. It is therefore well possible that this form constitutes a separate lexeme which might have diachronically originated from gonowa-, but has since then reanalyzed. To the extent that there is a diachronic link between the equality expressed by gon(o-|gono-)wa- and the possibility denoted by gonowa-, this would be in tune with what Lichtenberk (2016) described for some other Oceanic languages, where an expression of non-epistemic possibility also means ‘match, fit’. This polysemy pattern has however not been widely described so far. For instance, there is no entry for a grammaticalization link between equality and ability or possibility in Heine & Kuteva (2002). An interesting possibility for linking the two meanings is suggested by examples like the following, which could also be translated as something like ‘my strength is not equal to the task of swimming’:

(76) nuwana nige ye-gu bayao gonowa-na kabo ya tuba
    maybe NEG POSS1-1SG.POSS strength possibility/same-3SG.POSS then 1SG.SBJ swim
    ‘maybe I would not have the strength to be able to swim’ (WakonaYeKahaihai_01DN_0069)

Another example where gonowa- is ambiguous between possibility and similarity is given in (77), where the word yauwo (‘hello, thanks’) is explained by way of its similarity to the greeting lautoki.

(77) kita kalina-da unai ne gonowa-na doha lautoki unai ta
    1INCL language-1INCL.POSS PP.3G ART possibility/same-3SG.POSS like greetings PP.3G 1INCL.SBJ
    hepaisowa use
    ‘in our language, we use it in the same way as “lautoki” / we can use it like “lautoki”.’ (AboutDialects_01DP_0021-22)

Abilities and, even more often, inabilities or participant-internal (im)possibilities are regularly expressed by gonowa-. This noun can form a single-word sentence or be followed by a clause that elaborates on the type of possibility in question. The following examples also show that the ability-denoting gonowa- can take the full range of person-number features for its possessor. This is an important factor for our analysis as gonowa- as an inflected noun that constitutes an independent clause:

(78) Gonowa-m?
    possibility-2SG.POSS
    ‘are you ok / are you able to do it / are you managing?’ (lit. your possibility)

(79) Gonowa-gu
    possibility-1SG.Poss
    ‘I can do it / I’m ok’ (lit. ‘my possibility’)

(80) gonowa-m meta [kabo ku dobi ku unui-he-mate]
    possibility-2SG.POSS TOP then 2SG.SBJ go.down 2SG.SBJ catch-CAUS-die
    ‘you are able to go down, to catch it and kill it’ (BudoiNualele_01CY_0497-9) (repeated from above)

However, it appears that the form gonowa-na, with a third person singular possessor, is highly specialized and, like nuwa-na ‘maybe’, might no longer be fully transparent as a possessed, predicative noun phrase. Examples like (80) show that gonowa- can be inflected for a third-person-singular possessor even if the subject of the ability is, for example, a first person.

(80) nige gonowa-na [ya wose sagu-i-go]
    NEG possibility-3SG.POSS 1SG.SBJ paddle help-TR-2SG.OBJ
    ‘I can’t help you paddling.’ (Boneyawa_11BG0097)

In combination with its reference to participant-internal possibility, this observation can be inter-
pered in two different ways.

1. Either, gonow-na is an inflected noun here, in which case the possessor suffix can only refer to the subsequent clause, because the subject of that clause, in turn, is a first person singular. This would make it a counterexample against the widespread assumption about form-meaning correspondences we introduced in section 2.1: Structures with clausal subjects should express epistemic or participant-external modality, not ability. We have already seen in the context of the Daakaka example in (43) that the form-meaning correspondences do not appear to be as strict as previously suggested.

2. Or, cases like this one are an indication that gonowana is being reanalyzed as an adverbial marker of possibility rather than an inflected, predicative noun. Apart from participant-internal possibility, gonowana can also express participant-external possibility. In these cases, the possessor is typically a third-person singular, indicating its coreference with the complement clause. The following two examples show cases of circumstantial impossibility – the small size of the pawpaw tree in one case, the dinghy being anchored in the other.

   (81) [nige gonow-na] [ta mwalae] [mwauyope meta ye gagili kalili] neg possibility-3sg.poss 1incl.sbj go.in pawpaw top 3sg.sbj small very
   ‘one couldn’t really climb that pawpaw, the pawpaw was too small’ (Boneyawa_02AJ_0016)

   (82) [nige gonow-na] [se dobij] [pana anka wa ye tabe-tabe didi-ni]
   neg possibility-3sg.poss 3pl.sbj go.down because anchor ana 3sg.sbj redup-pull flow-tr
   ‘they couldn’t go out to the sea because the anchor was pulling [at the dinghy]’ (Boneyawa_30DP_0018)

Deontic possibilities can also be expressed with gonowal-na, as shown in the following two examples. Example (83) is about the customs and rules associated with the building of canoes. The sentence in (84) concerns the rules of fishing.

   (83) gonow-na kabo kowa ku gelu
   ability-3sg.poss will 2sg 2sg.sbj board
   ‘Thus it would be alright for you to board.’ (CanoeBuilding_01BC_0091)

   (84) huku meta nije laugagayo [gonow-na] [tamowai gaibu ye luy ye fishing top neg rule possibility-3sg.poss person just.like.that 3sg.sbj go 3sg.sbj
   huku]
   ‘In terms of fishing there are no rules, anybody can go and fish just like that.’ (CanoeBuilding_01BC_0115)

Epistemic possibility is usually expressed by nuwana, as mentioned before. One candidate for an epistemic interpretation of gonowal-na is the following example, which comes from a story about an old woman who encounters a freezer for the first time in her life when she goes to the store. As she reaches to take something out of the freezer, she is shocked by the sudden sensation of cold and believes she received an electric shock. Another plausible interpretation here is, however, that gonowana expresses the internal, generic ability of ice to cause an electric shock. We therefore have no unambiguous example of gonowana expressing epistemic possibility and this meaning might not be part of its semantic range.

   (85) eh temeta aisi meta [nige gonow-na temeta pawa ye hai-go] ...
   eh near.ad power near.ad neg possibility-3sg.poss near.ad power 3sg.sbj take-2sg.obj
   ‘Hey, that’s ice! That can’t give you an electric shock …’ (PowerGotMe_01AQ_39)

16 Technically, we are dealing with a possessor instead of a subject, but functionally, the possessor fills the role of the subject in relation to the predicative noun.
A hypothetical use of gonowa(-na) in combination with taba is attested below. The term taba is closely associated with counterfactual and other irrealis contexts:

(86) doha taba tamowai gonowa-na [doha haedi hali teha unai ye lau-ma]
    like IRR person possibility-3SG.POSS like where other side PP.SG 3SG.SBJ go-to.SPKR
    ‘for instance when a person comes from somewhere’ (AboutDialects_01DP_6)

The same combination can also be used for polite questions:

(87) taba gonowa-na [ku he-kata-gau]
    IRR possibility-3SG.POSS G.POSS 2SG.SBJ CAUS-know-1SG.OBJ
    ‘Could you let me know [how you made your haul]?’ (lit. ‘If you could teach me …’) (Boney-awa_29CO_0040)

4.3 Conclusions

In the preceding section, we have argued that gonowa- is a predicative noun which forms bi-clausal structures to express possibility. In some cases, its status is ambiguous and we cannot clearly distinguish between gonowa-na as an inalienably possessed, predicative noun in a bi-clausal construction as opposed to a situation where gonowana has been reanalyzed as an adverbial particle modifying a single clause.

We have shown that gonowa(-na) can express a wide range of possibilities, including participant-internal, circumstantial, deontic and hypothetical readings. In addition, epistemic readings cannot be fully excluded based on our data. It is also a high-frequency item of the language: The form inflected for a third person singular possessor gonowana alone is at the 99th percentile of token frequencies in the corpus data we used. The form gonowana occurs 234 times in the corpus of 150k tokens. In combination with other inflections, the total number of occurrences of (unreduplicated) gonowa- is 250. Note that this unreduplicated form almost always expresses possibility. This number is similar to the pronoun yau (1sg), which occurs 238 times, the noun waga (‘canoe’), which occurs 237 times and is the main topic of several texts, and the aspectual particle taki (‘just’), which occurs 256 times. The word naniu, which we have discussed above as a highly grammaticalized expression of epistemic possiblity, occurs 260 times. The noun kabi ‘manner’, which features prominently in expressions of ability, occurs a total of 151 times with various possessors—of those occurrences, 106 are followed by kata ‘know’. We can conclude that the frequency of gonowa- indicates a highly general use, comparable to some of the most frequent nouns and to some grammatical markers. Gonowana- does not, however, express obligation or necessity. Most contexts that are translated with must or have to involve the morpheme bena, which was briefly discussed in examples (55)f.

Moreover, gonowana can be seen to contrast paradigmatically with nuwana, which primarily expresses epistemic possibility and has a similar syntactic distribution, and possibly also with kabi-…kata as an expression of learned ability. It is hard to assess how many nouns enter into bi-clausal constructions similar to gonowa-, since there is no formal marking of the syntagmatic relationship between the noun and its complement clause. We are however confident that, apart from the candidates mentioned here, there are few if any other nouns that exhibit similar behaviour. In contrast to English possible, gonowa- does not appear to compete with a wide range of lexical expressions with a comparable distribution and function. Also, there are no items in the language that are structurally simpler and could replace gonowa- in most contexts.

In sum, we suggest that gonowa(-na) meets the criteria for a highly grammaticalized item, even though it sometimes, maybe always, forms a bi-clausal structure: It has a wide range of meanings, is highly frequent and can be described to be part of a small paradigm. In a typology that is concerned with grammatical markings of possibility regardless of their structural complexity, items such as gonowa(-na) should therefore definitely be considered.
5 Summary

In this article, we have presented a detailed description and analysis of expressions of possibility in the Oceanic languages Daakaka and Saliba-Logea. Most of the empirical observations presented here have not previously been published. Among our observations are cases that demonstrate that the relation between form and function is not as straightforward as sometimes assumed. In particular, participant-internal possibilities can be expressed by structures involving clausal subjects.

Further, we have shown that, in both languages, the bi-clausal structures we describe are the most highly grammaticalized ways to express certain types of possibility. This is evidenced by their low semantic specificity, high frequency, and small number of paradigmatically contrasting items. The present study therefore extends the current understanding of modal expressions both in Oceanic languages and cross-linguistically, in that previous studies of modal expressions tend to exclude bi-clausal constructions on the grounds of their structural complexity and, possibly, based on an analysis of the present terms as lexical rather than grammatical expressions of modality.

References


Druskat, Stephan. 2018 (Jan.). ToolboxTextModules (Version 1.1.0).


Wolf, Lavi. 2014. *Degrees of assertion*. Ben Gurion University of the Negev, Faculty of Humanities and Social ....