Glossa a journal of general linguistics

Sauerland, Uli, et al. 2020. When hypotaxis looks like parataxis: embedding and complementizer agreement in Teiwa. *Glossa: a journal of general linguistics* 5(1): 89. 1–30. DOI: https://doi.org/10.5334/gjgl.931

RESEARCH

When hypotaxis looks like parataxis: embedding and complementizer agreement in Teiwa

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Teiwa, an Alor-Pantar language of the Trans-New Guinea family, has been characterized as expressing speech reports not with complementation, but with combinations of two clauses juxtaposed under a single intonation contour with no morphological indication for integration (Klamer 2010: *A Grammar of Teiwa*, Mouton de Gruyter). We argue, contra Klamer, that speech and attitude reports in Teiwa should be analyzed as embedding (or *hypotaxis*). We present evidence from intonation, syntax and semantics that speech reports are expressed by a single, monosentential structure in Teiwa with embedding of the speech report. Our results also show that purely morphological diagnostics can be unreliable for distinguishing between a monosentential or bisentential structure of speech reports. We describe several formal experiments from our fieldwork that provide more reliable tests. Our result has implications for both the ongoing theoretical discussions of clausal complementation, complementizer agreement, grammaticalization of complementizers and the historical evolution of complementation.

Keywords: embedding; complementation; complementizer agreement; parataxis; speech reports; Papuan

1 Introduction

Grammatical analysis of embedded clauses has been a central theme of modern theoretical linguistics since Chomsky (1957) used data from complex clauses to gain deeper insight into the formal properties of natural language. Recently, researchers have gained new insight into complementation through close examination of syntactic and semantic properties across a wide range of languages (Aboh 2005; Arsenijević 2009; Bogal-Albritten 2016; Elliott 2017; Jayaseelan 2014; Kastner 2015; Kratzer 2006; Moulton 2015; and others). Our primary empirical interest in this paper is embedding in the Teiwa language (Klamer 2010a). Understanding embedding in Teiwa is of general interest because Teiwa was claimed to lack complementation entirely and to instead use *juxtaposition under a single intonational contour* (Klamer 2010a). (1) is a Teiwa example of this type of juxtaposition from our own fieldwork:

(1) Natan a na-walas **a** **wa** bas a Qalambas ma gi
Natan 3SG 1SG-tell 3SG say tomorrow 3SG Kalabahi COME go
'Natan told me that he will go to Kalabahi tomorrow.' [LT.CD1.008][1]

[1] Data we collected during our fieldwork are contained in a Toolbox format corpus file appended to this paper. The example IDs refer to the text reference IDs used in the corpus. A short description of the file naming system can be found in Supplement 2.

Example (1) contains both the verb *walas* 'tell' and following it, the verb *wa* 'say'. However, in the English translation we provide, the speech report expressed by (1) requires only one verb of speech, *told*. In other words, the Teiwa (1) seems to correspond to the English sentence *Natan told me that he said that …* with double embedding, but this interpretation is actually very marginal in Teiwa. Therefore an analysis of (1) as embedding seems initially implausible. Since at the same time, several substrings of (1) can form independent sentences as shown in (2), it seems plausible that (1) consists of more than one sentence. An analysis as a sequence of the two independent sentences (2a) and (2b) is the alternative proposed by Klamer to which we refer in this paper as the *bisentential analysis*.

(2) a. Natan a na-walas
Natan 3SG 1SG-tell
'Natan was talking to me.' [sentence 1]

b. a wa bas a Qalambas ma gi
3SG say tomorrow 3SG Kalabahi COME go
'He said he is going to Kalabahi tomorrow.' [sentence 2]

We argue here that (1) must be analyzed as a single sentence where the sequence *a wa* acts as a complementizer agreeing with the matrix clause subject. We refer to our proposal as the *monosentential analysis*. As far as we know, the way speech and attitude reports are expressed in Teiwa is unique among living languages. The complementizers are related to the verb *say* in many languages, e.g., Malayalam (Jayaseelan 2014), Matses (Munro et al. 2012), or Usan and other Papuan languages (Reesink 1993), but only a handful of languages link speech complements with the fully inflected verb *say*. One such language is Nanti, where the complementizer (glossed as QUOT) agrees with the matrix subject (see (12) below). Agreeing complementizers are reported for a number of Bantu languages (Kawasha 2007; Diercks 2013) several Mande languages of West Africa (Idiatov 2010; van Koppen 2017), and in Nilotic (Diercks & Rao 2019). Idiatov (2010) argues that such agreeing complementizers, at least in Mande, appear to be always related to quotative predicators and ultimately verbs, sometimes still present in the same form. As an example, we will discuss Lubukusu (Section 3 below). In Teiwa, the verb *say* linking speech and attitude reports requires a subject pronoun.[2] The language most similar to Teiwa that we are aware of is the extinct Akkadian (Deutscher 2000), a parallel to which we return in Section 3.

The main goal of our paper is to propose a monosentential analysis of Teiwa examples like (1). Under our analysis *a wa* essentially fulfils the role of a complementizer. We first present background on the relevant aspects of Teiwa in Section 2. In Section 3, we discuss a number of languages with complementizer agreement. In Section 4.1, we address the status of the utterance initial *a wa*, as in (2b), where *a wa* does not follow another propositional attitude verb. We argue that in such cases, *wa* is an independent full verb taking a clausal complement following it. In Section 4.2, we then consider examples like (1), in which *a wa* is non-initial and prosodically integrated with the preceding propositional

[2] One reviewer raised the question of whether forms such as *a* in (1) should be described as *pronoun* or *clitic*. For our main argument this question is irrelevant and it is only important that the same form is used in (1) and in an independent sentence like (2b). We use the term *pronoun* for two reasons: to follow Klamer (2010a) and because the impersonal pronoun *hala* can occur in this position (see (30b) below). *Hala* is bisyllabic, can bear stress, and in object position is followed by agreement, and therefore not a clitic. Note furthermore that other pronouns such as *a* do not undergo reduction in rapid speech, even when the second syllable of the sequence *a wa* does for some speakers (further details in Section 4.2.5).

attitude verb; we argue that *a wa* in such occurrences is a *complementizer*. We present three arguments in favor of the monosentential analysis and argue for an agreement relation between the speech verb (agreement controller) and the complementizer *wa* (agreement target). Our conclusion is that, despite initial appearances to the contrary, the monosentential analysis is correct based on evidence we present from prosody, syntax, and semantics. We return to the parallel between languages discussed in Section 3 and Teiwa in Section 5 where we state the implications of the Teiwa embedding on our understanding of the evolution of complementizers and complementation.

2 Background and the puzzle

In 2.1 we provide information about the Teiwa language and its speakers. The treatment of Teiwa complex sentences in Klamer (2010a) is presented in 2.2.

2.1 Teiwa language

Teiwa is spoken on the island of Pantar, located in the Nusa Tenggara Timur province of Eastern Indonesia, shown in Figure 1. Teiwa has about 4,000 speakers, who reside in two villages, Madar and Lebang. Most of the Teiwa speakers in Madar are male because the society is predominantly patrilocal (Klamer 2010a: 17).

Virtually all Teiwa speakers are at least bilingual, speaking Teiwa and Malay. They are predominantly Christian, received at least a few years of elementary education in Indonesian and virtually everyone is fluent in Alor Malay. Christian worship has been conducted in Indonesian since the 1970s (Klamer 2010a: 3). Teiwa is an endangered language whose speakers are shifting towards Alor Malay. In the coastal village of Madar, children do not acquire Teiwa as their first language while in Lebang, located in the mountains, children still spoke the language and acquired it in most domains at the time of our fieldwork. Given the strong influence of Malay and Indonesian, it is possible that the language may have recently undergone changes in the areas of interest due to the influence of Malay/Indonesian. For this reason, wherever possible, we have made an effort to include speakers of various ages in the experimental studies. Despite our effort we did not detect a significant effect of age and conclude that the phenomena we report on exhibit some stability across native Teiwa speakers of different ages.

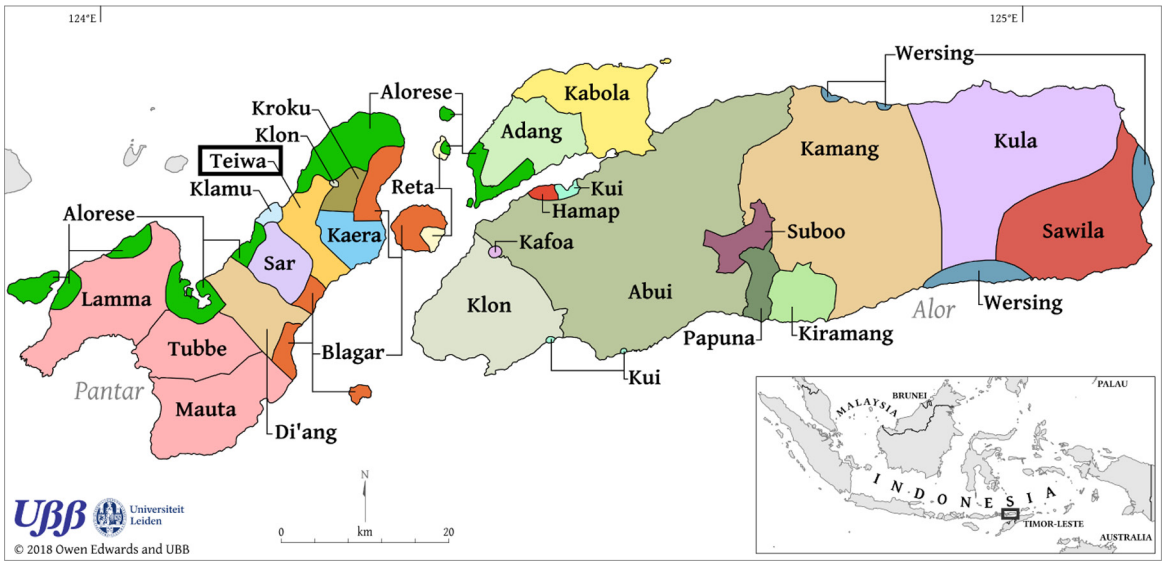


Figure 1: Alor-Pantar languages (courtesy of Owen Edwards, Leiden University).

Teiwa has a nominative-accusative alignment and limited morphology. Nouns agree with possessors (alienable vs. inalienable); verbs agree with human objects and can combine with realis suffixes. Teiwa is overwhelmingly head-final, the most common constituent order being OV, with negation and conjunctions following the predicate. Verb serialization is common (Klamer 2010a: 30–31).

2.2 Clause combinations in Teiwa

This section summarizes the analysis of Teiwa clause combinations, following (Klamer 2010a: 361–395), which provides the following description:

> *Teiwa discourse is characterized by strings of clauses that can be connected by a conjunction or discourse linker, or separated by an intonational break, while there are also clauses that are merely juxtaposed to each other under a single intonation contour* (Klamer 2010a: 363).

Specifically, Klamer reports that relative and complement clauses are not attested in Teiwa. Klamer further addresses subordinate adverbial clauses, as well as adnominal purpose clauses, which we will not discuss here. At the same time, Klamer clearly intends her discussion of complement clauses to be a preliminary one, stating that *further detailed investigations of Teiwa clause combinations therefore remain necessary* (Klamer 2010a: 363).

Serial verb constructions are distinguished from clause combinations by the empty subject position of one of the serialized verbs, as shown in (3).

(3) Ba a ta tup-an a **pin** Ø **gi**
SEQ 3SG TOP get.up-REAL 3SG [hold Ø go]$_{\text{serial.verb}}$
'So he got up and left.' (Klamer 2010a: 308)

As for adverbial clauses, Klamer shows that two temporal connectives exist in Teiwa: *si* 'SIM' for temporal simultaneity (4a) and *ba* 'SEQ' for temporal sequentiality (4b). *Ba* is also used to describe causal relations.

(4) a. Qui yaa ma xa'a **si** i wan tad.
caterpillar descend come this SIM 3PL surround
'Caterpillars came down surrounding them/swarming around them.' (Klamer 2010a: 383)

b. A uy i wan hamar ma walas **ba** a bis.
3SG person PROX prayer COME tell SEQ 3SG healthy
'He prayed for this person [so] he would get better.' (Klamer 2010a: 384)

Si 'SIM' and *ba* 'SEQ' must occur between two clauses or (for *ba* 'SEQ') two phrases. However, Klamer reports that there is no evidence of an asymmetry between two clauses connected by *si* 'SIM' or *ba* 'SEQ': *Both conjunctions function to express a temporal connection between two equivalent clauses* (p. 386). So, syntactically, they behave like the coordinating conjunctions *ata* 'and' and *le* 'or' when they are used to connect clauses.

The only evidence Klamer presents for clausal subordination in Teiwa is from an adnominal purpose clause construction illustrated in (5): *qar ol-an* in (5) must clearly be a subordinate clause because of its clause medial position.[3]

[3] We did not investigate this construction further because we were not aware of its existence in 2008 when we conducted our fieldwork. It is not used in speech and attitude reports.

(5) Ni'in sen qar ol-an ga-x wan maan
1PL.EXCL$_{Location}$ [money [rice buy-REAL]$_{VP}$ 3SG-possession]$_{Theme}$ be NEG
'We do not have money to buy rice.' (Klamer 2010a: 377)
(Lit. '[Possession of money to buy rice] does not exist (at) us').

With speech reports, Klamer finds no evidence of subordination in Teiwa (Klamer 2010a: 364–369) but does make a distinction between speech reports with the verb *wa* 'say' and those with other speech verbs. Consider first the verb *wa*. Klamer points out that the verb *wa* can be used to express not only the concepts 'say' and 'think', but also 'go' as a deictic motion verb. However, only the *wa* 'go' combines with the realis suffix.[4] Furthermore, when used to report speech or thought, *wa* can be followed by either direct or indirect speech. One clear example of indirect speech is (6).

(6) iman a wa iman paat, pi-soxai le, pi-pantum le
they 3SG say they not.know 1PI-dance or 1PI-poem(IND) or
'They say they do not know our dances or our songs.' (Klamer 2010a: 275)

Klamer does not commit herself to a specific syntactic structure for the analysis of speech reports with *wa*, but refers to them as 'quotative constructions'. One potential reason for a special status of *wa* may be word order: While complements in Teiwa generally precede the verb, in all of Klamer's examples with *wa*, the speech report follows *wa*, as shown in (6). However, the order of the verb *paat* and its object in (6) illustrates, the word-order of object and verb exhibits actually some flexibility, as Klamer also reports. We return to the analysis of *wa* below.

Of the other utterance verbs, Klamer's discussion of *regan* 'ask', *bangan* 'request/ask for something', and *walas* 'tell' is most relevant for our current purpose, though Klamer also discusses *taxani* 'inquire', *soi* 'order', and *liin* 'invite'. Klamer proposes that all of these verbs *occur in juxtaposition with the reported utterance itself* (p. 364) and describes the structures in which they occur as *multi-clause combinations* (p. 364). With *regan* 'ask', she provides the two examples in (7) to show that the content of the question reported can either follow *regan* 'ask' and its nominal arguments, as in (7a), or precede them, as in (7b).

(7) a. A ni-regan gigalal ba ni aria-n maan.
3SG 1PL.EXCL-ask why SEQ 1PL.EXCL arrive-REAL NEG
'He asked us why we did not come.' (Klamer 2010a: 366)

b. A miaag bif g-oqai g-u'an yilag la miaag ga-regan?
3SG yesterday child 3SG-child 3SG-cradle who FOC yesterday 3SG-ask
'Who asked him if he carried a child yesterday?' (Klamer 2010a: 366)

In addition, Klamer cites example (8) in which the phrasal verb *om ga-regan* 'ask themselves' is followed by a direct speech complement.

[4] The motion verb *wa* 'go' is compatible with the realis and may be the source of the speech verb *wa* 'say', in the same way as the English *go* is to a marker of speech reports in colloquial speech (Butters 1980; Cukor-Avila 2002). While there are virtually no cognates for the Teiwa *wa* 'say' in the Alor-Pantar languages, several can be identified for the Teiwa motion verb *wa* 'go': Tubbe *wa* 'go (to close places)' (Holton & Lamma Koly 2008), Abui *we* 'go, leave, go away' (Kratochvíl & Delpada 2008), Kamang *we* 'go' (Schapper & Manimau 2011), and Sawila *we* 'leave, depart' (Kratochvíl et al. 2014). In the cited languages the initial *w correspondence is regular.

(8) Iman mis-an wan om mai om ga-regan taxaran si pi ta in
3PL sit-REAL be inside store inside 3SG-ask how SIM 1PL.INCL TOP thing
i er?
FORTHC make
'They sat planning thinking: "How shall we do it?"' (Klamer 2010a: 373)

In the case of *bangan* 'request/ask for something', Klamer points out that this verb has unusual word order properties: Object nominals can occur with *bangan* either in the usual preverbal position, shown in (9a), or postverbally, as in (9b), which she reports as otherwise impossible in Teiwa. Further, Klamer also suggests that the clause following *bangan* in (9c) serves as an object.

(9) a. Na sen bangan.
1SG money ask.for
I ask for money. (Klamer 2010a: 366)

b. Na bangan na-bangan qau.
1SG ask.for 1SG-life good
'I ask for a good life.' (Klamer 2010a: 366)

c. Na bangan Kri Bas n-un-mulax geneg.
1SG ask.for Mr Bas 1S-APPL-help a.bit
'I ask Mr Bas to help me a bit.' (Klamer 2010a: 367)
(Lit. 'I ask for Mr Bas [he] helps me a bit.')

Finally, the most interesting class of utterance verbs for our purpose consists of those followed by *wa*. Klamer uses *walas* to illustrate this class, as we do in (1) above, and reports that *in most cases* walas *is followed by the quotative construction consisting of* a wa *'s/he says' and the speech report* (direct or indirect speech), as illustrated in (10a) (indirect speech) and (10b) (direct speech).

(10) a. a tup-an a emaq u ga-walas, **a wa** a mau tewar
3SG get.up-REAL 3SG wife DIST 3SG-tell 3SG say 3SG want(IND) walk
por awan ta gi.
island far TOP go
'he got up [and] said to his wife, he said he wanted to go to an island far away' (Klamer 2010a: 367)

b. … a-yivar ga-walas **a wa**: "Ha siga' ga'an"
… 3SG-dog 3SG-tell 3SG say 2SG be.quiet 3SG
'… [he] told his dog saying: "You be quiet"' (Klamer 2010a: 367–68)

Following on Klamer's investigation of complex clauses in Teiwa, our own inquiry is focused on the speech reports introduced by *wa* and on the status of examples like (1) and (10) where *wa* follows another speech verb. Before examining relevant cases in Teiwa in detail, we take a brief look at the typological and historical findings from other languages.

3 *Say* as a complementizer

Research on several other languages has described the use of forms related to the verb *say* to express propositional attitudes. There is ample evidence that complementizers commonly originate in a general verb of speech (Heine & Kuteva 2002; Güldemann 2008). More specifically this has been demonstrated for some Austronesian languages (Klamer

2000), Creoles like Bislama (Crowley 2004: 182), Chadic (Frajzyngier 1996), Dravidian (Jayaseelan 2014), Ewe (Lord 1993), and some Papuan languages (Reesink 1993). In difference to Klamer's analysis, such uses have often been described as *Complementizer* forms of the verb *say*. In this section, we show that Teiwa represents a uniquely interesting case to understand when a verbal form should be analyzed as a complementizer.

For the following, we introduce a descriptive terminology: We write that the verb *say* occurs (or occurred) as *Independent Occurrence* expressing the verb of speech if no other propositional attitude verb occurs nearby that *say* might be construed with. In the Teiwa data we have seen up to now, (2b) and (6) contain such independent occurrences of *wa*. Furthermore, a form related to the same verb *say* can also occur as *Integrated Occurence* where it is construed with another propositional attitude verb. Of the Teiwa examples up to now, (1), (10a), and (10b) contain integrated occurrences of *wa*. The form of *wa* used in independent and integrated occurrences is actually identical in Teiwa,[5] but more frequently it seems that integrated forms of the verb *say* are reduced.

We focus on languages where the integrated uses of *say* exhibit agreement with the subject of the other attitude verb they are construed with. In European languages, complementizers either do not agree at all (as in English) or agree with the subject of the embedded clause, as in some dialects of German and Dutch (Zwart 1997: 137–141). However, the Germanic complementizer agreement is never controlled by the subject of the matrix clause. Complementizer agreement with matrix subjects has been observed only in Nanti (Michael 2008) and in a number of Bantu languages (Kawasha 2007; Diercks 2013), several Mande languages of West Africa (Idiatov 2010; van Koppen 2017), and in Nilotic (Diercks & Rao 2019). One such language is Lubukusu (Bantu, Kenya). Diercks (2013) introduces the notion *complementizer agreement* using Lubukusu examples such as (11).[6] The subject of the speech verb *babolela* 'say' in (11) is *babandu* 'people', a class 2 noun. It is the controller of the subject agreement prefix *ba-* attached to both the verb and the complementizer *li*. In (11b), the agreement controller is a class 1 noun *Alfredi*.

(11) Lubukusu (Bantu, Kenya)

a. Ba-ba-ndu ba-bol-el-a Alfredi **ba-li** a-kha-khil-e.
2-2-people 2S-said-AP-FV 1Alfred 2-that 1S-FUT-conquer
'The people told Alfred that he will win.'

b. Alfredi ka-bol-el-a ba-ba-ndu **a-li** ba-kha-khil-e.
1Alfred 1S-said-AP-FV 2-2-people 1-that 2S-FUT-conquer
'Alfred told the people that they will win.' (Diercks 2013: 358)

Diercks (2013) shows that the complementizer agreement in Lubukusu is productive: various noun classes control agreement on the complementizer (p. 364–365) and the agreement is not affected by negation (p. 366). Lubukusu has a number of complementizers, among which AGR-*li* appears to be restricted to verbs of *speech/manner of speech*, *knowledge/belief*, and *desire*; it is incompatible with verbs that presuppose the truth of their complement (Diercks 2013: 397–398). We do not know whether the complementizer *li* of Lubukusu is related to a verb of saying.

Complementizer agreement is also reported for Nanti (Arawakan, Peru). In Nanti, we find both independent occurrences of *ka*N*t* 'say' and integrated occurrences thereof as *ka*, but Michael's analysis is different from Klamer's analysis of Teiwa. Michael (2008: 111)

[5] For one exception, see (45) below.

[6] In the Bantuist tradition the numbers indicate noun classes. Odd numbers indicate singular, even ones plural. The labels S and O mark subject and object.

analyzes the Nanti *ka* in (12) as a marker of quotative embedded clauses (a complementizer in our terms) that agrees with the matrix subject. Specifically, *ka* occurs with first person agreement in (12a) and with third person masculine agreement in (12b). Michael (2008) identifies the verb *ka*N*t* 'say', shown in (12b), as the diachronic source of the marker *ka* and reports that similar morphemes are also attested in other Campa languages (Michael 2008: 111–112).

(12) Nanti (Arawakan, Peru)

a. no = keNkitsa-ak-i **no-ka** no = goNke-haa-a
1SG = tell.story-PERF-REALIS.I 1SG-QUOT 1SG = arrive-CL:WATER-REAL.A
ShaNpiNkihari
place name
'I told a story of my arriving in ShaNpiNkihari.'

b. i = N-kaNt-e **i-ka-ha** tomi no = ha-i
3MS = IRR-say-IRR.I 3MS-QUOT-NEG.IRR son 1SG-go-REAL.I
no-N-kamoso-e
1SG = REAL-visit-REAL.I
'He would say: I will not go and visit my son.'

The closest parallel to Teiwa is presented by Akkadian (Semitic, Ancient Mesopotamia), whose long written record captured the development of a general complementizer (Deutscher 2000). Akkadian is the earliest known Semitic language, which was used in writing from around 2500 BC until the beginning of the current epoch in a great variety of genres. Akkadian letters are available from the earliest period and reflect well the development of the colloquial language because they were dictated by illiterate clients to scribes to be read out to the recipient, a property which makes the letters well suited for the investigation of grammaticalization (Deutscher 2000: 23).

As shown in Table 1, Old Akkadian is characterized by (Deutscher 2000) as a language without embedding where *enma* S(-*ma*) and later *umma* S(-*ma*) encode an independent clause paratactically joined with a speech report attributed to the speker (marked as S here). From Early Old Babylonian *umma* S-*ma* is attested with other speech verbs and the S marking disappears in the Middle Babylonian period. During the Neo-Babylonian period, *umma* appears as a complementizer with verbs such as 'fear' or 'hear', as shown in Table 1.

Table 1: Development of complementizer *umma* (Deutscher 2000: 67).

period	form	grammatical status	translation
Old Akkadian	*enma* S(-*ma*)	independent clause	'(this is what) S said/says'
(2500–2200BC)			
Late Old Akkadian	*umma* S(-*ma*)	idem.	idem.
(2200–2000BC)			
Early Old Babylonian	*umma* S-*ma*	independent clause	'(this is what) S said/says'
(2000–1800BC)		or with speech verbs	
Later Old Babylonian	*umma* S-*ma*	still independent clause and almost	'(this is what) S said/says'
(1800–1600BC)		obligatory with speech verbs	
Middle Babylonian	*ummā*	only with speech verbs,	'saying' or ∅
(1500–1000BC)		subject S lost	
Neo–Babylonian	*umma*	speech verb complementizer,	'saying', ∅, or 'that'
(1000–500BC)		extending to verbs 'fear', 'hear'	

In Early Old Babylonian *umma* may form an independent clause as in (13).[7] The subject pronoun *anaku* 'I' combines with the particle *ma* and has to follow *umma*. Deutscher (2000: 70) describes *ma* as a particle used for emphasis and coordination.

(13) Early Old Babylonian
umma anaku-ma alp-um sa taqabbi'-u [u-la i] z-za-az
umma 1-PART ox-NOM REL you.say-SUB is not available
'I said: "the ox you are talking about is not available".' (Deutscher 2000: 72)

Several examples of integrated uses of Early Old Babylonian *umma* with speech verbs are given in (14). Deutscher (2000: 72) states that the speech verb and *umma* are in paratactic relation. Note that the subject pronoun following *umma* 'say' is first person singular in (13a) and (13b) but third person plural in (13c). The subject of *umma* is the same as the subject of the speech verb, resembling the Lubukusu and Nanti agreement pattern.

(14) Early Old Babylonian
a. ašpurak-kum **umma anāku-ma** litma'ā …
I.wrote-to.you *umma* 1-PART let.them.swear …
'I wrote to you, (and) this is what I said: "…"' (Deutscher 2000: 72)

b. a-ap-pá-al-su [um-m]a anāku-ma … [5 lines]
I.answered-him *umma* 1-PART
'I answered, (and) this is what I said "…"' (Deutscher 2000: 72)

c. iq̄-bi-ú ni-im-ma **umma sunu-ma** …
they.said-to me-PART *umma* they-PART …
'They talked to me, (and) this is what they said "…"' (our translation)
(Deutscher 2000: 73)

As the translations given in (14) indicate, Deutscher (2000) does not consider the Early Old Babylonian data to be instances of embedding, but of two independent paratactically joined sentences (see also Deutscher 2005), i.e. a similar analysis to the one Klamer (2010a) adopts for Teiwa examples like (6). In sum, the previous literature suggests that structures with integrated occurrences of *say* (or an agreeing complementizer) receive different analysis across languages: a monosentential, complementation structure when the integrated form of *say* is morphologically distinct from the independent forms as in Nanti and all languages without agreement on integrated *say*, but a bisentential, paratactic structure when the integrated and independent forms of *say* are identical as in Early Old Babylonian and Teiwa. Teiwa is the only living language of the latter type as far as we know, and therefore it is important to apply further diagnostics for complementation to it including prosodic and semantic tests. We present our results in the following section.

4 The analysis of Teiwa *wa* ('say')

This section presents new evidence concerning both independent and integrated occurrences of Teiwa *wa*. In Section 4.1, we argue that independent occurrences of *wa* are full lexical verbs taking a speech report as the object, and in Section 4.2 we show that integrated occurrences of *wa* are complementizers that follow another speech verb and agree with its subject in person and number. Both uses are distinguished by a number of features summarized in Table 2 and will be discussed in the remainder of this section.

[7] Deutscher (2000: 70) gives a number of arguments for *umma* coming ultimately from the verb 'say'. However, such etymology is only putative.

Table 2: Properties of the independent *wa* and the integrated *wa*.

feature	independent *wa*	section	integrated *wa*	section
subject of *wa*	speaker	4.1.1	agreement	4.2.2
aspect	compatible	4.2.3	incompatible	4.2.3
negation	compatible	4.1.2	incompatible	4.2.4
prosodic status	head	4.1.3	integrated	4.2.5
analysis	full verb	4.1.4	complementizer	4.2.6

In our discussion we frequently refer to a number of experiments conducted with the assistance of several young Teiwa men, to whom we refer with their first names as Ben, Bimbo, Lorens, Natan and Orias. All of them are friends and live in the village of Madar. In several experiments they acted out scenarios which included reporting each other's speech, thoughts, and intentions.

4.1 Independent occurrences of wa 'say'

In this section, we discuss uses of *wa* 'say' in contexts lacking another speech verb, such as (15). We show that independent *wa* is a full lexical verb with the interpretation 'say, think'. We imply that *wa* is not an evidential marker, to which speech verbs such as 'say' commonly grammaticalize (Heine & Kuteva 2002: 265).

(15) a **wa** bas a Qalambas ma gi
[3SG]$_{\text{subject}}$ say [tomorrow 3SG Kalabahi COME go]$_{\text{object}}$
'He said he is going to Kalabahi tomorrow.' [MM.E6.0033]

The independent *wa* is a transitive verb taking a speech report as its object argument and the speaker of the speech report as the subject. In other words, the analysis of *wa* is exactly that of *say* in English.

4.1.1 Encoding of the subject

As mentioned in Section 2.1, Teiwa does not exhibit much verbal morphology. The pronoun *a* immediately preceding *wa* in (15) is phonologically a clitic. Its occurrence is obligatory, and the form varies with the person and number of the subject, as (16) illustrates.

(16) iman **i** **wa**, saxa' ga-tof la un tei g-om me'
they 3PL say chicken 3SG-egg FOC CONT.DST box 3SG-inside be.in
'They think that there is a chicken egg in the box.' [AM.FB2.003]

The pronoun doubling in (16) encodes focus on the third person plural subject. Further details about this form can be found in (Klamer 2010a: 84–85). In Teiwa, subjects are expressed by pronouns, and prefixation is reserved for objects (Klamer 2010a: 31). Verbs that mark their subject with a prefix are rare in Teiwa: Klamer (2010a: 98) reports that there are only three verbs which follow such pattern: *-o'on* 'hide' (17), *-ewar* 'return', and *-ufan* 'forget'. All three roots are vowel-initial and encode events with an affected subject. Notably, the S prefix of the vowel-intitial verbs has a reduced form consisting of a single consonant, unlike the subject agreement found with the complementizer *wa* (see Section 4.2.5).

(17) ha h-o'on
2SG 2SG-hide
'You hide.' (Klamer 2010a: 98)

4.1.2 Compatibility with negation

Furthermore, the independent *wa* is compatible with negation, as seen in (18), a property expected from a lexical verb but not from an evidential particle or a complementizer.

(18) Na wa **maan** na i'
1SG say NEG 1SG sick
'I did not say that I'm sick.' [LT.CD2.177]

4.1.3 Prosodic properties of the independent *wa*

The speech report verb *wa* can be a prosodic head, forming a prosodic word with the subject proclitic *a* and the subject noun *Natan*. The pitch contour of (19) is shown in Figure 2.

(19) Natan **a** **wa** ha-hutan ari'
Natan 3SG say 2SG-bow break
'Natan said your bow broke.' [MW.E789.39]

Example (20) shows that the verb *wa* may be the final constituent in questions targeting the speech report.

(20) Atab le, hasi eqar afo'o **a** **wa**?
true PART PART woman DST 3SG think
'That's right, so what does the woman think?' [BT.EFB3.008]

The intonation contour indicates that the speaker's pitch rises at the end of (20), as can be seen in Figure 3. This pattern is common for declarative questions (Van Heuven & Van Zanten 2005: p. 88) and is cross-linguistically widespread (Ohala 1984: p. 5).[8]

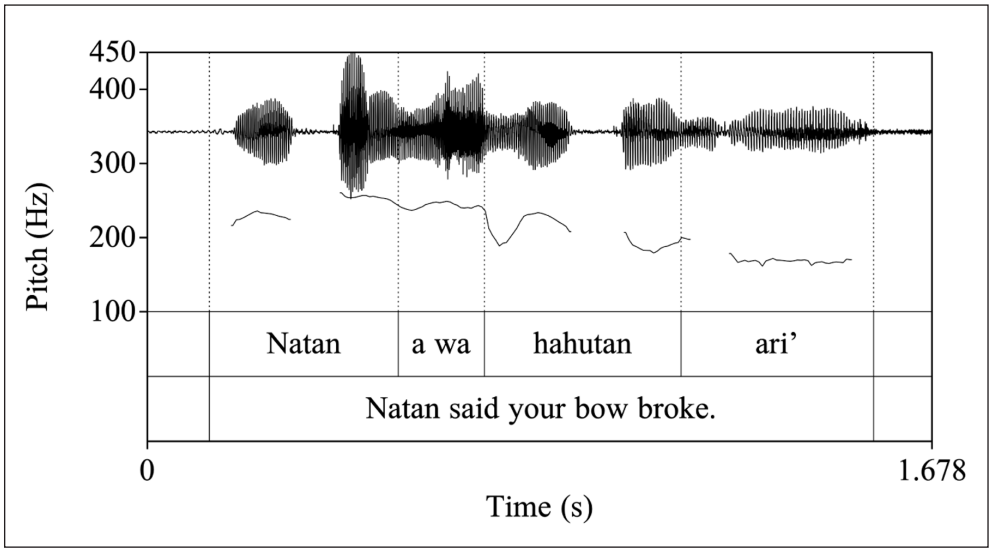


Figure 2: Prosodic word *a wa* in (19).

[8] Question melody differs across languages, but researchers have claimed that some element of high pitch, absent from the corresponding statements, is widespread. Perhaps the most common implementation is the terminal high boundary tone (H%) (Van Heuven & Van Zanten 2005: p. 88)

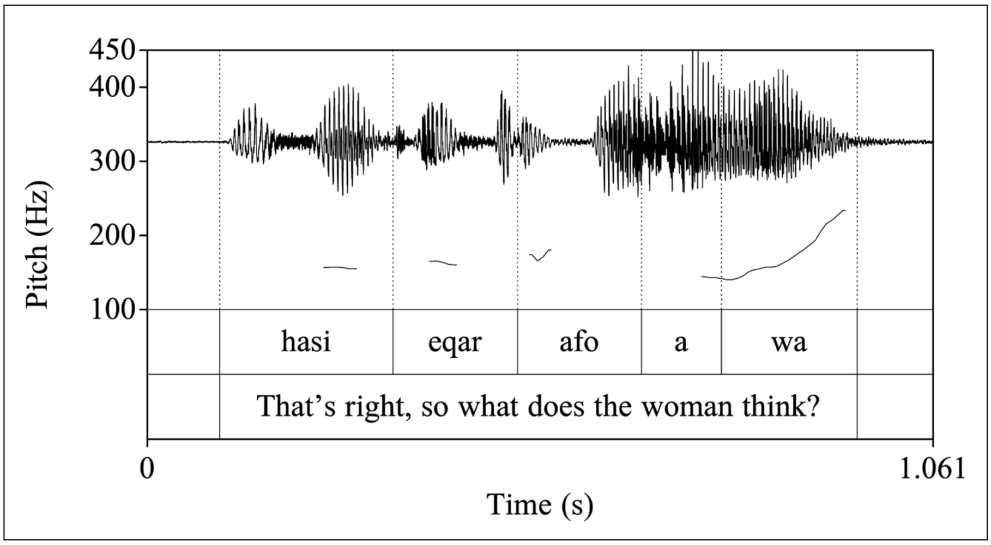


Figure 3: Rising pitch contour in the Teiwa declarative question (20).

Table 3: Responses predicted by the non-embedding and embedding analysis.

		truth value predicted by analysis	
condition	**schema**	**non-embedding**	**Embedding**
match-correct:	'A' - '*a wa* A'	1	1
mismatch-incorrect:	'A' - '*a wa* B'	0	0
match-incorrect:	'B' - '*a wa* B'	0	1
mismatch-correct:	'B' - '*a wa* A'	1	0

The question may be fragmented because in the following turn, shown in (21), the other participant first supplies a noun phrase, then after 10 seconds reiterates his answer as a full statement.

(21) yirkua, … (10s) … **a** **wa** xa'a yirkua la gom mia'
turtle 3SG say this turtle TOP 3S-inside fill
'A turtle… She thinks there is a turtle inside.' [BT.EFB3.009]

In sum, the syntactic and prosodic facts univocally demonstrate that *wa* is a full-fledged lexical verb, marking subject, allowing object ellipsis and compatible with negation. Next, semantic evidence is presented showing that the speech verb *wa* and its object form a single clause. The speech report is embedded and syntactically subordinate to the verb *wa*.

4.1.4 Semantic evidence: true reports of a false statement

We have designed an experiment to probe the truth values of the reported speech in both the non-embedded analysis proposed in (Klamer 2010a) and the embedding analysis proposed here. The non-embedded analysis predicts that the truth of the reported speech is entailed, but the embedding analysis does not make this prediction. The judgements of our primary consultants indicated that the prediction of the embedding analysis is correct. The materials consisted of short dialogues which were recorded by two of our consultants. Each test item consisted of a pair of sentences spoken by Natan and Orias. The first sentence, spoken by Natan, was either clearly correct or incorrect. Examples of both are

given in (22), where Madar is the Teiwa settlement where we conducted our research and where Natan lives. Bandar is a nearby village inhabited by a different linguistic group.

(22) Natan: Na Bandar / Madar me'.
Natan: 1SG Bandar / Madar live
Natan: 'I live in Bandar (incorrect) / Madar (correct).' [NM.EP.015,017]

Natan was followed by Orias who produced a speech report of Natan's utterance that was either correct or incorrect. For example, (22) would be followed by either sentence in (23).

(23) Orias: Natan **a** **wa** a Bandar / Madar me'.
Orias: Natan 3SG say 3SG Bandar / Madar live
Orias: 'Natan said that he lives in Bandar / Madar.' [NM.EP.016,018]

Participants in the experiment were presented with 30 such pairs (the first six were practice items) and instructed to report whether what Orias said was accurate. The participants responded either *atab* ('yes, true, correct') or *man* ('no').

The prediction of the non-embedding and embedding analyses for the four types of items are presented in tabular form in Table 3: The non-embedding analysis predicts that (23) should be understood as two sentences. The first, *Natan a wa.* ('Natan talked.'), should be judged true in all four scenarios, and therefore the truth of the second, *a Bandar/Madar me* 'He lives in Bandar/Madar' should determine the acceptability of the whole utterance (23). On the other hand, the embedding analysis predicts that (23) should be judged in the same way as the English translation 'Natan said that he lives in Bandar/Madar', i.e., only according to whether it is a correct report of the prior utterance.

The judgments of the speakers who assisted with the construction of the material corresponded to the embedding analysis and are confirmed in the experiment we conducted (see Supplement 1, Experiment 3). The experiment included 21 participants aged 25 to 81 years (mean age: 46.3). We did not find an effect of age. This indicates that the Teiwa grammar of independent *wa* has not undergone a recent change.

In sum, we argued in this section that the independent *wa* should be analyzed along the lines of the English verb *say*, a verb that takes a (usually clausal) complement. We presented experimental evidence corroborating this conclusion.

4.2 Integrated occurrences of wa

In this section, we consider cases where the sequence of a subject pronoun and *wa* follow another speech verb, such as *-walas* 'tell' in (1), repeated here as (24).

(24) Natan a na-walas **a** **wa** bas a Qalambas ma gi
Natan 3SG 1SG-tell 3SG say tomorrow 3SG Kalabahi COME go
'Natan told me that he will go to Kalabahi tomorrow.' [LT.CD2.008]

Initially a bisentential analysis of such sequences seems plausible because the integrated *wa* could receive the same interpretation as the independent *wa*. Such an analysis would correspond to the English paraphrase *Natan talked to me. He said that he'll go to Kalabahi tomorrow.* But we demonstrate that the bisentential analysis cannot be correct, and that instead the monosentential analysis is correct. This entails that integrated *wa* must receive a different interpretation than the independent *wa* discussed in 4.1. We argue that *wa* in uses such as (24) is a complementizer.

In the following examples, integrated *wa* mostly occur with the speech verb *walas* 'tell'. The speech complement of *walas* 'tell' does not have to be always expressed with the complement clause linked with *wa*. Another possibility is to increase the valency of *walas* 'tell' with the oblique marker *ma* 'COME' adding a nominal phrase describing the information, as shown in (25).[9] The basic valency of *walas* includes the subject (agent = *teller*) and the object (recipient = *tellee*).

(25) a. kri Bart [indan ma] na-walas maan
respected.old.man Bart anything COME 1SG-tell NEG
'Bart did not tell me (about) anything.' [EMM08.021]

b. amidan$_i$ la Natan [t_i ma] ha-walas?
what FOC Natan COME 2SG-tell
'what did Natan tell you (about)?' [JM.E789.0052]

Note that the question pronoun *amidan* 'what' is not necessarily fronted but may also remain in-situ, as in (26) where it is not focussed.

(26) Natan [amidan ma] ha-walas?
Natan what COME 2SG-tell
'Natan told you what?' [MM.E6.101]

4.2.1 Distribution of integrated *wa*

Integrated *wa* combines with at least the following five verbs: *walas* 'tell', *wulul* 'gossip (trans.), talk about st.', *ultag* 'talk', *yivar* 'dream' (27), and *puan yaxai* 'talk nonsense, lie'.[10]

(27) Ben a yivar **a** **wa** a yir og hufa'
Ben 3SG dream 3SG say 3SG water hot drink
'Ben dreamed that he drank coffee (lit. hot water).' [LT.CD2.149]

When used with the verbs listed above (27) integrated *wa* is optional (i.e., (28) is also grammatical). But these sentences are perceived to be less clear without *wa*, and therefore, the use of *wa* is preferred.

(28) Hala na-wulul a i'.
people 1SG-tell 3SG sick
'People tell me that he's sick.' [LT.CD1.123]

In addition to the five verbs above, we found a single occurrence with *ma bi'in* 'praise' and multiple uses with *om* 'think', as in (29).[11]

[9] For details about the oblique marker *ma*, see (Klamer 2010a; b).

[10] Klamer (2010a: 369, 386) shows, furthermore, that *liin* 'invite', *soi* 'order', and *taxani* 'inquire' combine with speech report clauses but does not state whether those can be linked with *wa*.

[11] Klamer (2010a: 94) discusses *om* only as a noun within what she describes as phrasal verbs. Other experiencer verbs can be formed with *om* followed by an adjective or verb (Klamer 2010a: 94-95). But, the adjective in (ia) exhibits no agreement, and the verb in (ib) exhibits third person agreement while (29) shows that the subjects of *wa* and *om* agree.

(i) a. n-om qalixil
1SG-inside itchy
'I am angry.' (Klamer 2010a: 94)

b. (na) n-om ga-regan
1SG 1SG-inside 3SG-ask
'I think/say to myself.' (Klamer 2010a: 94 & 98)

(29) na n-om **na wa** ha un Qalambas me'
1SG 1SG-inside 1SG say you CONT Kalabahi be.in
'I thought to myself that you would be in Kalabahi.' [EMM08.228]

4.2.2 Agreement of *wa* with the subject of the main verb

While Klamer (2010a) only reports integrated uses of *wa* with the pronoun *a*, we found that integrated *wa* agrees in person and number with the subject of the main speech verb. The agreement is productive and regular, as shown in (30). Integrated *wa* agrees with the second person plural subject of *walas* 'tell' in (30). In (30b), integrated agrees with impersonal *hala* 'others, unknown people' (for more details on *hala* see Klamer (2010a: 30)).

(30) a. **yi'in** la na-walas maan **yi** wa insi yi-yaf waad wan kariyan
2PL FOC 1SG-tell NEG 2PL say FUT 2PL-house big be work
'You did not tell me that you will perhaps build a big house (for yourselves).' [EMM08.111]

b. **Hala** na-puan yaa qai **hala** wa a ii
others 1SG-talk nonsense others say 3SG sick
'They told me as joke that he is sick.' [LT.CD2.122]

(31) shows that *wa* cannot be integrated if the subject agreement is not obtained. Instead, (31) is interpreted as omission of *na wa*; i.e., the verb *om* followed by a complementizer-less complement clause containing the speech verb *wa*.

(31) na n-om a wa […]
1SG 1SG-inside 3SG say …
'I thought to myself he said that …' [EMM08.217]

4.2.3 Compatibility of *wa* with aspectual markers

Integrated *wa* cannot be preceded by an aspectual modifier such as the distal continuative *un*. As shown in (32b), where *wa* is preceded by the aspectual marker *un*, its interpretation is that of a speech verb and not a complementizer.

(32) a. Ben un a yivar a wa a **un** tuax hufa'
Ben CONT.DST 3SG dream 3SG say 3SG CONT.DST palm.wine drink
'Ben is currently dreaming that he is currently drinking *tuax* (palm wine).' [LT.CD2.151]

b. Ben un a yivar Ben a **un** a wa a tuax hufa'
Ben CONT.DST 3SG dream Ben 3SG CONT.DST 3SG say 3SG palm.wine drink
'Ben is currently dreaming that he is talking and that he drinks *tuax* (palm wine).' [LT.CD2.152]

4.2.4 Syntactic evidence for a monosentential analysis

In English, and even more so in some other European languages, the presence of complementizers such as *that* provide unequivocal morphosyntactic evidence for embedding. In Teiwa, the supporting evidence for embedding comes from prohibitives and long distance extraction.

4.2.4.1 Prohibitives (negative imperatives)

Klamer (2010a: 301) describes two types of prohibitives in Teiwa. The first type is marked by the clause final *gaxai* 'do not'. The second type, shown in (33), contains *gaxai* and a

positive imperative marker: *ha-dan* 'your part, your obligation'. The sentence's final *gaxai* 'do not', however, marks a prohibitive force and (33) is therefore interpreted as a prohibitive overall.

(33) **Ha-dan** na-pak-an **gaxai**.
2SG-PART 1SG-call-REAL do.not
'Do not call me.' (Lit. 'Your obligation is not to call me') (Klamer 2010a: 301)

Without *gaxai*, the imperative remains positive, as shown in (34a), but simple prohibitives with just *gaxai* are also possible (34b).

(34) a. Hamar ma walas le, **ha-dan** er-an xoran.
pray COME tell or 2SG-PART make-REAL thus
'You should pray!' (Lit. 'Saying prayers, make that your obligation!')
(Klamer 2010a: 299)

b. Wat wrer **gaxai**!
coconut climb do.not
'Don't climb the coconut (tree)!' (addressee is not yet climbing)
(Klamer 2010a: 301)

The double marking of prohibitives is also possible in examples with the sequence of *walas* and *wa*, as shown in (35). The prohibitive *gaxai* follows *walas* and precedes integrated *wa*.

(35) **Ha-dan** Ben ga-walas **gaxai ha wa** na tabako ma iga
2SG-PART Ben 3SG-tell do.not 2SG say 1SG tobacco COME hide
'Do not tell Ben that I hid the tobacco.' [MM.E789.0122]

The prohibitive interpretation of (35) is difficult to reconcile with the bisentential analysis, which would give rise to the reading: '*Do not talk to Ben. Say I hid the tobacco*.' The monosentential analysis, on the other hand, offers a rather straightforward explanation: the clause *na tabako ma iga* is embedded and therefore under the scope of the prohibitive marker.

4.2.4.2 Long-distance movement

Syntactic movement from one clause to another is one of the strongest arguments for a complex monosentential structure, long-distance movement of question words being a classic case. However, it has also been established that not all languages allow long-distance movement from complement clauses – Northern German dialects, in particular, tend to not allow long-distance movement of question words from finite complement clauses (Fanselow & Weskott 2010 and others).

Teiwa, like English, fronts question words in non-polar (or *wh*-) questions (Klamer 2010a: 280–293). Example (36) shows that question words can move from the complement of independent *wa*.

(36) **Yilag** la Ben a wa ha g-ua?
who FOC Ben 3SG say 2SG 3SG-hit
'Who did Ben say you hit?' [LT.CD2.216]

Movement from the complement clause of other speech verbs is difficult. In our attempts to elicit long extraction, speakers often produced examples like (37). Note that one of the arguments of *ultaq* 'tell' is marked as oblique with *ma*. This indicates that *amidan* 'what' in (37) is an argument of *ultaq* 'tell', and therefore (37) is not an example of long extraction.

(37) Amidan la Ben **ma** ha-ultag-an a wa bif ga'an sii?
What FOC Ben COME 2SG-tell-REAL 3SG say child that bite
'About what did Ben tell you that it bit that child?' [LT.CD2.225]

Example (38), however, is also acceptable. In (38), neither of the arguments of *walas* 'tell' is marked with oblique case. The absence of oblique marking in (38) suggests that *yilag* 'who' is not an argument of *walas* 'tell', but is instead an argument of the verb *ua* 'hit'. Example (38) therefore requires the monosentential analysis of integrated *wa*.

(38) **Yilag** la Ben pi-walas a wa insi a n-ua
who FOC Ben 1PL.INCL-tell 3SG say maybe 3SG 1SG-hit?
'Who did Ben tell us will hit me?' [LT.CD2.219]

In sum, the syntactic evidence is in favor of the clausal embedding analysis for the integrated *wa*.

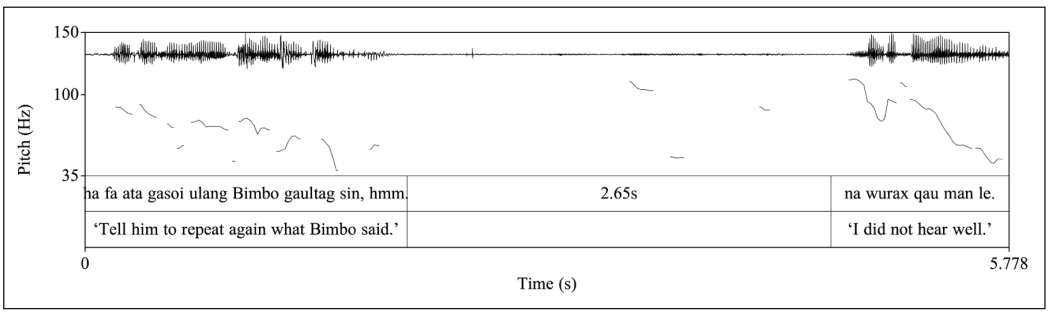
4.2.5 Prosodic evidence for a monosentential analysis

Klamer (2010a: 361) mentions that intonation connects juxtaposed clauses. Prosodic properties, in particular pitch movement (intonation), timing, and intensity signal sentence boundaries (Bolinger 1984; 1989). In particular, a special intonation contour marks the end of the sentence. The question is whether the absence of a sentence final contour can then be taken to indicate subordination. While Klamer herself does not assume that intonation directly indicates sentence boundaries, Mithun (2009) shows that intonation in Mohawk distinguishes between monosentential and bisentential sequences.[12] Further, Kastner et al. (2014) argue that prosody alone can mark embedding in the emerging Kafr Qasem Sign Language.

Klamer (2010a: 304) notes that Teiwa clauses are separated from each other by a falling intonation on the final word (usually a verb). We confirmed this in our data. Example (39) consists of two sentences separated by a long pause and shows the sentence final drop. In addition to the sentence final low tone (L%), (39) also shows that Teiwa exhibits pitch declination as well.

(39) a. ha fa ata ga-soi ulang Bimbo ga-ultag sin.
2SG try once.again 3SG-order repeat(IND) Bimbo 3SG-talk first
'Tell him to repeat what Bimbo said.' [AME6.0120]

b. na wuraq qau maan le.
1SG hear good NEG PART
'I did not hear well.' [AM.E6.0121]



[12] Both sentence boundaries and intonation have also been found to be relevant in determining turn units in conversation analysis (Sacks et al. 1974).

In this section, we show that Teiwa speech reports with integrated *wa* generally exhibit a single intonation contour, as expected by the monosentential analysis. Specifically, we rely on falling intonation as a signal of a sentence boundary. The falling intonation contour, associated with the final unit, is absent before integrated *wa*; in fact, we see the opposite contour of the pitch rising just before *wa*, with an optional pause between *wa* and the rest of the sentence.

Now consider examples of speech reports with *walas* 'tell'. For one, the *walas a wa* sequence is generally followed by a short pause, but there is no pause after *walas* 'tell'. The placement of the pause is not expected in the bisentential analysis, but it provides evidence for the monosentential analysis. The second argument related to pitch is based on the absence of sentence-final drops (i.e., intonation units with final L%) in the *walas a wa* sequence. Instead, we generally find a rise in pitch on *wa*. This, again, would be unexpected in the bisentential analysis, but it is consistent with the monosentential one.[13]

The example in (40) from speaker MW exemplifies both of the general patterns we found. MW produced a 0.6s pause that follows *a wa*. Figure 4 further shows, there is a clear rise targeting the initial pitch level on *a wa* and the higher pitch is subsequently maintained across the pause.

(40) Natan a na-walas **a** **wa** a pemantik pin a-yaf ma gi
Natan 3SG 1SG-tell 3SG say 3SG lighter(IND) hold 3SG-house COME go
'Natan told me that he took the lighter to his house.' [MW.E789.18]

In rapid speech, such as (41), the pause disappears, but the pitch rise on *wa* remains, as can also be seen in Figure 5.

(41) Natan a na-walas **a** **wa** a bai gaal
Natan 3SG 1SG-tell 3SG say 3SG pig shoot.with.arrow
'Natan told me that he shot a pig.' [MW.E789.37]

The intonation pattern is the same in examples where *walas* 'tell' is negated, as in (42). Figure 6 shows a slight pitch rise at integrated *wa* 'say' that is maintained even in the presence of the negator *maan* and targets the initial pitch level of about 95Hz.

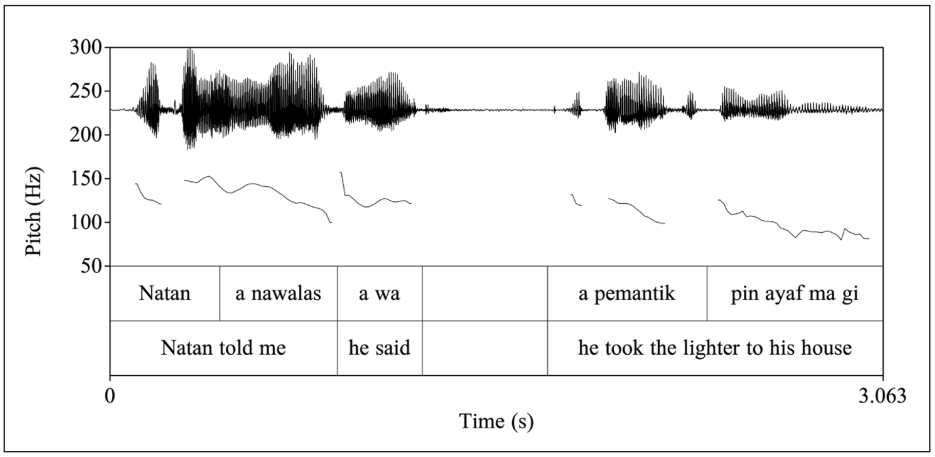


Figure 4: Optional pause after *a wa* in (40).

[13] In their cross-linguistic work, Hale & Selkirk (1987) point out that languages vary with respect to the prosodic phrasing of function words such as complementizers, and this variation is not fully determined by syntactic structure (see also Truckenbrodt 1999). If the monosentential analysis is correct, phrasing in Teiwa would need to be analyzed in a similar way as Kwakiutl (cf. Boas 1911) and other languages where the functional heads are always phrased with a preceding head.

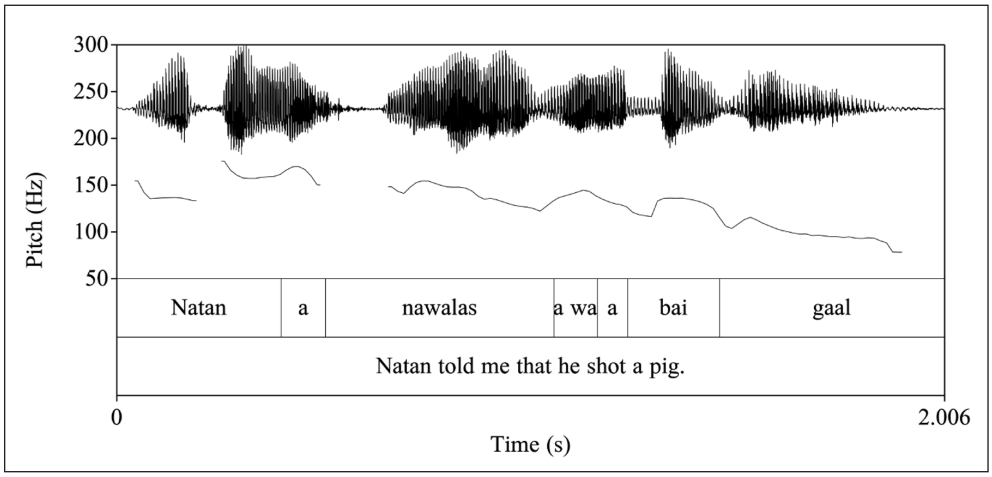


Figure 5: Absence of pause after *a wa* in (41).

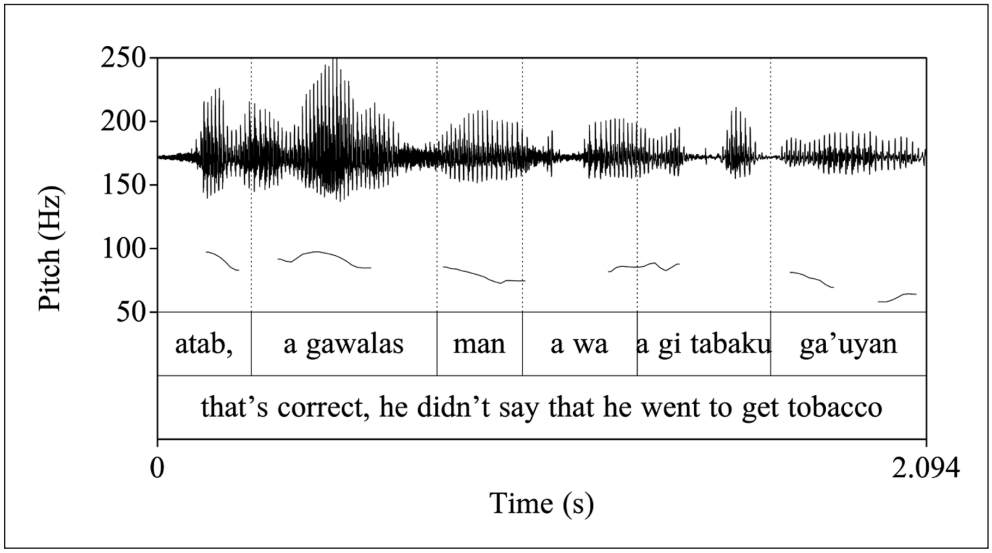


Figure 6: Declination in the pitch contour of (42).

(42) atab, a ga-walas **maan a wa**, a gi tabaku ga-uyan
true 3SG 3SG-tell NEG 3SG say 3SG go tobacco 3SG-search
'That's true, he did not say that he went to get tobacco.' [AM.E6.148]

Examples such as (43) show that the intonational contour may be the only indication of embedding. As shown in Figure 7 JL's pitch at the beginning of the sentence is roughly 250 Hz. The contour contains only one final fall to roughly 160Hz. Only at the beginning of next sentence is the pitch reset to the original level. In this example, because JL is speaking slowly, the two joined clauses are separated by a pause of roughly 0.7s separating the speech verb from its complement, analogously to (40).

(43) na Ben ga-walas Natan ga-baq muling
1SG Ben 3SG-tell Natan 3SG-body weak
'I told Ben [that] Natan is tired.' [JL.E789.56]

Finally, speaker JL also produced example (44), which consists of three clauses integrated under a single intonational contour. Figure 8 shows the contour starting at roughly 250Hz and closing at about 160Hz. There is no drop at the end of the first and second clause;

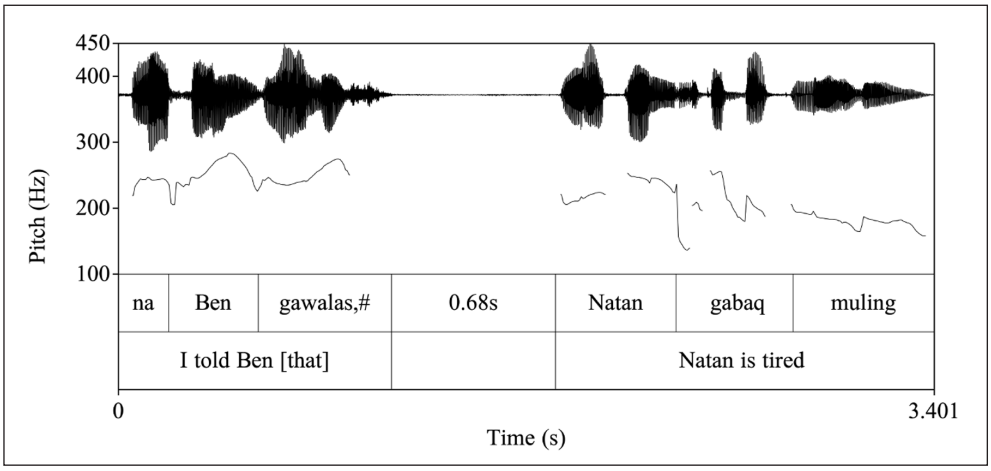


Figure 7: Declination in the pitch contour of (43) with a 0.68s pause.

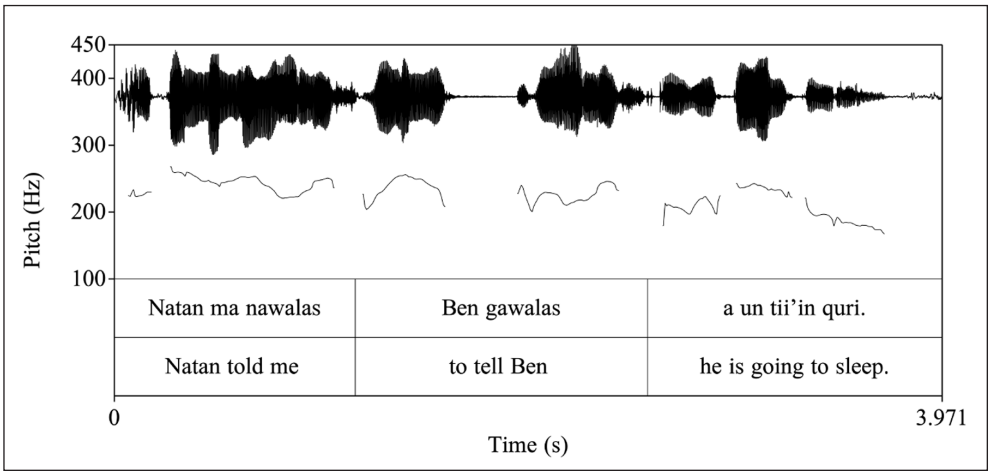


Figure 8: Declination in the pitch contour over two complement clauses (44).

instead the pitch rises back to about 250Hz each time, signaling that the sentence is not yet finished. Figure 8 also shows that there are almost no pauses between the three clauses. In our analysis, this sentence contains two complement clauses.

(44) Natan ma na-walas Ben gawalas a un tii'-in quri
Natan COME 1SG-tell [Ben 3SG-tell [3SG PROG lie.down-REAL sleepy]]
'Natan told me to tell Ben that he is going to sleep.' [JL.E789.88]

Furthermore, we found one speaker, JM, a 45-year-old Teiwa female, to phonologically reduce integrated *wa* in spontaneous speech in (45). Figure 9 shows that JM produced the *na wa* sequence as a single syllable [nɑʊ]. In (45b), JM further reduced the *na wa* into just [nə].

(45) a. na ga-walas **[nɑʊ]** ga-baq muling
1SG 3SG-tell 1SG say 3SG-body weak
'I tell him he is tired.' [JM.E789.51]

b. na ga-walas **nə**, Natan tuax maya'
1SG 3SG-tell 1SG.say Natan wine spill
'I tell him that Natan spilled the wine.' [JM.E789.45]

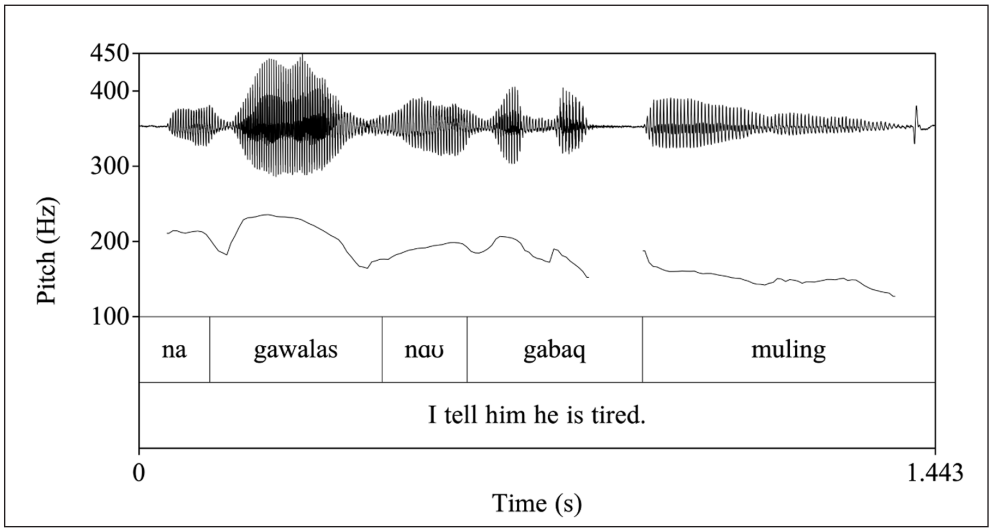


Figure 9: Phonological reduction of integrated *wa* by JM in (45a).

Note that even JM's reduced forms still indicate person-number agreement with the subject of the main verb *walas* 'tell'. We found no reduced forms in the speech of other Teiwa speakers and our consultants consistently insisted on the complete *a wa* sequence. Therefore, JM's speech seems to represent a minority dialect where grammaticalization may have progressed. It should be noted that phonological reduction of *wa* does not occur in JM's speech when *wa* is the main verb, as shown in Figure 2. We conclude, therefore, that while JM's speech further supports our analysis of Teiwa as allowing embedding, it leaves intact our conclusion that embedding exists independent of complementizers.

4.2.6 Semantic evidence for a monosentential analysis

The primary semantic diagnostic for subordination is scope. The reason scope is a good diagnostic is that the way sentence meanings are combined in discourse is generally taken to amount to coordination (Stalnaker 1978; Sauerland 2016). In the following, we investigate four types of scopal phenomena: (i) the scope of negation, (ii) the scope of constituent questions, (iii) the scope of prohibitives, and (iv) the scope of polar question markers.[14]

4.2.6.1 Scope of Negation

The scope of negation, which is used to distinguish between bi- and monosentential sequences, was first employed by Noonan & Bavin (1981) to study Lango. We constructed the example in (46) to investigate the scope of negation with the verb *walas* 'tell'. According to our primary consultants, this placement allows an interpretation in which negation takes wide scope over both *walas* and the following clause with integrated *wa*. Such interpretation is predicted only by the monosentential analysis.

(46) Natan a na-walas **maan** a wa a xaf kariman ol
Natan 3SG 1SG-tell **NEG** 3SG say 3SG boat small buy
bisentential: 'Natan did not talk to me. He said he is buying a small boat.' monosentential: 'Natan did not tell me that he is buying a small boat.'

[14] Other scopal phenomena, such as the scope of universal quantifiers, provide less conclusive evidence because of the phenomenon of telescoping (Poesio & Zucchi 1992). But telescoping does not challenge the claim that intersentential composition is always dynamic coordination, if Poesio & Zucchi (1992) are correct in their argument that telescoping involves silent universal quantifiers.

This judgment is difficult to discern because the pragmatics of negation imposes a requirement on sentences such as (46) and its English translation that the content of the complement clause be salient (Horn 1989, and others). Typically, this requirement leads consultants to suggest a scenario out of the blue in which (46) could be uttered when the complement is actually true. This would correspond to the English paraphrase 'He is actually buying a small boat, but he did not tell me about it.' In this case, the complement clause would be salient because it is actually true. However, we found that our consultants also accept (46) in another scenario where the complement is salient, namely in short dialogues like (47), which involves a correction. In (47), the statement that Natan is talking about buying a small boat is made salient by a question.

(47) Q: Did Natan tell you that he is buying a small boat?
A: No, he told me that he is buying a boat, but he did not tell me that he is buying a small boat.

In Teiwa, one situation we created to detect whether the wide-scope negation interpretation is available was acted out by Natan, Bimbo, and Ben. At first, only Natan and Bimbo are present, and before leaving the room Natan tells Bimbo the following:

(48) Natan: na gi bui gu-'uyan.
1SG go betelnut 3SG-search
Natan (to Bimbo): 'I go search betelnuts.' [AM.E6.139]

Then Ben enters and asks Bimbo about what Natan said. Bimbo does not answer Ben truthfully, but instead says that Natan went to look for cigarettes.

(49) a. Ben: Natan amidan la ma ha-walas?
Natan what FOC COME 2SG-tell
Ben (to Bimbo): 'What did Natan tell you?' [AM.E6.141]

b. Bimbo: Natan **a** **wa**, a gi tabako gu-'uyan.
Natan 3SG say 3SG go tobacco 3SG-search
Bimbo (to Ben): 'Natan said he goes to search tobacco.' [AM.E6.142]

In this scenario, the following exchange between two observers, LT and AM, is felicitous and was actually observed in our fieldwork:

(50) a. LT: xoran si, atab Natan a Bimbo ga-walas **maan a** **wa**, a gi
then SIM true Natan 3SG Bimbo 3SG-tell NEG 3SG say 3SG go
tabako gu-'uyan le maan?
cigarette 3SG-search or NEG
LT: 'So then, Natan did not say to Bimbo that he went to look for cigarettes.' [AM.E6.147]

b. AM: atab a ga-walas **maan a** **wa**, a gi tabako gu-'uyan
true 3SG 3SG-tell NEG 3SG say 3SG go cigarette 3SG-search
AM: 'Yes, he did not tell him that went to look for cigarettes.' [AM.E6.148]

In (50), both LT's question and AM's answer contain *walas* 'tell' followed by negation. The truth of (50b) in this scenario argues against the bisentential analysis since it predicts that (50b) will be understood as a conjunction or juxtaposition of two sentences. Only the first of these sentences would be negated, and the meaning of this

statement would be roughly *Natan did not talk to Bimbo*. The second would have the positive meaning *Natan said he went to look for cigarettes*, which is also predicted to be false in the scenario. Only the monosentential analysis predicts AM's utterance to be felicitous because negation can then take scope over both clauses in (50b). The same reasoning also applies to the question (50a): Based on the monosentential analysis, the question should be interpreted as *Did Natan not talk to Bimbo?*, and it would therefore be answered negatively. Furthermore, the putative second sentence that makes up (50b) would be the claim *Natan said he went to look for cigarettes*, which is false in the scenario. The felicity of the positive response *atab* in (50b) argues, therefore, that the question is not interpreted as the bisentential theory predicts, but receives a wide-scope negation interpretation that is only consistent with the monosentential analysis. We confirmed these intuitions with informants and in an experiment (reported in the appendix) with 10 additional Teiwa speakers using six different items.

4.2.6.2 Scope of Constituent Questions

A second diagnostic for a complex monosentential structure which is widely used in language acquisition (e.g., de Villiers 1995) involves long constituent questions. When the interrogative word remains in situ, the distinction between a long monosentential interpretation and a bisentential, short-question interpretation is only semantic. A relevant long question in Teiwa would be (51), where the interrogative *ita'a* 'where' occurs in a sentence with an integrated *wa* and the attitude verb *om*.

(51) Bimbo a om si a wa bui un **ita'a** la mia'?
Bimbo 3SG inside SIM 3SG say betelnut CONT.DST where FOC put
bisentential: 'Bimbo was thinking. Where did he say that the betel nut is?'
monosentential: 'Where does Bimbo think the betel nut is?' [MOT.E6.080]

While the distinction between the two readings in (51) is rather subtle, a clearer distinction arises in (52), which must be interpreted as double embedding. Such interpretation is forced by the second *wa*: it cannot be integrated because its subject is *Natan*, not *Bimbo*. Teiwa speakers prefer the structure in (51) which suggests that the complementizer *wa* is left out if it is followed by the speech verb *wa*.

(52) Bimbo a om si (a wa) Natan a wa bui un **ita'a**
Bimbo 3SG inside SIM (3SG say) Natan 3SG say betelnut CONT.DST where
la mia'?
FOC put
bisentential: 'Bimbo was thinking. Where did Natan say that the betelnut is?'
monosentential: 'Where does Bimbo think Natan says the betel nut is?'
[MOT.E6.082]

Different answers for question (52) are predicted in the scenario where Bimbo is misinformed about what Natan believes. For example, Bimbo believes that Natan thinks the betelnut is in the basket, but Natan actually thinks it's in the box. In this scenario, the bisentential analysis predicts the answer *in the box*, but the monosentential analysis predicts *in the basket*. According to our primary consultants, the prediction of the monosentential analysis is correct. We successfully confirmed this judgment in an experiment with 6 different items and 10 additional Teiwa speakers reported in the supplement as Experiment 6.

4.2.6.3 Scope of Prohibitives

Teiwa prohibitives were introduced in 4.2.4. We argue that prohibitive provides additional evidence for the monosentential analysis of integrated *wa*. Consider the example in (53). The monosentential analysis predicts (53) to express a prohibition to tell the content following *wa* as in the English translation provided for (53). But the bisentential analysis predicts that the prohibitive should only take scope over the first verb, and the predicted interpretation should correspond to the paraphrase *Do not talk to Ben, but say that I hid his lighter*. According to our consultants, only the wide-scope prohibitive interpretation predicted by the monosentential analysis is available. We confirmed this judgment with 10 Teiwa speakers and report it in the appendix as Experiments 7, 8, and 9.

(53) **Ha-dan** Ben ga-walas **ha wa** na ga-pemantik ma iga.
2SG-PART Ben 3SG-tell 2SG say 1SG 3SG-lighter COME hide
'Do not tell Ben that I hid his lighter.' [DSK.E789.011]

4.2.6.4 Scope of Polar Questions

Polar questions provide the last scope diagnostic for distinguishing between the monosentential and bisentential analysis. Klamer (2010a: 277–278) reports that polar questions in Teiwa are not marked by word order or by a special particle. Alternative questions, such as (54a), contain the sentence final *le maan* 'or not' and expect a positive or negative answer. In the following, we use the term polar question to describe this structure and distinguish it from alternative questions formed with *le* 'or', such as (54b).

(54) a. A xoran si yi ga-sar le maan?
3SG thus SIM 2PL 3SG-find or NEG
'If so, did you find her or not?' (Klamer 2010a: p. 279)

b. Ina tau le yed?
eat PRF or PRSP
'Have you eaten already or not yet?' (Klamer 2010a: p. 279)

Polar questions may contain the negator *maan*. Importantly, the regular negator *maan* will immediately follow the speech verb, as in (55). The bisentential and monosentential analyses of integrated *wa* make different predictions for polar questions like (55). The predicted interpretations are shown in (56a) and (56b), respectively. The bisentential analysis predicts no relationship between the negator *maan* following the speech verb and the sentence final *le maan*, while the monosentential analysis allows for an interaction.

(55) Bimbo a Ben ga-walas **maan** a wa Natan ga-warax sin le maan?
Bimbo 3SG Ben 3SG-tell **NEG** 3SG say Natan 3SG-wait first or NEG
(lit.) 'Bimbo did not tell Ben – he said to wait for Natan – or not?'
[DSK.E789.088]

(56) a. bisentential prediction: 'Bimbo did **not** talk to Ben. **Did** he tell him to wait for Natan?'
b. monosentential prediction: '**Did** Bimbo **not** tell Ben to wait for Natan?'

The two accounts predict different responses to (55). In this experiment, Natan had to leave and asked Bimbo to pass a message to Ben to wait for him. In one scenario, after Ben arrived, Bimbo passed him Natan's message truthfully. In the alternative scenario, Bimbo

made up a different message. The experiment participant, who witnessed the exchange, was then quizzed about what happened with sentences such as (55).

The bisentential account predicts (55) to be odd since it consists of a false assertion followed by a question inconsistent with that assertion. The prediction of the monosentential analysis depends on one additional factor: the way negative polar questions are answered in Teiwa. Well-studied languages like English and Japanese differ with respect to this property (Kuno 1973): In response to the question *Isn't John running?*, the English positive response *yes* entails that John is running. But the Japanese positive response *hai* entails that he is not running, and the negative *iie* must be used if John is actually running.

Our evidence indicates that Teiwa behaves like Japanese: In response to (55) in the scenario introduced above, the answer *maan* 'no' is the appropriate one. Again, we collected two types of data to corroborate this empirical claim: we constructed sentences that present (55) in the scenario mentioned above and tested them experimentally with 10 subjects (age-range: 16–65 years; mean age: 37). The design and results are reported in the appendix as Experiment 6 and confirmed that, indeed, *maan* 'no' is the felicitous response in the critical scenario and it is predicted by the monosentential analysis.

5 Conclusions

We established a contrast between the speech verb *wa* and complementizer occurrences of *wa* following other speech verbs: the speech verb *wa* can be combined directly with a finite clause complement, as in (57a). Other speech verbs can also embed finite clauses, but Teiwa speakers prefer them to be linked with the agreeing complementizer *wa*, as in (57b). In both cases, *wa* is prosodically integrated with the rest of the sentence, but only the complementizer *wa* may undergo phonological reduction for some speakers. Unlike the speech verb *wa*, the complementizer is not compatible with aspect or negation and must agree with the subject of the main verb.

(57) a. S $\mathbf{wa}_{\text{speech.verb}}$ $[\text{speech.report}]_{\text{complement}}$
b. S speech.verb $[\text{AGR}_{\text{s}}\ \mathbf{wa}_{\text{complementizer}}\ [\text{speech.report}]]_{\text{complement}}$

Semantic integration of the complement clause was demonstrated using a number of tests, including (i) the scope of negation, (ii) the scope of constituent questions, (iii) the scope of prohibitives, and (iv) the scope of polar question markers. The traditional analysis of speech and attitude reports assumes that a speech verb V and a finite clause CP stand in verb-complement relation in the syntax and in predicate-argument relation in the semantics (Hintikka 1962, and others). More recent proposals suggest neither a syntactic verb-complement relation nor a semantic predicate-argument relation have been obtained between V and CP (Aboh 2005; Arsenijević 2009; Kastner 2015; Moulton 2015; Elliott 2017).

Our conclusion is that complementation can exist independently of complementizer morphemes (see also Kastner et al. 2014). Finally, our paper has implications for the discussion of complementizers and complementation in historical linguistics. In Section 3 we compared Teiwa with languages such as Old Babylonian, Nanti, and Lukubusu, and argued that *wa* may be in an early stage of complementizer development, but complementation precedes this development in Teiwa.

The presence of embedding in the Teiwa cases opens a new perspective on the discussion of structures in Akkadian and also Pirahã (Everett 2005) where parataxis has been proposed. For Akkadian, the types of evidence we discussed in Section 4.2 are likely to never be available (clearly so for prosodic evidence). For Pirahã, Sauerland (2017; 2018) shows using a similar experimental designs that Pirahã speakers treat speech reports as

Table 4: Attested stages of sentence integration and complementation.

	integration type		
linking type	**SEMantics + PROSody**	**SEM + PROS + AGR**	**SEM + PROS + NO AGR**
juxtaposition	Mohawk		
	Pirahã		
quotative only		Old Akkadian	
quotative **and**		Teiwa	
speech verb COMP		Old Babylonian	
		Nanti	
speech verb COMP		Lukubusu	Middle Babylonian
general COMP			Neo-Babylonian
			and many others

semantically integrated with the speech verb and subordinated. Sauerland (2017) shows that Pirahã clause linker *sai* shows pitch differentiation of its conditional and nominalizing usage. Pirahã like Mohawk (Mithun 2009) represents a type of sentence integration detectable only at the semantic and prosodic level, which has to precede all subsequent stages of grammaticalization.[15]

Semantic (SEM) and prosodic (PROS) integration is the necessary condition that allows for other grammatical signals of integration to develop. During the grammaticalization polysemy and marking of subjects (i.e. subject agreement, AGR) gradually disappears. Table 4 schematically represents the attested stages of this process.

Abbreviations

The following glosses diverge from the Leipzig Glossing Rules or from Klamer (2010a) and Deutscher (2000): APPL = applicative, CONT = continuative, DEM = demonstrative, DIST = distal, EXCL = exclusive, FOC = focus marker, INCL = inclusive, IND = Indonesian loan, NEG = negator, NOM = nominative, PART = particle *ma* in Old Babylonian, PL = plural, PRF = perfective, PRSP = prospective, REAL = realis, SG = singular, SEQ = sequential marker, SIM = simultaneous marker, and SUB = subordinative form of the verb (Old Babylonian).

Additional Files

The additional files for this article can be found as follows:

- **Supplement 1:** Experiment protocols and evaluations; https://osf.io/97qr2/?view_only=b90a84b5bd544510835b025fe139fb40, file "Supplement.pdf"
- **Supplement 2:** Teiwa Language Data (Toolbox corpus, metadata, file-naming system); https://osf.io/97qr2/?view_only=b90a84b5bd544510835b025fe139fb40, file "TeiwaToolboxCorpus.zip"
- **Supplement 3:** Intonation data (audio files, ELAN and Praat annotations, pitch plots). https://osf.io/97qr2/?view_only=b90a84b5bd544510835b025fe139fb40, file "Intonation.zip"

  Language data collected for this paper, consisting of sound files and their annotations in Praat, Elan, and SIL Toolbox are part of the Teiwa Collection of The Lan-

[15] Also English and Teiwa permit such juxtapositional subordination, but also allow other options.

guage Archive https://archive.mpi.nl/tla/, https://hdl.handle.net/1839/e945b510-6c1c-4192-b4df-70d520e12e37

Acknowledgements

We are very grateful to Marian Klamer that she so generously supported our effort to test and further explore her results and analysis. We also thank Lorens Titing for his excellent technical support of our fieldwork and the transcription of the Teiwa data, to Barnabas Titing and his family for their hospitality and to Amos Sir for organizational and spiritual help, and Philipp Luczok for help with some transcriptions. For comments at presentations of this material we thank the audience at the CHLaSC final conference in Berlin 2009. Finally, we thank the three reviewers of Glossa as well as Johan Rooryck as our editor for their help in getting this paper into its present shape.

Funding Information

The fieldwork was supported by the European Community under the 'New and Emerging Science and Technologies' Programme (NEST-PATH-HUM), grant 028395. The completion of the paper was in part supported by Bundesministerium für Bildung und Forschung (BMBF) grant 01UG1411, the DFG grants SA 925/1-4 and SA 925/11-1 and the ERDF grant Sinophone Borderlands: Interactions at the Edges (CZ.02.1.01/0.0/0.0/16_019/0000791).

Competing Interests

The authors have no competing interests to declare.

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How to cite this article: Sauerland, Uli, Bart Hollebrandse and František Kratochvíl. 2020. When hypotaxis looks like parataxis: embedding and complementizer agreement in Teiwa. *Glossa: a journal of general linguistics* 5(1): 89.1–30. DOI: https://doi.org/10.5334/gjgl.931

Submitted: 01 March 2019 **Accepted:** 08 June 2020 **Published:** 10 September 2020

]u[*Glossa: a journal of general linguistics* is a peer-reviewed open access journal published by Ubiquity Press.

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