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The Pahoturi River language family, with special reference to its verbal puzzles

https://doi.org/10.1515/lingty-2022-2096
Published online December 1, 2022

Abstract: This profile of the Pahoturi River language family of southern Papua New Guinea draws from extensive fieldwork on Idi [ISO 639-3: idi] and Ende [kit] – two of six varieties comprising this family – and brief surveying of the other four, which we illustrate in print for the first time. We present the first typological treatment of Pahoturi River in pursuit of shining more light on this understudied corner of the linguistic landscape. This profile is organized into two parts: first, we present sections on the basic structures and systems of Pahoturi River, illustrated with examples from across the family and supplemented with descriptions of Idi and Ende as relevant. From our preliminary data on the four other varieties, we gather that they are similar to Idi and Ende in many respects, but more investigation is warranted. Second, we provide an in-depth treatment of the verbal complex of Idi and Ende. We highlight two intriguing aspects of these complex systems – analytic constructions and ditransitive indexing – that distinguish the Pahoturi River family and the linguistic region of southern New Guinea.

Keywords: auxiliary constructions; copulas; ditransitives; exponence; light verb constructions; Pahoturi River; Papuan; syncretism; verbal adjuncts; verbal number

1 Introduction[1]

This article is a profile of the Pahoturi River language family (PR) of southern New Guinea and is split into two parts. First, Sections 1–5 detail what is known about the family from a typological perspective, covering important descriptive

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characterizations. Section 1 provides an overview of the family; Section 2 describes PR phonology and prevalent phonological processes; Section 3 highlights PR nominal morphology; Section 4 discusses the PR verbal complex, which exhibits complex patterns at multiple levels in the structure; and Section 5 provides an overview of PR syntax, with a focus on argument alignment.

The second part of the paper, Section 6, presents an in-depth analysis of two aspects of the PR verbal construct, specifically Idi analytic constructions and Ende ditransitive indexing. These are introduced below.

The Idi sentence in (1) exemplifies a typical analytic construction in PR languages, composed of an uninflecting analytic stem (*yéndhpä*)[2] and an auxiliary element hosting all inflectional materials (*gagn*).[3] This type of verbal construction contrasts with synthetic constructions, which only contain an inflected synthetic stem (see [2] for an example). Curiously, analytic stems also function as nominals when bearing case clitics, calling into question whether these complex predicates are light verb or auxiliary verb constructions. Section 6.1 argues for the auxiliary analysis.

(1) *Dia* *bom* ***yéndhpä*** ***gagn***.
dia bom jɪnɖpæ gagən
deer me (1SG.ACC) see AUX.REM.PFV.3SG>1SG
'The deer saw me.'
Idi (Qbr 2015: ln. 64)[4]

Turning to Ende ditransitive indexing, we find that in PR verbal complexes, four morphemes show object-oriented indexation. These four morphemes invariably index the direct object in monotransitives, as shown by the subscript *O*s in (2). However, these same morphemes can index either the recipient or the theme in ditransitive constructions and the choice is sensitive to both an animacy and a number hierarchy. Section 6.2 provides a comprehensive discussion.

2 See Appendix A for a chart of the orthographic conventions in the four languages with writing systems: Ende, Kawam, Idi, and Taeme. Agob and Em words are written using the Taeme orthography for vowels and the Ende orthography for consonants.

3 All inflected verbs are morphologically complex and potentially ambiguous due to the ubiquity of distributed and multiple exponence in PR languages. When morphological exponence is not at issue, glosses will only provide the intended meanings, as in (1).

4 Unless otherwise noted, all examples are sourced from our data, which are available through the PARADISEC archive: Idi (Schokkin 2014) and all others (Lindsey 2015). Each inline citation includes the last name of the speaker, the year the recording was made, and the line number within the recording. Direct links to each recording are available in the References in the PARADISEC corpus section in the Appendix.

(2) *Bibi … eka de ddob obo kollmällang de*
bibi … eka=de d͡ʒob obo koɽməɽ=aŋ=de$_O$
you all (2NSG.NOM) … story=ACC some his (3SG.POSS) follow=AGT=ACC
nälläntmenyaemeyo.
n-$_O$ ə-$_O$ ɽənt -meɲ$_O$ -ajm$_O$ -ejo
FUT.3PLO-3PLO-tell-III.PLO-NSG>PL-FUT.2NSGA
'You all will go and tell his other followers the story.'
Ende (Kurupel (Suwede) and Warama 2009: ln. 855)

1.1 Introduction to the family

Pahoturi River is an independent family spoken in the South Fly area of southern New Guinea, a region remarkable for its linguistic diversity with eight unrelated phyla (Evans 2012: and see Figure 1). The area boasts many unique characteristics, including (i) a high degree of egalitarian multilingualism, (ii) a system of verbal morphology in which information is distributed, constructive, and cumulative, and (iii) complex tense, aspect, and number systems (Evans et al. 2018a). PR-speaking communities have extensive social relationships with speakers of several distinct language families: Yam to the west, Anim and Gogodala-Suki (Trans-New Guinea) to the north, Oriomo to the east, and Pama-Nyungan (Australian) to the south.

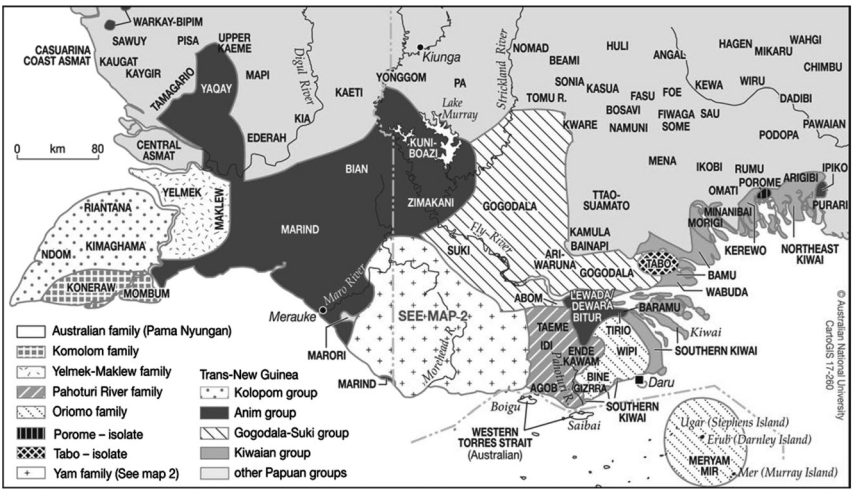

Figure 1: Languages of southern New Guinea (Evans et al. 2018a: 642).

Previous classification attempts have disagreed about how to group PR within a broader family. For example, Wurm (1975: 328) places PR in a Trans-Fly stock, part of the Trans-New Guinea phylum, while Ross (2005: 30) groups PR with Yelmek-Maklew and Morehead-Maro (Yam) in a South-Central Papuan group (non-Trans-New Guinea). Evans and colleagues deem the above classifications tenuous and instead propose five maximal clades for the region: PR, Komolom, Yelmek-Maklew, Tabo, and Yam (2018a: 641–643).

PR consists of at least seven named language varieties: Agob, Em, Ende, Idi, Idzuwe (not currently spoken), Kawam, and Taeme (see Figure 2). An eighth variety called Idan, brought to our attention in 2022 by speaker Bomso Maikong, is actively spoken in Kuiwang and surrounding areas and may be closely related to Taeme (Scanlon, p.c.). This list is longer than in prior sources (*for example*, Evans et al. 2018a; Lindsey 2017, 2019) as more conversations with community members have taken place. The family was once more internally diverse; speakers can recall the loss of some varieties due to shifts in clan position and composition, even in recent history (see Zakae 2018, ln. 189; Kurupel (Suwede) 2018b, ln. 140–146; Bewag 2018, ln. 112).

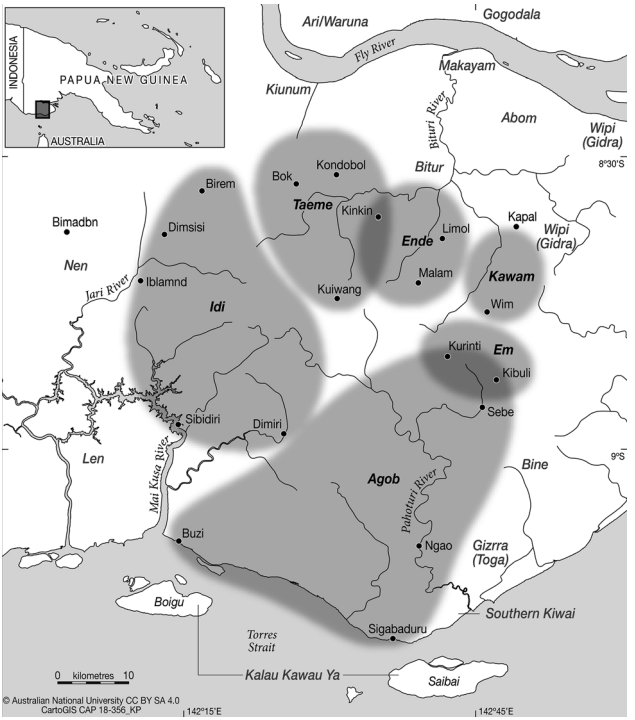

Figure 2: South Fly villages with predominant Pahoturi River speaker populations.

We use the term LANGUAGE VARIETIES to refer to each of the communicative systems considered distinct by speakers and remain agnostic to the divide between language and dialect. While we are comfortable classifying Idi and Ende as distinct languages given their numerous lexical, morphological, and phonemic differences, further classifications within the family require more data. Traditionally, PR has been treated as a dialect continuum, with Idi and Taeme at one end and Agob and Ende at the other (Eberhard et al. 2019). Comparative data suggest that Kawam and Em align closer to Agob and Ende, as we present below.

To calculate shared vocabulary among the varieties, we collected wordlist data using the Yamfinder survey (Carroll et al. 2016; Lindsey 2017) and performed a pairwise comparison analysis on all lexemes by counting cognates within each lexical concept (Ellison et al. 2017).

In Figure 3, the tree on the left indicates a first-order split between the western (Idi and Taeme) and eastern (Agob, Em, Ende, and Kawam) varieties. Idi and Taeme share 86% of their lexicon (as cognates), while Kawam and Ende share 91%. Em patterns more closely with Ende and Kawam, followed by Agob. The low numbers in the leftmost column indicate that Idi diverges the most from the eastern varieties, perhaps due to contact with Yam languages to the west.

We may see more divergences between the varieties when we elicit a broader lexical set from villages where Kawam, Agob, Em, and Taeme are spoken. The Yamfinder wordlist includes basic concepts, which we predict would be less susceptible to change (Swadesh 1955; Bergsland and Vogt 1962; but cf. Haspelmath 2008). Thus, these results represent conservative similarity metrics.

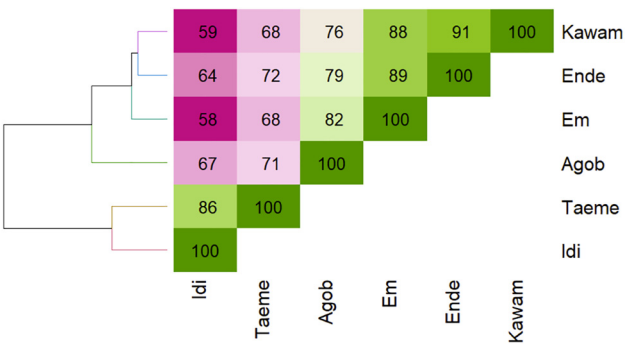

Figure 3: Percentage of shared cognates in Yamfinder across six PR varieties.

Table 1: Pahoturi River consonant inventories.

	Bilabial	Alveolar	Post-alveolar	Retroflex	Palatal	Velar	Labial velar
Plosive	p b	t d				k g	k͡p g͡b[a]
Affricate			t͡ʃ d͡ʒ[b]	ʈ͡ʂ ɖ͡ʐ[c]			
Nasal	m	n			ɲ	ŋ	
Fricative		s z					
Tap or flap		r		ɽ[d]			
Approximant					j		w
Lateral approx.		l			ʎ[e]		

[a]Labialized velar plosives have only been observed in Idi and Taeme. They may be realized without a labial closure (*i.e.* [kʷ] and [gʷ]). [b]Post-alveolar affricates are found in Kawam, corresponding with the retroflex affricates in other varieties. [c]Retroflex obstruents have been observed in all PR varieties except Kawam. [d]The retroflex flap is found in Agob, Em, and Ende. [e]Palatal laterals have been observed in Idi and Taeme.

2 Phonology

Table 1 organizes the consonant inventories of the PR varieties, based on descriptive fieldwork and lexical surveys.[5] This collective inventory is striking for Papuan languages (cf. Foley 2000), especially because it includes three retroflex and four liquid consonants, but is not unusual for the region. The labialized velars, retroflex series, and syllable-initial velar nasals are also observed in—or can be reconstructed for—nearby Anim and Yam (Evans et al. 2017; Rogers 2021).

All varieties contain oral plosives at bilabial, alveolar, and velar places of articulation. The retroflex obstruents occur in all varieties except Kawam and alternate between a stopped and affricated manner of articulation.[6] In Kawam, they are realized as palato-alveolar affricates (Chon and Lindsey 2022).

Idi and Taeme have labialized velar plosives, variably produced with both bilabial and velar closures or with just one velar closure. Labial-velar plosives are also found in Yam, of which Idi is the closest neighbor. In the eastern varieties, cognates that have labialized velars in the western varieties have sequences of velar stops and rounded vowels (Brickhouse and Lindsey 2021).

The contemporary PR varieties have four liquids. An alveolar trill/tap (/r/ or /ɾ/) and an alveolar lateral (/l/) are observed universally. A retroflex flap (/ɽ/) is observed in Ende, Agob, and Em, and a palatal lateral (/ʎ/) is observed in Taeme and Idi. Table 2 presents a reconstruction analysis of these liquids for proto-PR.

5 For an in-depth treatment of the sound systems, see Lindsey (2021a) for Ende, and Schokkin and colleagues (2021) for Idi.

6 An analysis of variable affrication in Ende suggests a socially-indexed change in progress from retroflex plosives to affricates (Strong et al. 2020, 2022).

Table 2: Pahoturi River liquid inventories (Evans et al. 2019).

Proto-PR	Idi	Taeme	Kawam	Ende	Em	Agob
*r	r	r	r	r	r	r
*l	l	l	l	l	l	l
*ʎ	ʎ	ʎ	l	l	l	l
*ɾ	l	l	r	ɾ	ɾ	ɾ
*ʀ	l	ʎ	r	ɾ	ɾ	ɾ

All varieties have high and mid front unrounded and back rounded vowels (/i, e, u, o/), one low central vowel (/a/) and two mid central vowels of varying qualities. All except Ende have the low front vowel /æ/ (see Table 3). This inventory resembles that of nearby Nen, which contains six full oral vowels (/i, e, u, o, a, æ/) and two central vowels (/ɪ, ə/) with limited distributions (Evans and Miller 2016). In contrast, nearby Bitur (Trans-New Guinea) only has five phonemic vowels (/i, e, u, o, a/) and no central vowels (Rogers 2021). The locations where Nen and Bitur are spoken are represented in Figures 1 and 2.

2.1 Phonological processes

PR languages exhibit an interesting vowel harmony pattern, especially as it pertains to the ventive directional/associated motion systems (Gast 2017a; Reed and Lindsey 2021). For Idi, Gast (2015a) and Schokkin and colleagues (2021) categorize the vowels into a [-light] set (/a, e, o, ə/), and a [+light] set (/æ, i, u, ɪ/). [light] is a lexical feature of stems, and vowel harmony leads to systematic alternations in bound forms, for example in the nominal clitics (discussed in Section 3). In (3), the [–light] stem *mangg* 'brother' takes the [–light] allomorph of the core clitic *=a*, whereas the [+light] stem *sémbl* 'pig' takes the [+light] allomorph *=ä*.

Table 3: Pahoturi River vocalic inventories.

	Front	Central	Back
High	i		u
Mid	e	(two central vowels)	o
Low	æ[a]	a	

[a]Observed in all varieties except Ende.

(3) The core clitic *=a* harmonizes to *=ä* after [+light] words, like *sémbl* 'pig'.

Bo	***manggmangga***	***sémblä***	*ybdheo.*
bo	maŋg~maŋg=a	sɪmbl=æ	jəbəɖeo
my (1SG.POSS)	PL~brother=CORE	pig=CORE	kill.REM.3NSG>3SG

'My brothers killed the pig.'
Idi (Ado 2014: ln. 32)

In contrast, Lindsey identifies two types of assimilatory vowel processes in Ende. The global harmony pattern corresponding with Idi's [light] pattern is akin to a progressive prefix- or stem-controlled height-based pattern in Ende, in which high vowels (/i, ɪ, u/) trigger raising of mid vowels (/e, o/). This is illustrated in (4) where the nominals *lla* 'person' and *män* 'girl' take the mid-vowel allomorph of the accusative clitic *=de*, while *llig* 'boy' takes the high vowel allomorph *=di*. The second process noted in Ende is a regressive stem-controlled total assimilation pattern affecting some verbal prefixes. For more detail, see Lindsey (2019: 190) and Reed and Lindsey (2021).

(4) Accusative *=de* harmonizes to *=di* after words with high vowels like *llig* 'boy'.

Ngäna	*ako*	*mɨnyi*	*däbe*	***lla de***	*ttättle*
ŋəna	ako	mɪɲi	dəbe	ɽa=de	ʈʂəʈʂle
my (1SG.NOM)	also	FUT	that	person=ACC	correct
dägagalle,	***män de,***	*o*	***llig di.***		
dəgagaɽe	mən=de	o	ɽɪg=di		
AUX.REM.HAB.3SG>3SG	girl=ACC	or	boy=ACC		

'I would correct those people, the girls or the boys.'
Ende (Bewag 2018: ln. 207)

All varieties show evidence of floating nasal patterns (Lindsey 2019: chap. 3) involving a nasal consonant that appears before and assimilates in place to the leftmost non-initial obstruent in the word. For example, compare the positioning of the velar nasal *ng* before the velar stop in the Kawam root *chongg* 'to give' (5) and the more left position of the now alveolar nasal *n* in the prefixed root *nchog* (6).

(5) Infinitival form of *chongg* 'to give': *chongg*

Bo	*deyarɨn*	*ibo*	*chäm*	***chongg*** *e.*
bo	dejarən	ibo	t͡ʃæm	t͡ʃoŋg=e
he (3SG.NOM)	come.REM.VEN.3SGA	us (1NSG.INCL.DAT)	life	give=ALL

'He came to give us life.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 10:45)

(6) Inflected form of *chongg* 'to give': *-nchog-*

Ngɨna	*bäbire*	*minyi*	*ba**nchog**.*
ŋəna	bæbire	miɲi	ba-nt͡ʃog
I (1SG.NOM)	you all (2NSG.DAT)	will (FUT)	FUT.2SGO-give

'I will give it to you.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 6:23)

Ende, Kawam, Em, and Agob allow floating nasals before voiceless and voiced obstruents. Idi and Taeme only allow these before voiced obstruents. Speakers indicate that prenasalization is absent in word-initial position, though it is weakly audible and often visible in the acoustic signal.

Other phonological processes within PR have been treated to varying degrees for Idi and Ende, most notably infinitival reduplication (Lindsey 2019: sec. 4.2) and phonologically-conditioned allomorphy in many of the nominal clitics and the verbal morphology. Stress, tone, and intonational prominence do not play significant roles in these phonological systems, as is typical for the region (Evans et al. 2018a).

A great deal of phonetic variation has been observed across the languages. Free variation of the voiced alveolar fricative /z/ ([z, ʒ, d͡z, or d͡ʒ]) is a regional feature, observed also in Yam, Trans-New Guinea, and Oriomo (Brown et al. 2021; Kashima 2021; Lindsey 2021a; Rogers 2021; Schokkin et al. 2021). Two phonetic variables that have been studied extensively for both Idi and Ende include the variable realization of the retroflex obstruents as stops or affricates (Strong et al. 2020, 2022) and the variable deletion of /n/ in verb-final position (see Schokkin 2021b; Lindsey 2021b).

3 Nominal morphology

In contrast to the verbal morphology (see Section 4), nominal morphology is quite transparent, comprising a few derivational suffixes and 15 stacking phrasal case clitics (see Table 4). Reduplication and compounding are attested as derivational processes. Number coding can be categorized as a split system (Corbett 2000: 122–123), whereby part of the nominal class (pronouns and kinship terms) distinguish singular from nonsingular (the former by suppletion, the latter by reduplication), while the rest of the nominal class does not inflect for number. In such cases, number may be indexed in the verb or by a reduplicated adjective.

Table 4: Nominal case clitics in Em (Bolet 2017b; Munu 2018).

Semantic role	Form
Nominative	*=da* (SG), *=ya* (NSG)
Accusative (patient)	*=de*
Dative (recipient, beneficiary)	*=bélle* (SG), *=bira* (NSG)
Instrumental, comitative	*=allong*
Possessor	*=bo* (SG)
Distant possessive	*=bo* (SG)
Animate locative	*=bo sére=me*
Inanimate locative	*=me*
Animate allative	*=bo sére*
Inanimate allative	*=we*
Animate ablative	*=bo sér=att*
Inanimate ablative	*=(w)att*
Perlative	*=dae*
Proprietive	*=n*
Privative	*=meny*
Restrictive	*=dae*
Similative	*=ingoll*
Purposive	*=ma*

3.1 Pronominal paradigms

Pronominal paradigms distinguish three persons and two numbers and feature a clusivity contrast in the first-person forms. Pronoun sets include nominative, accusative, dative, possessive, past possessive (source), restrictive, and emphatic. The patterns uphold Cysouw's (2002) generalizations that pronominal paradigms that distinguish clusivity should not exhibit any person syncretism in the singular (i.e., 1SG = 2SG) or in the nonsingular. Only Taeme and Idi exhibit number syncretism in the nominative second and third persons (i.e., 2SG.NOM = 2NSG.NOM) and Agob in the accusative second person (i.e., 2SG.ACC = 2NSG.ACC). Curiously, Idi's first-person pronouns differ from the rest of the family, with similarities to third person. Full tables organizing pronouns for all varieties are listed in Appendix B.

Nominative pronouns are used for intransitive subjects and transitive agents, while accusative pronouns are used for transitive objects. Dative pronouns may be used for recipients of ditransitive clauses, or even for affected parties, such as beneficiaries or maleficiaries. Example (7) shows a first person dative pronoun in the beneficiary sense in Agob.

(7) Dative pronouns can be used to introduce beneficiaries.

Ngémlle	*ngomo*	*yae*	*Kuruntti me*	*gozegan.*
ŋəmɽe	ŋomo	jaj	kurunʈ͡ʂi=me	gozegan
me (1SG.DAT)	my (1SG.POSS)	mother	Kurunty=LOC	birth.REM.3SG>1SG

'I was born in Kurunty.' (lit. 'My mother birthed me in Kurunty.')
Agob (Billy 2015: ln. 13)

Reflexive pronouns are created by using the possessive pronoun with a word referencing self or the body, like *zaga* (Ende 'self') or *ddägane* (Taeme 'body'), as shown for Taeme (8). Reciprocal pronouns are created by reduplicating the possessive pronouns, as shown for Taeme (9).

(8) Reflexive pronoun constructions are comprised of the possessive pronoun and a word meaning 'self' or 'body'.

Ngén	***ngémo***	***ddagane***	*gwatérépenen.*
ŋən	ŋəmo	d͡ʐagane	gʷa-tərəpen-en
I (1SG.NOM)	my (1SG.POSS)	REFL	REFL.REM-cut-1SGA

'I cut myself.'
Taeme (Tama 2019)

(9) Reciprocal pronouns are reduplicated forms of the possessive pronouns.

Bo	***oba~oba***
bo	obaoba
they (3.NOM)	themselves (3NSG.POSS~3NSG.POSS)

gwatérépeneyo.
gʷa-tərəpen-ejo
REFL.REM-cut-3NSGA
'They cut each other.'
Taeme (Tama 2019)

3.2 Nominal clitics (case marking)

A set of at least 15 case clitics can be identified, covering core grammatical cases and all other case morpheme functions (e.g., adnominal, referential and complementizer) attested in Dench and Evans (1988). The case clitics observed in Em are listed in Table 4 and exemplified in Appendix C. These clitics may be hosted by any nominal, a class including nouns (e.g., Ende *ine* 'water'), property nouns functioning as either a noun or an adjective (e.g., *mer* 'good, goodness'), and closed subclasses of adjectives (e.g., *ulle* 'big'), locational nominals

(e.g., *ik* 'inside'), and quantifiers (including numerals and personal and interrogative pronouns). Differential marking of animate referents is common, with languages showing differential forms for most of the spatial cases (see Table 4).

Some case clitics also occur on non-finite verbs when these function as clause complements, but in these cases, they indicate different semantic roles. For example, in Ende the clitic *=me* indicates a locative argument when following a nominal (e.g., *ma me* 'in the house'), but simultaneity when following a non-finite verb (e.g., *kängkäl me* 'while climbing'). On the other hand, the purposive clitic *=ma* has the same general meaning whether following a nominal (e.g., *up ma* '(going) for bananas') or a non-finite verb (e.g., *tudi ma* '(going) for fishing'). There is no overt nominalization marker differentiating a non-finite verb form when it is used with case clitics from when it is used as the main predicate in a clause.

Case clitics are generally obligatory, adjoining to the rightmost element of the phrase, and have scope over the whole phrase. In cases of a split noun phrase (NP), the case clitic may appear twice. For example consider the following accusative-marked noun phrases in which the adjective *sisor* 'new' precedes the noun (10), follows the noun (11), and is split from the noun (12). In all cases, the accusative clitic *=de* follows the rightmost element in the phrase.

(10)

Ibi	*ibra*	*minyi*	*ttongo*	*sisor*	*bikwem* ***de***
ibi	ibra	mɪɲi	ʈoŋo	sisor	bikwem=de
we (1NSG.INCL.NOM)	for us (1NSG.INCL.DAT)	FUT	a	new	fireplace=ACC

ako bangeseya.
ako baŋeseja
then make.FUT.1NSGA
'Then we will make ourselves a new fireplace.'
Ende (Warama 2017: ln. 64)

(11)

Abo	*bongo*	*ttongo*	*ma*	*sisor* ***de***	*nogo.*
abo	boŋo	ʈoŋo	ma	sisor=de	nogo
must	you (2SG.NOM)	a	house	new=ACC	build.FUT.2SG>3SG

'You must build a new house.'
Ende (Warama 2017: ln. 13)

(12)

Ako	*ai*	*dan*	*ttongo*	*mälla* ***de***	*bällädän*
ako	ai	da=n	ʈoŋo	məʈa=de	bəʈədən
again	good	INT.DEM=COP.PRS.SGS	a	woman=ACC	marry.FUT.3SG>3SG

sisor ***de.***
sisor=**de**.
new=ACC
'Then it is okay for him to marry a new woman.'
Ende (Zakae 2016: ln. 7)

While most PR languages exhibit nominative-accusative alignment in their core argument marking, Idi differs in that nominatives and inanimate patients share the same clitic, with only animate patients marked differently from agents and subjects. Appendix C provides an inventory of case clitics in Idi.

3.3 Deictics

PR languages have elaborate demonstrative systems. Two formatives are clearly recognizable across the family: *g-* with proximate distance semantics, and *d-* with intermediate distance semantics. Two Em proximal demonstratives, *ge* and *génymae* are shown (13), while one intermediate demonstrative, *do*, is shown (14).

(13) Proximal demonstratives in Em

Ge	***ge***	***ge***,	*dirom da*	*guddellon*	***ge***	***ge***	***ge***
ge	ge	ge	dirom=da	gud͡ʒɐɽon	ge	ge	ge
here (PROX.DEM)	here	here	cassowary=NOM	stand.REM.3SGS	here	here	here

génymae	*dugabollon*	***ge***.
gəɲ=maj	dugaboɽon	ge
here=LOC	stand.REM.3SGS	here

'Closer and closer, the cassowary stood right there, he stood there.'
Em (Bolet 2017a: ln. 42)

(14) Intermediate demonstratives in Em

Do	*walle*	*godowallon*.
do	waɽe	godowaɽon
there (INT.DEM)	water	swim.REM.3SGS

'It swam to the other side.'
Em (Bolet 2017a: ln. 29)

A distal demonstrative form is much rarer, but is observed in Idi (15) and Ende (16). They appear to be based on different formatives in both languages: namely, *ḡ* (/g͡b/) in Idi and *dem* in Ende.

(15) Distal and proximal demonstratives in Idi

Mk	*plena*	*da*	***ḡaleḡale***	*gwlble,*	***giligili***
mək	plen=a	da	g͡baleg͡bale	gwələble	giligili
battle	plane=CORE	FOC	that_way	move.HAB.3SGS	this_way

gwlbli.
gwələbli
move.VEN.HAB.3SGS

'War planes used to be flying back and forth.'
Idi (Pid 2017: ln. 130)

(16) Proximal, intermediate, and distal demonstratives in Ende

Ge		*kaptte da*	*bɪtbɪt*	*dan,*
ge		kapʧ͡ʂe=da	bɪtbɪt	da=n
PROX.DEM		cloth=NOM	black	INT.DEM=COP.PRS.SGS
be	***de***	*mamam*	*dan.*	
be	de	mamam	da=n	
but	INT.DEM	red	INT.DEM=COP.PRS.SGS	
Be	***dem***	*de*	*pällämpälläm a*	*eran.*
be	dem	de	pəɽəmpəɽəm=a	era=n
but	DIST.DEM	FOC	white=NOM	where=COP.PRS.SGS

'This cloth is black, and that one is red, and that one way over there is white.'
Ende (Baewa 2018: ln. 120)

Many demonstrative forms, including those used for discourse deixis, can bear nominal morphology such as the ablative, allative, and locative case clitics, and exhibit vowel harmony for deictic directionality as do verbs (see 15).

4 The verbal complex

Verbs can be said to be the center stone of the crown that is the PR language family, as they exhibit complex patterns at multiple structural levels. The most typical verbs can be roughly divided into three categories: SYNTHETIC VERBS that host their own inflection, ANALYTIC CONSTRUCTIONS that contain an uninflected analytic stem followed by an inflected auxiliary, and COPULAS containing a grammatical element and a copular clitic.

The three types are showcased in examples (17) and (18). (17) contains an analytic construction (one uninflecting lexical verb ① combined with one inflected auxiliary verb ②) and one synthetic verb ③ which hosts its own inflectional affixes, indicating tense, aspect, mood, argument person and number, verbal number, and directionality.

(17)

Sana	*yu* ①	*dägagän* ②	*a*	*ŋge*	*ine da*	*däbem*	
sana	ju	d-ə-gag-ən	a	ŋe	ine=da	dəbe=m	
sago	fire_cook	REM-3NDUO-AUX-3SGA	and	coconut	water=NOM	that=ACC	
dikomän ③							
d-i-kom-ən							
REM-VEN.3NDUO-bring.PL-3SGA							

'He cooked the sago on the fire and brought coconut water.'
Ende (Sowati (Kurupel) 2016: ln. 28)

Copula predicates function slightly differently: they consist of a copular clitic that fuses argument number and tense and attaches to a grammatical word, such as *da* 'that' in Ende, see ④ in (18).

(18)

Nge	*däm a*	*obene*	*daeya* ④	*ngämo*
ŋe	dəm=a	obene	da=eja	ŋəmo
coconut	sucker=NOM	his (3SG.PST.POSS)	INT.DEM=COP.PST.SGS	my (1SG.POSS)

kobeyam *Barekam.*
kobejam barekam
brother_in_law personal_name
'This coconut sucker was from my brother-in-law Barekam.'
Ende (Jerry and Kaoga (Dobola) 2017: ln. 80)

In this section, we will organize information about the verbal complex as concisely as possible, starting with a description of the verbal stem, then an explanation of the form and function of the inflectional material, followed by a discussion on copula predicates. We conclude with a summary and an overview of the types of verbal constructions one might encounter in PR languages. Section 6.1 contains a more detailed discussion on analytic verbal constructions in Idi, while Section 6.2 provides more details on object-oriented inflection in Ende ditransitives.

4.1 Verbal stems

4.1.1 Analytic stem and synthetic stems

To discuss the topic of verbal stems, we use the superordinate term *lemma* to refer to the lexicon entry of a single verb, or a set of related verb stems. For instance, the Kawam lemma 'to baptize' consists of the analytic stems *kumbog* (NPL) and *kumbumeny* (PL) and the synthetic stems *ngkubog* (NPL) and *ngkubumeny* (PL). In contrast, the Kawam lemma 'to see' only contains the analytic stem *ikop*. Analytic stems differ from synthetic stems in that no inflectional material attaches to them directly, but must occur instead on a following auxiliary element.[7] Consider the contrast between the realization of the lemma 'to baptize' with a plural analytic stem *kumbumeny* preceding an inflected auxiliary verb (19) and with a directly inflected singular synthetic stem *ngkubog* (20).

7 In the Papuanist literature, this class of coverbs that appear with auxiliary or light verbs in these types of constructions are called "verb adjuncts" (Pawley 1993).

(19) Plural analytic stem of lemma *kumbog* 'to baptize': *kumbumeny*

Ngɨna	*bibim*	*gɨnya*	*inä me*	***kumbumeny***
ŋəna	bibim	gəɲa	inæ=me	kumbumeɲ
I (1SG.NOM)	you (2NSG.ACC)	here	water=LOC	baptize.PL

anggare.
aŋgare
AUX.PRS.1SG>2NSG
'I will baptize you in this water.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 1:8)

(20) Singular synthetic stem of lemma *kumbog* 'to baptize': *ngkubog*

Zon	*Yesu bɨm*	*dɨdɨme*	*inä*	***dungkubogɨn***	*Zodɨn*
zon	jesu=bəm	dədəme	inæ	du-ŋkubog-ən	zodən
John	Jesus=3SG.ACC	there	water	REM.3SGO-baptize.NPL-3SGA	Jordan

wäre poch me.
wære pot͡ʃ=me
water body=LOC
'John baptized Jesus in the Jordan.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 1:9)

4.1.2 Restricted and extended stems

In both Idi and Ende, verb stems can be divided into two main subclasses: RESTRICTED and EXTENDED. They correspond to a difference in lexical aspect: punctual/telic versus durative/atelic. In Idi, restricted and extended stems form different conjugation classes. Restricted stems do not take a past tense prefix, and they take a different set of agreement suffixes. There is often a formal similarity between restricted and extended stems from the same lemma, but derivational processes are often opaque and no longer productive. Below, the difference between inflected forms for the remote past is shown by restricted *-gädzn-* (21) and extended *-gädz-* (22), both meaning 'take out'. The different forms reflect different event structures: a python can be removed from a hole all at once (punctual), while honeycomb is removed bit-by-bit (durative).

(21) Restricted form of Idi *gädzn* 'take out': *-gädzn-*

Ländä	***ygädznea***	*gp-atha.*
lændæ	jə-gædʒn-ea	gəp-aʈa
together	3SGO-take_out-1NSGA	hole-ABL

'Together we took it (the python) out from the hole.'
Idi (James 2014: ln. 34)

(22) Extended form of Idi *gädzn* 'take out': *-gädz-*

Kpa	***begädza.***
kəp=a	b-e-gædʒ-a
fruit=CORE	REM-3SGO-take_out-1NSGA

'We removed the honeycomb (from the tree).'
Idi (Ämädu 2015: ln. 171)

This differential inflection marking for restricted and extended stems is not observed in Ende.

4.1.3 Valency of stems

The majority of PR verb stems are either intransitive (subcategorized for a single S[8] argument) or transitive (subcategorized for an A and O argument). There are also many ambitransitive stems that can be intransitive or transitive without any overt derivational process. These are mostly patientive, where the S in the intransitive use corresponds with the O in the transitive use: examples include Kawam *zän* 'enter (intransitive; 4.1.3); put into (transitive; 4.1.3)' or Idi *nglbn* 'stand up, grow up (intransitive); lift up (transitive)'. Valency cross-cuts the lexical aspectual distinction; thus, both transitive and intransitive verbs are found in restricted and extended classes.

(23) Intransitive use of Kawam *zän*: 'to enter'

Ge	*jhobae*	*rikochang*	*dan*	*Adibo aba*
ge	d͡ʒobaj	riko͡ʃ=aŋ	da=n	adibo=aba
PROX.DEM	very	difficult=ATT	INT.DEM=COP.PRS.SGS	God=3SG.POSS

chongom e	***zän** e.*
t͡ʃoŋom=e	zæn=e
kingdom=ALL	enter=ALL

'It is very difficult [for rich people] to enter the kingdom of God.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 10:25b)

(24) Transitive use of Kawam *zän*: 'to put in'

Ärod Äntipos	*[…]*	*dandɨmoenegɨn*	*Zon bɨre*	*[…]*	*sɨrämang*	*makɨp*
ærod_æntipos		dandəmojnegən	zon=bəre		səræmaŋ	makəp
Herod		order.REM.3SG>3PL	John=3SG.DAT		dark	place

8 We use the terms S, A and O as abbreviations for the core arguments of verbal predicates, and not for semantic-syntactic relations. Semantic roles are indicated by labels such as agent, patient, experiencer, etc.

zän *e.*
zæn=e
put_in=ALL
'Herod ordered for John to be put into prison.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 6:17–18)

The intransitive template is also used in passive and anti-passive constructions with verb roots that typically take the transitive template.

4.2 Verbal inflection

Verbal morphology templates are complex and exhibit many types of multiple and distributed exponence. Verbal inflectional categories include tense, aspect, mood, directionality, and verbal number. Inflected verbs consist of a stem and up to four affix slots on either side; exponents of all categories may be found in any of these slots. Moreover, affixes do not correspond to single values and can only be disambiguated by affixes in other slots. This is typical of languages in the area, see for example, the grammars of Yam languages Ngkolmpu (Carroll 2016) and Komnzo (Döhler 2018). Typically in PR, S and A arguments are indexed by a suffix, while O arguments are indexed by a prefix. Some ditransitive verbs, for example Ende *ttongg* 'to give', show agreement with dative-marked recipients (see Section 6.2). Table 5 illustrates the typical structure of an Ende verb, using *nälläntmenyaemeyo* 'you (all) will tell them' as an example:

Table 5: Inflectional slots in Ende: *nälläntmenyaemeyo*.

Tense, subject, object	Object	Verb stem	Pluractional	Tense, subject
n	ä	lläntmeny	aem	eyo
FUT.2>3	3NDUO	tell.PLO	NSG>PL	FUT.2NSGA

Below, we will briefly discuss multiple and distributed exponence, tense-aspect-mood marking, and participant and event number. For detailed discussion of Ende argument indexing see Section 6.2, for Idi verbal number see Schokkin (2022b), for syncretism, see Appendix D, and for directionality, see Reed and Lindsey (2021).

4.2.1 Multiple and distributed exponence

As in other languages in the area (see for example, Carroll et al. 2016; Döhler 2018), PR languages exhibit distributed exponence in their verbs, meaning morphemes are specified for multiple grammatical categories and those categories are

distributed across morphemes (Carroll 2022; Carroll et al. 2016; Caballero and Harris 2012; Harris 2017). Under Caballero and Harris' (2012) typology, multiple exponence in PR is affixal and formally distinct, with no licensing dependency on each other. In other words, to determine the values for verbal categories, the entire verb must be considered.

The Ende form in (25) illustrates this complexity. Each morpheme in (25) has as many as five potential interpretations across tense (remote past, recent past, future/irrealis), arguments (A, O), person (1, 2, 3), and number (singular, dual, plural). For example, the first morpheme in (25), *n-*, provides five possible interpretations (REC.TR.SGO; REC.TR.PLO; FUT.3>2SG; FUT.2>3SG; **FUT.2>3PL**), while the final morpheme *-eyo* has three possible interpretations (REM.3NSGA; FUT.3NSGA; **FUT.2NSGA**).[9] The co-occurrence of these two morphemes disambiguates the verb as being future tensed since that is the only interpretation compatible with both morphemes. Accordingly, the verb in (25) has an unambiguous tense, despite the ambiguity at the morpheme level.

(25) *nälläntmenyaemeyo*
n-ə-ɽəntmeɲ-ajm-ejo
FUT.2>3PL-3PLO-tell.PLO-NSG>PL-FUT.2NSGA
'You all will tell them/those stories.'
Ende (Kurupel (Suwede) and Warama 2009: ln. 855)

The glossing line in (25) illustrates how indexing of the O argument is manifest across four morphemes: the tense prefix (*n-*), the O-prefix (*ə-*), the stem (*ɽəntmeɲ*), and the pluractional suffix (*-ajm*). In transitive verbs with a single O argument, these morphemes all agree with the person and number features of that O argument and by association also accord with one another.

4.2.2 Tense-Aspect-Mood marking

All varieties have three morphological perfective tenses: remote past, typically used for events that happened before sunset yesterday, recent past for events earlier today and last night, and future for upcoming events, imperatives, and other modal extensions. A fourth inflectional paradigm, called imperfective, primarily has past habitual and irrealis uses. Examples (26) and (27) show the two past tenses in Agob, distinguished by differing tense prefixes for the verb *oter* 'to sleep'.

9 The bolded interpretations are the only available interpretations of these morphemes given the full form of the verb in (25).

(26) Remote past form of Agob *oter* 'to sleep': *gwoternen*

Dérέng de	***gwoternen***.
dərəŋ=de	gw-oternen
dog=NOM	REM-sleep.3SGS

'The dog was sleeping.' (lit. 'The dog fell asleep a while ago.')
Agob (Billy 2015: ln. 21)

(27) Recent past form of Agob *oter* 'to sleep': *noternen*

Dérέng de	***noternen***.
dərəŋ=de	n-oternen
dog=NOM	REC-sleep.3SGS

'The dog is sleeping.' (lit. 'The dog fell asleep recently.')
Agob (Billy 2015: ln. 20)

Formal marking of tense-aspect-mood (TAM) is distributed across the verb, appearing primarily in the first prefix slot (which also marks valency), the first suffix slot (which also marks verbal number), and the final suffix slot (which also indexes S and A arguments).

Several verbal particles are identified which add further modal meanings to a clause, like the future particle *ménɣi* in Agob (28).

(28) Agob future verbal particle: *ménɣi*

Kénazbag	*ngéna*	***ménɣi***	*obom*	*ikop*	*bege*.
kənazbag	ŋəna	məɲi	obom	ikop	b-ege
tomorrow	I (1SG.NOM)	FUT	him (3SG.ACC)	see	FUT-AUX.1SG>3SG

'Tomorrow, I will see him.'
Agob (Billy 2015: ln. 138)

The present progressive can only be expressed in an analytic construction, see (29). This type of periphrastic construction is also used for the other TAM values for non-inflecting verbs and is discussed in Sections 4.1 and 6.1.

(29) The present progressive requires an analytic construction[10]

Dérέng da	*mon*	***iko***	***igan***.
dərəŋ=da	mon	iko	igan
dog=NOM	girl	see	AUX.PRS.3SG>3SG

'The dog sees the girl.'
Agob (Billy 2015: ln. 23)

10 Note that the nominative clitic for Agob agents (=*da*) differs from the nominative clitic for Agob subjects (=*de*, see (26–27)). This is suggestive of a split alignment system, whereby Agob pronouns are nominative-accusative and non-pronominal arguments exhibit a tripartite pattern. Curiously, Kala Lagaw Ya, controversially categorized as Australian or Papuan (see Hunter et al. 2011) and spoken directly south of Agob on Mabuiag and Saibai islands, has a complex system of alignment, including a tripartite pattern in the singular pronouns (Round and Stirling 2015). Agob's alignment system and potential contact with Kala Lagaw Ya are areas for future research.

4.2.3 Participant number

Participant number marking (Corbett 2000) is particularly interesting in PR, as verbs exhibit different types of number marking in multiple locations. Suffixes typically agree in number with S and A arguments, while prefixes agree with O arguments. Many verb stems also alternate according to the plurality of the absolutive participant: if the S or O argument has a plural referent (greater than two), the use of a plural stem is obligatory: compare for instance Idi *wadzan* 'enter, put into (nonplural S/O)' and *dzardzar* 'enter, put into (plural S/O)'. Plural stems can also be used to mark event number, for example, with actions that are performed several times or at several places.

Interestingly, affixes and stems do not distinguish the same number categories. In Idi, the O-prefix distinguishes singular and non-singular (2+) objects, while the stem distinguishes non-plural (1–2) and plural (3+) participants. Thus, a dual object is indexed with a nonsingular prefix and a nonplural stem, see (30). In this example, paucal number (a small number greater than 2) for the A can only be deduced from the use of the suffix *-m*, referring to plurality of an S or A, on the second verb. See Schokkin (2022b) for an in-depth discussion of verbal number in Idi.

(30) Combination of NSG and NPL gives dual or paucal reading, while combination of NSG and PL gives plural or paucal reading

Kublä		***yabdhea***,
kubɪl=æ		ja-bəɖ-ea
bush.wallaby=CORE		NSGO-kill.NPL-NSGA
daytha	*ako*	***wapthnmea***
daj=ʈa	ako	w-a-pthən-m-ea
INT.DEM=ABL	again	INTR-TV-depart-PLS-NSGS

'We (DU|PC) killed two bush wallabies, and we (PC|PL) took off again from there.'

Idi (Yamta 2016: ln. 15)

Both Idi and Ende have a dedicated slot between the stem and the S/A suffix slot, which takes a form marking the (non-)plurality of both A and O in transitive verbs. In Ende, if the A is singular and the O is plural (3+), the *-neg* suffix is used, see (31). If the A is nonsingular (2+) and the O is plural (3+), *-aeb* is used, see (32).

(31) Ende plural suffix *-neg* indexes a singular subject and a plural object

Bogo	*mɨnyi*	*bibim*
bogo	mɪŋi	bibim
he (3SG.NOM)	FUT	you all (2NSG.ACC)

yawengaemnegän.
ja-weŋajm-neg-ən
FUT.2NSGO-forget.PLO-SG>PL-3SGA.FUT
'He will forget you (3+).'
Ende [elicited]

(32) Ende plural suffix *-aeb*/*-aem* indexes a nonsingular subject and a plural object

Lɨg a	*oba*	*bägäl a*	*wa*	*täbäll a*
ɾɪg=a	oba	bəgəl=a	wa	təbəɾ=a
child=NOM	their (3NSG.POSS)	bow=NOM	and	spear=NOM

dänglläbaebeyo.
d-ə-ŋəɾəb-ajb-ejo
REM-3NDUO-GET.PLO-NSG>PL-3NSGA.REM
'The children got their bows and spears.'
Ende (Dareda 2016: ln. 7.1)

Thus, we see multiple ways in which number marking is distributed across verbs. Sometimes, a number value does not have a dedicated form, but is constructed by combining different elements with other values, see (30). Elsewhere, number is marked simultaneously in several places on the verb without serving a disambiguation function, as in (31) where the plural (3+) quantity of the O is indexed in the prefix, the stem, and the suffix immediately following it.

4.3 Copular verbs

Copular verbs function differently from lexical verbs in that they consist of a copular enclitic that fuses number and tense and attaches to a grammatical word. Copular inflection only indicates subject number (singular, dual, or plural) and two tenses (past and present), as shown for Ende and Idi in Tables 15 and 16 in Appendix E.

To form the basic copula, these inflected elements can be attached to the intermediate demonstrative *da*, as shown for Taeme (33).

(33) Basic copula in Taeme

Bo	*ngémo*	***dan***.
bo	ŋəmo	da=n
he (3SG.NOM)	my (1SG.POSS)	INT.DEM=COP.PRS.SGS

'He is mine.'
Taeme (Tama 2019)

The existential copula is formed by attaching a copular clitic to the reduplicated form of the basic copula *dade*, as shown for Em (34).

(34) Existential copula in Em

Ngémo	*mélla*	***dadeg***.
ŋəmo	məɽa	da~de=g
my (1SG.POSS)	woman	exist~INT.DEM=COP.PRS.SGS

'I have a wife.' (lit. 'My wife exists.')
Em (Bolet 2017a: ln. 8)

Copular clitics can be added to other grammatical words like interrogative forms (*what* and *where*), adverbs (*here* or *there*), or pronouns (*I* or *you*).

Some erstwhile copular forms appear to have been (partly) reanalyzed and function primarily as markers of information structure, a process also attested for various Yam languages (Evans et al. 2018b). Example (15) shows a similar use of *da* in Idi, where it functions as a focus particle for the phrase *mk plena* rather than as a spatial demonstrative, as evidenced by the distal demonstrative *ḡaleḡale* immediately following it. Example (35) shows a copular question with 'what', while (36) shows the use of *eragaya* 'where was' as a focus particle after the subject of a copular clause.

(35) Copular clitic + *kada* 'what' in Kawam

Kujhur ach	*pinongg dabo*	*mog*	***kadan***	*ke?*
kud͡ʒur=at͡ʃ	pənoŋg=da=bo	mog	kada=n	ke
death=ABL	rise=NOM=3SG.POSS	meaning	what=COP.PRS.SGS	Q

'What is the meaning of rising from the dead?'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 9:10)

(36) Copular clitic + *era* 'where' in Kawam

oba	*tikop*	***eragaya***	*jhobae*	*rikochang*
oba	tikop	era=gaja	d͡ʒobaj	rikot͡ʃaŋ
their (3NSG.POSS)	heart	where=COP.PST.PLS	very	hard

dagaya
da=gaja
INT.DEM=COP.PST.PLS

'Their hearts were hardened.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 6:52)

Copular verbs also support the possessive verbal construction, in which verbs of having, knowledge and desire are paired with the possessive pronouns (*ngämo umllang da …dan* 'my knowledge is …'), and the simple past, present, and future tenses, in which the ablative, locative, allative clitics, respectively, pair with an analytic stem (*ngäna …=att/me/we dan* 'I am from/in/about to …').

5 Syntax

Word order in PR varieties is flexible (Brown 2020) but is typically subject-verb (SV) in intransitive clauses (see (39)) and agent-object-verb (AOV) in transitive clauses (see (41)). One notable exception is the experiencer-object construction, ordered OAV (see (37) and Section 6.1.5).

(37) Experiencer-object constructions have OAV word order.

Babom	*nya*	*ngémi*	*dekolnea.*
[babom]$_O$	ɲa	[ŋəmi]$_A$	d-ə-ekol=neja
you (2SG.ACC)	MOD	we (1NSG.EXCL.NOM)	REM-2O-scratch=1NSGA

'You were scratched by us.' (lit. 'We scratched you.')
Taeme (Tama 2019)

Phrasal heads are phrase-final with a few exceptions: many nominal modifiers occur after the noun (e.g., Agob *késre* 'small', see (38)), and one deictic demonstrative acts as a preposition (Ende *do* 'there; until'). PR uses a system of non-finite verbs paired with auxiliary and phasal verbs instead of the clause chaining patterns common among Trans-New Guinea languages (Pawley and Hammarström 2018: 98–99).

(38) Many nominal modifiers, like *késre* 'small', follow nouns.

Mén	***késre*** *de*	*notarnen.*
mən	kəsre=de	notarnen
girl	small=NOM	sleep.REC.3SGS

'The young girl is sleeping.'
Agob (Billy 2015: ln. 19)

5.1 Alignment and marking of core arguments

As detailed in Section 3.1, pronominal systems show nominative-accusative alignment. For example, the first-person nominative and accusative pronouns in

Ende are distinguished by a suffixal *-m* (*ngäna* 1SG.NOM and *ngänäm* 1SG.ACC). In Ende and Idi, these pronouns are only used for humans or anthropomorphic characters in stories, while demonstrative forms refer to non-human referents. In Ende, the suffixal *-m* also marks the accusative form for demonstratives, but not in Idi. Non-pronominal arguments are indexed with nominative case in typical subject and agent roles and with accusative case in typical patient roles, as shown for Em (39).

(39) Non-pronominal arguments exhibit nominative-accusative alignment.

Llabo ***da***	*mon* ***de***	*ikop*	*négagon.*
[ɽabo=da]$_A$	[mon=de]$_O$	ikop	nəgagon
man=NOM	woman=ACC	see	AUX.REC.3SG>3SG

'The man saw the woman.'
Em (Munu 2018: ln. 89)

Idi stands out within the family because it shows neutral alignment on full NPs when the O argument has a non-human referent.[11] A phrasal clitic *=A* {=ä; a}, glossed CORE, flags NPs functioning as S, A and O arguments: see (40) and (41), where all arguments bear the same case marker in a transitive and intransitive clause, respectively. *=A* is not attested on nouns that end in the vowel /a/ or on proper names.

(40) In Idi transitive clauses, both A and O are marked with core clitic *=A*.

Bo	*manggmangga*	*sémblä*
[bo	maŋg~maŋg=a]$_A$	[sɪmbl=æ]$_O$
my (1SG.POSS)	PL~brother=CORE	pig=CORE

ybdheo.
jəbəɖeo
kill.REM.3NSG>3SG
'My brothers killed the pig.'
Idi (Ado 2014: ln. 32)

(41) In Idi intransitive clauses, S is marked with core clitic *=A*.

Qändä	*kpa*	*wäsplin.*
[k͡pændæ	kəp=a]$_S$	w-æ-spl-in
tree_species	fruit=CORE	INTR-TV-fall-3SGS.REM

'A *qändä* nut fell.'
Idi (Purgä 2014: ln. 3)

O arguments with human or anthropomorphic reference may be marked by suffixal *-m*, see (42). This is also observed in Taeme.

11 See also Footnote 10 for speculation on tripartite alignment in Agob.

(42) Idi and Taeme exhibit differential object marking; human and anthropomorphic objects are marked with suffixal *-m*.

Obo	*mélbä*	*gta*	*yépi*	*lam*	*yéndhpä*
[obo	mɪlbæ]$_A$	[gəta	jɪpi	la-m]$_O$	jɪnɖpæ
his (3SG.POSS)	sister	this	supernatural_being	man-ACC	see

begän.
begæn
AUX.PFV.NPL.REM.3SG>3SG
'His sister saw the *yépi* man.'
Idi (Ämädu 2014: ln. 18–19)

The syntactic role of arguments in cases like (40) is disambiguated through a range of factors including discourse pragmatics, constituent order (with AOV more common than OAV in clauses with activity verbs), and animacy.

Idi's neutral alignment is probably a result of historical vowel changes and consonant loss, leading to a merger of proto-PR *=*(d)a* 'subject/agent marker' and *=*de* 'object marker'. This neutralizing process may have been reinforced by nearby Nen's ergative-absolutive alignment in pronominal and noun marking systems. As there are many bilingual speakers, some convergence may have occurred. Detailed research modeling language change in Nen and Idi is needed to infer how the two grammars have been affected by contact.

Other PR languages, like Taeme, distinguish nominative and accusative clitics for all referents, but animacy still affects case marker selection. NPs with non-human referents take case clitics *=(d)a* and *=de* to mark nominative and accusative cases, respectively. For the nominative, *=da* occurs after vowel-final words, while *=a* follows consonant-final words.

(43) Intransitive subjects are marked with nominative: *=da*

La ***da***	*gaben*	*alan.*
[la=da]$_S$	gaben	alan
man=NOM	stand	AUX.PRS.3SGS

'The man is standing.'
Taeme (Geser 2018a: ln.41)

(44) Transitive subjects are marked with nominative: *=da*; transitive objects are marked with accusative: *=de*

La ***da***	*mla* ***de***	*yékép a*	*nagan.*
[la=da]$_A$	[mla=de]$_O$	jəkəp=a	nagan
man=NOM	woman=ACC	eye=VB	AUX.REC.3SG>3SG

'The man saw the woman.'
Taeme (Geser 2018a: ln.43)

For full NPs with human referents, *=(d)a* is used for nominative but the pronominal accusative clitic, e.g., Kawam *=bim* marks accusative case (45).

(45) Animate accusative objects are marked with a pronominal accusative case clitic

ubi	*timamae*	*Yesu* ***bim***	*ikop*	*digag ying*
[ubi	təmamaj]$_A$	[jesu=bəm]$_O$	ikop	dəgagjəŋ
they (3SG.NOM)	all	Jesus=3SG.ACC	see	AUX.REM.3NSG>3SG

'They all saw Jesus.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 6:50)

Finally, conjoined objects are marked with the nominative case clitic *=(d)a* as opposed to the accusative case clitic *=de* (46). This pattern, in which A and O are both marked nominative, is curiously similar to the core case marking in Idi described above.

(46) Conjoined objects are marked with nominative case: *=da*

Ede	*adibach*	*deda*	*mit ach*	*ra da*	*medi****da***	*wa*	*mig****da***
ede	adibat͡ʃ	deda	mit=at͡ʃ	[ra=da]$_A$	[medi=da]$_O$	wa	[məg=da]$_O$
so	because	this	reason=ABL	man=NOM	father=NOM	and	mother=NOM

wanysigeny	*yaran.*
waɲsəgeɲ	jaran
leave	AUX.PRS.3SG>3DU

'This is why a man will leave his father and mother.'
Kawam (The Kawam Language Committee and The Lewada Bible Translation Centre 2010: Mark 10:7)

Transitive clauses with two overt core arguments (as pronouns or NPs) are rare because core arguments are not usually expressed when retrievable from the discourse context. Person/number values of core arguments can additionally be indexed by verbal agreement affixes. However, due to many syncretisms, referents are often not fully recoverable based on just the verb, and a form like Idi *nabdhan* could either mean 'I hit you' or 'he hit me', depending on the context. This kind of underspecification is an areal feature of southern New Guinea (see Evans et al. 2018a).

6 An in-depth look at the PR verbal complex

We will now discuss two topics related to PR verbs in more detail: analytic constructions, illustrated by Idi, and indexing on ditransitive verbs, illustrated by

Ende. These topics were chosen both for their interest to typologists, as they illustrate features that may be rare cross-linguistically, and for their apparent centrality to how PR grammars are organized with respect to verbs. Although this discussion is based on analyses of Idi and Ende, we consider them to be pivotal elements determining the "genius" (Sapir 1921) of the family.

6.1 Analytic constructions in Idi

The distinction between constructions with an inflected verb stem (*synthetic constructions*) and those in which an auxiliary element is inflected (*analytic constructions*) is discussed in Section 4.1. Here we focus on analytic constructions, illustrated with examples from Idi. We consider these to be a type of complex predicate, and question whether they should be treated as light verb or auxiliary verb constructions. To this end, we include a detailed discussion of the uninflecting elements in Section 6.1.1 and of the inflecting elements in Section 6.1.2. Next, the discussion will turn to other constructions that show similarities to analytic constructions, but are not considered complex predicates. The overview will finish with a hypothetical grammaticalization path along which analytic constructions could have developed. Ende shows clear parallels with Idi in this respect, and the data we have on the other PR languages suggest that they operate comparably.

6.1.1 The uninflecting element: analytic stems

As mentioned, most lexical verbs have two stems: an analytic form used in a periphrastic construction for the present tense, and a synthetic form used for the other tenses. For example, the verb 'to bite, eat (meat)' has the analytic stem *dhndhg* (47), and the synthetic stem *-ndhg-* (48).[12]

(47)	*ŋgn*	*dhndhga*	*dhndhg*	*yran.*
	ŋən	ɖəndʒəg=a	ɖəndʒəg	jəran
	I (1SG.NOM)	meat=CORE	eat	AUX.PRS.3SG>3SG
	'I am eating meat.'			
	Idi (Elicited)			

12 For clarity, only nonplural stems are used to illustrate the analytic construction, unless otherwise indicated. Schokkin (2022b) discusses Idi verbal number in more detail.

(48) *Gta päklä bi thayabe bendhga.*
gəta pæklæ bi ʈajabe b-e-nɖəg-a
this python us (1NSG.EXCL.NOM) every REM-3SGO-eat.meat-1NSGA
'All of us ate the python.'
Idi (Ämädu 2017: ln. 98)

In addition to the verb lemmas with both types of stem, we also find many lemmas containing only analytic stems. These are never inflected directly but always followed by a separate form, not only in the present, but also the other TAM categories. Frequently occurring examples are *yeka* 'to tell, speak' (also a noun meaning 'language') and *yéndhpä* 'to see' (related to *yéndhép* 'eye'). Below, the use of *yéndhpä* is illustrated for the present, remote past, and recent past tenses, respectively.

(49) *Yéndhpä yrälä bä gta tmea?*
jɪnɖpæ jərælæ bæ gəta təme=a
see AUX.PRS.NPL.2SG>3SG you (2.NOM) this crocodile=CORE
'Do you (still) see this crocodile?'
Idi (Eka 2015: ln. 326)

(50) *Dia bom yéndhpä gagn.*
dia bom jɪnɖpæ gagən
deer me (1SG.ACC) see AUX.PFV.NPL.REM.3SG>1SG
'The deer saw me.'
Idi (Qbr 2015: ln. 64)

(51) *Yau ngay yéndhpä nagn.*
jau ŋai jɪnɖpæ nagən
NEG just see AUX.PFV.NPL.REC.1SG>3SG
'I didn't really see it.'
Idi (Ämädu 2015: ln. 184)

Analytic stems subcategorize for transitivity of the accompanying form. *Yeka*, for instance, combines with either transitive or intransitive inflected forms, whereas *yéndhpä* occurs exclusively with a transitive inflected form. Many analytic stems refer to bodily processes, emotions and physical sensations, or to states, such as *si* 'to urinate', *ngndä* 'to cry', or *yéndu* 'to sleep'.

Borrowed verb forms only occur in analytic constructions and are never inflected directly. Obvious loans are, for instance, the English verbs *miks* 'to mix' and *lus* 'to lose'. Also English nouns, such as *sespin* ('to boil in water', lit. 'saucepan') or *paia* ('to shoot with a gun', lit. 'fire') are encountered in this

construction. Facilitating the use of loanwords as verbs is a function of complex predicates observed across the Southern New Guinea region and elsewhere. For example, in Lavukaleve, a Papuan language of the Solomon Islands, there is a special verb-adjunct construction used just for loanwords (Terrill 2003: 399–400). For discussion of Komnzo (Yam), see Döhler (2018: 115), for Urdu, see Butt (2010), and for Bardi, see Bowern (2010).

Within the category of analytic stems, it is difficult to make a principled distinction between primarily verbal and primarily nominal stems. As mentioned in Section 3.2, analytic stems can function in non-finite subordinate clauses, taking nominal case marking. They can also function as core arguments to verbs (bearing a core case clitic, see Section 3.2), and be possessed. Below, (52) shows allative case on *käkäly* 'to load' (synthetic stem *-käly-*) to express purposive meaning, and (53) shows locative case on *wélwél* 'to wait' (synthetic stem *-wl-*) to express simultaneity of events. These suffixes are also found on nouns (see (54) and (55)) with the same semantics, as well as in their original spatial sense. Crucially, there is no formal difference in flagging case on a stem with uncontroversial verbal origins like 'to load', (52), and an uncontroversial nominal stem like 'basket', (54).

(52) *Doatha* *ält* *dinggiä* *dzirun,* *oblä*
do=aʈa ælt dɪŋgi=æ djirun oblæ
given_location=ABL health dinghy=CORE go.REM.VEN.3SGS her (3SG.DAT)
käkälyäwä.
kækæʌ=æwæ
load=PURP
'From there, an emergency dinghy came to pick her up.'
Idi (Purgä 2016: ln. 37–38)

(53) *Wélwélmä* *sémblä* *mk* *begän.*
wɪlwɪl=mæ sɪmbl=æ mək begæn
wait=SIM pig=CORE shoot AUX.PFV.NPL.REM.3SG>3SG
'While waiting, he shot a pig.'
Idi (Ḡambia 2014: ln. 29)

(54) *Gl* *thämä* *gaytha* *btrpnmndeo* *spelénggäwä.*
gəl ʈæm=æ gaj=ʈa bətrəpənməndeo spelɪŋg=æwæ
FUT leaf=CORE PROX.DEM=ABL cut.FUT.EXT.3NSG>3NSG basket=PURP
'They will be cutting the leaves from it [the coconut] for baskets.'
Idi (Gegera 2015: ln. 24)

(55) *Ngiä* *gta* *plomä* *ybänyin.*
ŋi=æ gəta plo=mæ jəbæɲin
coconut=CORE this single_man=SIM plant.REM.1SG>3SG
'I planted this coconut while I was single.'
Idi (Kbd 2015: ln. 31)

When a verbal lemma has both an analytic and a synthetic form, the analytic stem always contains either the same amount of or more morphological material than the synthetic stem. Thus, the former are analyzed as derived from the latter.

6.1.2 The inflecting element: auxiliary verbs

We will now turn our discussion to the elements bearing inflection in analytic constructions, and show that they are best analyzed as auxiliaries. We consider Idi analytic constructions a type of complex predicate: they involve two predicational elements that predicate as a single unit, and whose core arguments map onto a mono-clausal syntactic structure (Butt 2010: 2). Mono-clausal structure follows from the fact that the analytic stem always appears unmarked in the construction under discussion here. By contrast, when an analytic stem is used in a subordinate clause, and thus the construction as a whole is multi-clausal, the analytic stem is marked by a nominal case suffix, see (52–53). Neither is there any indication that the analytic stem functions as a core argument to the inflected element, as it is never marked with a core case clitic.[13]

Although the issue has received much attention in the typological and theoretical linguistic literature (both formalist and functionalist), it has proven difficult to establish good cross-linguistic criteria to distinguish between the various types of complex predicates. One such attempt puts forward the following criteria to tell apart light verb constructions from other complex predicates, most notably auxiliary verb constructions (Seiss 2009: 509; also cf. Butt 2010; Butt and Lahiri 2002):[14]

1. Light verbs are always identical in form to the corresponding main verb, whereas auxiliaries are usually form identical only at the initial stage of reanalysis from verb to auxiliary.

13 Note that analytic stems can function as a core argument to an inflected lexical verb, in which case they are marked by a core case clitic.

14 A third commonly encountered type of complex predicate is a serial verb construction (SVC), in which multiple fully verbal elements form a monoclausal syntactic structure. In PR, only clauses containing multiple forms bearing verbal inflection (whether lexical verbs, auxiliaries or copulas) would potentially classify as SVCs. We do not find these in our corpora (a potential marginal exception being a series of inflected motion verbs combined with a copula).

2. Light verbs always span the entire verbal paradigm, and are not restricted to appear with just one tense or aspect form.
3. Light verbs do not display defective paradigms.
4. Light verbs exhibit subtle lexical semantic differences in terms of combinatorial possibilities with main verbs, and are thus restricted in their combinations. Auxiliaries, on the other hand, are not restricted in their combinatorial possibilities (although they do not have to combine with every main verb).

The first criterion implies that in languages exhibiting light verbs, there will be a fully productive lexical counterpart to each of these elements. What is more, in order for the elements to count as light verbs "proper," they have to be identical in form to these lexical counterparts. It is here that Idi analytic constructions depart most radically from more prototypical light verb constructions as found in many languages of Australia and the Indian subcontinent. Only a very limited number of Idi stems are encountered fulfilling the function of an inflecting element in a complex predicate, and moreover, these stems are encountered in only two additional functions: in copula and experiencer-object constructions, discussed below in Section 6.1.4–6.1.5. Also in these latter functions, they can be considered semantically empty forms.

Present tense is only expressed with an analytic construction, with a dedicated auxiliary *-r-* ~ *-l-* (plural stem *-nga-*); see Appendix E, and, for example, (49). Other TAM values exhibit both analytic and synthetic constructions, and here we find perfective *-g-* (suppletive 3SGO *-gä-*, plural *-gädzi-*), and imperfective *-nd-* (plural *-ndr-*). None of these are found outside the three construction types under discussion in this paper, which indicates that they cannot serve the same function as lexical verbs. Instead, they are highly grammaticalized items serving as a vehicle for verbal inflectional categories like TAM, directionality, and person/number of core arguments, when combining with forms that are not allowed to bear verbal inflection themselves.

A brief contemplation of potential lexical sources points to the same conclusion. The present progressive stem is homophonous with the basic motion verb 'to go ~ come',[15] whereas the perfective and imperfective stems are formally similar to the lexical verb *ḡg* 'to make' and the 1|3SG present copula *=nd*, respectively. However, their inflectional paradigms do not show much similarity (but note that both the present progressive stem and the motion verb show the same type of person suppletion, a rare feature cross-linguistically). The inflecting forms in

15 Although homophonous, the two inflect differently: the auxiliary is ambifixing, and the motion verb prefixing (cf. Section 4.1.3). Both show person suppletion: *-l-* for 1|2SG absolutive arguments, and *-r-* elsewhere.

analytic constructions may have grammaticalized from lexical verbs at some point, but this historical relationship is now shrouded in obscurity due to the complexity of Idi inflectional patterns.

Thus, it is clear that the inflecting forms in the Idi analytic construction do not meet the first criterion as stated above, to be considered light verbs. Additionally, as the present tense has a separate form, they do not adhere to criterion (2) very well either. The forms do not show defective paradigms compared to lexical verbs, as, for instance, the copulas do, and so they do meet criterion (3). As for criterion (4), there appear to be few to no combinatorial restrictions on non-inflecting and inflecting forms, which indicates that Idi also does not meet this criterion.

Based on this, it appears that the inflected forms in Idi analytic constructions would be better analyzed as auxiliary verbs, as opposed to light verbs. This raises issues because the term AUXILIARY VERB is reserved for elements that consitute a complex predicate exclusively with unambiguously verbal forms. Anderson (2006, 2011) provides a thorough cross-linguistic study of auxiliary verb constructions and other complex predicate types, taking a functional-constructional approach, and includes discussion of cases which may not be considered auxiliary verb constructions under stricter approaches. Nevertheless, Anderson (2011: 796) defines auxiliary verb constructions as "mono-clausal verb phrases that minimally consist of an auxiliary verb component that contributes some grammatical content to the expression and a lexical *verb* component that contributes lexical content to the expression" [emphasis ours]. When discussing light verb constructions, the author is more agnostic as to what the non-inflecting element can pertain to (2011: 812): "one element is predicative and lexically rich, but the other element is lexically empty and merely instantiates the argument structure of the construction and allows for the predicative element to be expressible morphosyntactically."

Anderson states in a following footnote that in some languages the boundary between light verbs and auxiliaries may be near impossible to draw, citing data from the Papuan language Mek, and it is likely not the author's intention to propose a principled distinction, *per se*, between auxiliary verb and light verb constructions. The above examples have shown that Idi too poses difficulties for classifying uninflected elements in analytic constructions as either primarily verbal or non-verbal. This is problematic for analyzing these constructions as auxiliary verb constructions under a strict definition. Moreover, in the other construction types to be discussed (in Section 6.1.3), they do combine with forms that are unambiguously nominal, although they do not form a complex (verbal) predicate with these forms. In terms of its function, the Idi analytic construction fits Anderson's definition of light verb construction well.

Another recurring issue in the analysis of complex predicates is which of the participating forms, if any, can be considered the head of the construction. From

the literature, it appears that certain characteristics associated with the predicate head can be shared by two or more forms in both light verb and auxiliary verb constructions. Thus, this criterion appears not to be a good diagnostic in distinguishing between the two types of constructions. Both the Idi non-inflecting form and inflecting form in the analytic construction can be said to have characteristics of (verbal) predicate heads. The non-inflecting form determines the valency of the construction as a whole, since it subcategorizes for arguments, and can be marked for verbal number, whereas the inflecting form (in addition to bearing all TAM, directional, and agreement marking) is needed to form a grammatical sentence and can be considered the syntactic head of the construction.

The above discussion has shown that Idi (and by extension, the PR family) poses a challenge to the current typology of complex predicates. It appears that the definition of either the light verb construction or the auxiliary verb construction has to be broadened to accommodate the Idi phenomena. Either a definition of light verb constructions has to allow for the fact that the light verbs in question could entail highly grammaticalized elements not occurring also as lexical verbs, or a definition of auxiliary verb constructions has to allow for a non-inflecting element with a structurally ambivalent status in terms of its part-of-speech.

Despite the difficulties presented in analyzing the construction as a whole, the inflecting stems that can occur in Idi analytic constructions clearly form a separate verbal category based on language-specific criteria, and henceforth will be referred to by the term AUXILIARIES.

6.1.3 Other constructions that show similarities to analytic constructions

Two further construction types in Idi resemble the analytic construction, but do not form a complex predicate: constructions in which the auxiliaries function as copulas (Section 6.1.4), and experiencer-object constructions (Section 6.1.5). Due to their similarities, these construction types may be connected to the analytic construction, and could explain its origin. The sections below discuss the constructions in turn, followed by a discussion of a possible historical relationship with the analytic construction.

6.1.4 Copula constructions with auxiliaries

In addition to the copular enclitics, which show a reduced inflectional paradigm and can attach to different parts-of-speech (see Section 4.3), Idi also exhibits copular use of the same auxiliaries encountered in analytic constructions. Each of the three is attested in such constructions. The present progressive auxiliary is encountered both with the sense ‘be’ and ‘become’, while the perfective and

imperfective auxiliaries mostly have the sense 'become'. Because the predicative expression (PE) in a copula construction is not marked by a core case clitic, many of the constructions in which one of the auxiliaries is used as a copula are formally identical to analytic constructions. Below, examples are given: (56) and (57) with the present progressive auxiliary, and (58) and (59) with the perfective auxiliary.

(56) *La mg* *wlan.*
la_məg wəlan
old_man AUX.PRS.NPL.1SGS
'I am an old man.'
Idi (Gangge 2014: ln. 104)

(57) *Miäng* *wlan.*
mi-æŋ wəlan
flower-ATT AUX.PRS.NPL.1SGS
'It [the coconut tree] is flowering.'
Idi (Daiba 2015: ln. 28)

(58) *Ydi* *la mg* *gwagn?*
jɪdi la_məg gwagən
Q old_man AUX.PFV.NPL.REM.3SGS
'Did he become an old man?'
Idi (Kawa 2015: ln. 48)

(59) *Mer* *begäyo.*
mɛr begæjo
good AUX.PFV.NPL.REM.3NSG>3SG
'They fixed it up.'
Idi (Greh 2014: ln. 71)

These examples show that the auxiliaries can fulfill both the copular function of expressing a relation of identity or class membership (see (56, 58)), and expressing an attributive relation (57, 59), in addition to other copular functions such as expressing locatives. When it expresses a relation of identity, the PE is a noun such as *la mg* 'old man', and when it expresses an attributive relation, the PE is an attributive adjective such as *mer* 'good' or *miäng* 'with flowers' (derived from a noun with the attributive suffix).[16] We also find auxiliaries with transitive inflection,

16 No clear boundaries demarcate a class of nouns from adjectives, like there is between the class of verbs and everything else. Idi and other PR languages make a major distinction between verbal forms, taking verbal inflection, and non-verbal forms, not taking verbal inflection.

particularly when the predicative expression refers to a property, as in (59). In essence, this yields a causative of a copula construction: 'they made it (be) good.'

The copular enclitics are not attested with the 'become' sense, and neither do they occur with transitive inflection. But (56–57), for instance, do have counterparts with the 1|3SG present copula *=nd*, cliticized to a demonstrative form. At present, the exact factors that determine the use of the auxiliary-as-copula construction instead of the use of the enclitic form are not well understood. The permanency of the reference may play a role, in addition to whether the referent is available in the immediate physical or discourse context or not. This remains an area for further research.

6.1.5 Experiencer-object constructions

The construction termed EXPERIENCER-OBJECT CONSTRUCTION is transitive, and contains two argument NPs, one referring to an affected entity and one to an affecting entity, in addition to an inflected auxiliary. The main difference between experiencer-object constructions and analytic constructions is that the former are not complex predicates. For them, the auxiliary is unambiguously the sole predicate head, and the other constituents are unambiguously nominal, serving as core arguments to the verbal predicate head, marked by a core case clitic when expressed as full NPs. The two construction types have in common that in both cases, the inflected verb is semantically empty, and primarily functions to license the morphosyntactic expression of a particular event type, by serving as a vehicle for verbal inflectional categories. The main lexical contribution comes from the NP referring to the affecting entity, and this can be said to be the "semantic head" of the construction.

Experiencer-object constructions typically convey states or changes of states, in which a human or highly animate participant (the experiencer) is affected by an entity over which they have no control. The experiencer is the O argument of the construction, whereas the affecting entity is the A argument. Typically, the O is highly animate but low in volition, whereas the A is inanimate or abstract. Experiencer-object constructions tend to have OAV constituent order, whereas in general, AOV is more standard. This construction type is widely attested in Papuan languages; see for example, Foley (1986: 121–124, 2018: 925–926) and Pawley and Hammarström (2018: 113–115).

Not many lexical verbs refer to bodily sensations and emotions, and experiencer-object constructions often convey these meanings. They employ the same auxiliaries as mentioned above: *-r-* ~ *-l-* for present tense, and *-g-* or *-nd-* for the other tenses. Some examples are given below; (60) has the typical OAV order shown by experiencer-object constructions, while (61) shows AOV order.

(60) *Bom* *wota* *nalan.*
[bom]$_O$ [wot=a]$_A$ nalan
me (1SG.ACC) garden_food=CORE AUX.PRS.NPL.3SG>1SG
'I am hungry.' (lit. 'food affects me')
Idi

(61) *Dhndhg mga* *bim* *dzagn*
[ɖəndʒəg məg=a]$_A$ [bim]$_O$ djagən
meat real=CORE us (1NSG.ACC) AUX.PFV.NPL.REM.3SG>1NSG
Peireälä.
Peire=ælæ
personal_name=COM
'Peire and I were really hungry for meat.' (lit. 'meat affected the two of us')
Idi (Baiio 2014: ln. 8)

From the examples, it is clear that the meaning of the construction as a whole is determined by the noun heading the NP referring to the affecting entity. Substituting *dhndhg* 'meat' for *wot* 'garden food' has the effect that now the construction specifies that the affected human participants are hungry for meat specifically.

The noun referring to the affecting entity is usually abstract, like 'sleep', 'hunger' or 'thirst', but can also refer to an animate being. Example (62) comes from a story in which the hunting protagonist encountered a Papuan black snake (*Pseudechis papuanus*), a venomous snake species notorious for its aggression. The storyteller relates how he was paralyzed with fear after he narrowly escaped, and how his companions described his condition:

(62) *Obom* *qébiägä* *ada* *da*
[obom]$_O$ [k͡pɪbiæg=æ]$_A$ ada da
him (3SG.ACC) Papuan_black=CORE thus INT.DEM
nagn.
nagən
AUX.PFV.NPL.REC.3SG>3SG
'[They said,] "A Papuan black snake affected him like this."'
Idi (Sawe 2015: ln. 97)

OAV word order is also a minority pattern encountered in analytic constructions, as exemplified below. Reported speech is introduced by an analytic construction combining the semantically empty form *ada* 'like this; thus' with an inflected auxiliary. When both the A and O arguments, the speaker and recipient of the speech act, respectively, are humans, both OAV and AOV orders are found: example (63) shows OAV order and (64) shows AOV. Across the board, AOV appears to be more common in analytic constructions.

(63) *Bom* *Kwandze* *ada* *gagn…*
[bom]$_O$ [kwandʒe]$_A$ ada gagən
me (1SG.ACC) personal_name thus AUX.PFV.NPL.REM.3SG>1SG
'Kwandze told me, "…"'
Idi (James 2014: ln. 38)

(64) *Wigu* *mladam* *ada* *nagn,* *“Abe.”*
[wigu]$_A$ [mla-da-m]$_O$ ada nagən abe
personal_name woman-POSS.KIN-ACC thus AUX.PFV.NPL.REC.3SG>3SG come.FUT.2SG
‘Wigu told his wife, “Come.”’
Idi (Purgä 2014: ln. 17)

Nevertheless, rather than a clear-cut divide between experiencer-object constructions and “regular” transitive constructions, there is a gradient scale on which constructions can be placed with respect to the affectedness and degree of volitionality of a human O argument relative to that of the A argument, which has a bearing on constituent order. This is furthermore governed by information structure: topical O arguments tend to be fronted, even when inanimate.

6.1.6 Grammaticalization of analytic constructions

The previous sections have shown that there are two major ways of forming a verbal predicate in Idi: by a synthetic construction, in which a lexical verb stem is inflected directly, and by an analytic construction, a complex predicate in which a lexical stem is uninflected and an auxiliary form takes all the inflection. It was argued that the Idi analytic construction challenges the current typology of complex predicates, both because the uninflected element is not unambiguously verbal, and because the inflecting elements are only encountered as facilitating predication of forms that cannot do so otherwise, and not as full lexical verbs. We then went on to show that there are two further construction types with the same auxiliary forms that are not complex predicates: a copula construction in which a noun or adjective is predicated with the addition of an auxiliary form, and an experiencer-object construction in which a (change of) state of a human experiencer is expressed by a noun referring to the affecting entity, again predicated with the addition of an auxiliary. While in both cases the auxiliary is the syntactic head (without which predication would not be possible), the non-verbal element nearly completely determines the meaning of the construction. Because the same auxiliary forms are present in all three construction types, we question whether they are related and if they could have developed out of each other historically. All have in common a clear division of labor between the element that bears verbal inflectional marking, and the one that does not: the latter contributes lexical semantic meaning, while the former enables the morpho-syntactic expression by a verbal predicate.

The constructions also differ in various ways. In the experiencer-object construction, the relevant NPs are marked as core arguments, and so the construction is not a complex predicate, but syntactically headed by the sole (auxiliary) verb. Auxiliary-as-copula constructions are a more difficult matter. Because analytic

and copula constructions look the same, there are many borderline cases where it is unclear whether the non-inflecting element is primarily nominal or verbal. A case could be made quite easily for an utterance like (57) that it is a complex verbal predicate, and that *miäng* 'with flowers; flowering' functions as a non-inflecting verb, similar to e.g., *mk* 'to chase' in (53): while *miäng* is not attested with a synthetic (inflecting) stem counterpart, neither is *mk*. Analyzing (56) in the same way is a further stretch, but not impossible.

Apparently, the structural ambiguity with respect to the uninflected forms in Idi analytic constructions occurs not only because word class membership is difficult to determine across the board, but also because these constructions appear to be closely related to, and may have grammaticalized from, constructions that are more clearly bipartite noun-verb collocations, like the experiencer-object construction. Here, due to the preferred OAV constituent order, the NP in the A grammatical function usually occurs directly preceding the auxiliary verb. It seems a reasonable assumption that in some cases, this form may have been reanalyzed as part of a complex predicate, rather than as an argument to the auxiliary, particularly if it is used in this function more often than as a noun with clearly referential function.

This may have happened, for instance, with the form *yéndhpä* 'to see' (related to *yéndhép* 'eye'), which even appears to have retained a fossilized core case marker. In contemporary Idi, *yéndhpä* plus an auxiliary can occur accompanied by two overt core arguments A and O, as was shown in (49) and (50). Thus, *yéndhpa* is not analyzed as a core argument to the auxiliary, but rather as a non-inflecting form that combines with the auxiliary into a complex predicate. It may have once been the affecting entity in an experiencer-object construction, however. While the exact grammaticalization process is unclear, another factor that makes such a process plausible is the fact that core arguments are often left unexpressed when retrievable from the discourse context. Thus, the following reanalysis could have happened:

(65) Inferred grammaticalization source: experiencer-object construction

*(*bo)*	*bom*	*yéndhépä*	*nalan*
(*bo)	[bom]$_O$	[jɪnɖɻp=æ]$_A$	nalan
he/she/it (3SG.NOM)	me (1SG.ACC)	eye=CORE	AUX.PRS.NPL.3SG>1SG

'I am being seen.' (lit. '[his/her/its] eye affects me.')
Idi (inferred)

(66) Grammaticalization outcome: analytic construction

(bo)	*bom*	*yéndhpä*	*nalan*
([bo]$_A$)	[bom]$_O$	jɪnɖpæ	nalan
he/she/it (3.NOM)	me (1SG.ACC)	see	AUX.PRS.NPL.3SG>1SG

'He/she/it sees me.'
Idi (elicited)

When the NP with A grammatical function is dropped in (66) – which often happens in connected speech – the analytic construction is identical to a presumed experiencer-object construction that could be its source. This potential example is illustrative, because the form in question continued to exist independently as a noun with a slightly different meaning, which, if our inferences are correct, does not seem to have happened very often.

While we cannot be certain about the exact historical developments, the suggested grammaticalization route would pave the way for more forms with nominal origins, plus derived infinitives from synthetic verbal stems, to be recruited into the formation of complex predicates together with auxiliaries. This may have led to the current situation where this type of predicate is now a firmly established feature of Idi, and PR, morphosyntax.

6.2 Ditransitive indexing in Ende

This section presents a complex and unique split ditransitive alignment pattern in Ende, which is sensitive to both animacy and number, and allows both concordant and discordant agreement.[17] This is interesting typologically because it adds Ende to the known list of exceptions to the generalization by Haspelmath (2007) that

17 While this section uses ditransitive verbs such as *ttongg* 'to give' to illustrate this pattern, the pattern is also observed in other divalent verbs, such as *ngonoe* 'to ask for' (i), or verbs with applicative suffixes that introduce benefactive arguments, such as *gongg* 'to build for', cf. (ii-a) and (ii-b).

(i) The prefix agrees with the dual askee (parents) while the suffix agrees with the plural object (money).

Llig a	*obo*	*mäg bim*	***deyangnoenegän***	*ttägäll käp e.*
ɮɪg=a	obo	məg=bim	d-ej-a-ŋnoe-neg-ən	t͡ʂəgəɽ kəp=e
boy=NOM	his (3SG.POSS)	mother=3NSG.ACC	REM-DUO-TV-ask-SG>NSG-3SGA	money=ALL

'The boy asked his parents for money.'
Ende (Kenny 2018: ln. 86)

(ii) a. Verbs without applicative suffixes do not agree with the benefactive argument.

Ma de	*ubira*	*komlla yabira*	***nogo***.
ma=de	ubira	komɽa=jabira	n-o-go
house=ACC	for them (3NSG.DAT)	two=3NSG.DAT	FUT.2A-3NDUO-build

'Build the house for the two of them.'
Ende (Dobola 2018: ln. 91.3)

b. Verbs with applicative suffixes do agree with the benefactive argument.

Ma de	*ubira*	*komlla yabira*	***yanggog***.
ma=de	ubira	komɽa=jabira	∅-j-a-ŋgo-g
house=ACC	for them (3NSG.DAT)	two=3NSG.DAT	FUT.2A-DUO-TV-build-APPL.NPL

'Build the house for the two of them.'
Ende (Dobola 2018: ln. 91.4)

animacy-sensitive split indexing is only found in monotransitive constructions. Similar patterns have been attested for ditransitive constructions in Jamul Tiipay (Miller 2001: 162–163; Siewierska 2004: 60) and Laz (Lacroix 2011), where verbs also index the argument that is higher on the animacy hierarchy. However, to our knowledge, Ende is the only language that shows number sensitivity in ditransitive indexing.

Following Haspelmath (2005), we define argument flagging as coding on the arguments (by either case affixes or adpositions) and argument indexing as coding on the verb (by cross-referencing or agreement). Three major alignment types in ditransitives can be identified by comparing the marking in monotransitives on patient-like arguments (O) with those in ditransitives on theme-like arguments (T) and on recipient-like arguments (R):

(67) a. **Indirective**: themes pattern with direct objects, while recipients are marked differently. (O=T≠R)
b. **Neutral**: all three types of arguments (O, T and R) are marked the same way. (O=T=R)
c. **Secundative**: recipients pattern with direct objects, while themes are marked differently. (O≠T=R)

All three patterns in (67) are observed in Ende ditransitives for both argument flagging and argument indexing, which is further complicated by the abundance of and the high degree of syncretism in morphemes that exhibit object-oriented agreement on Ende verbs. This section will start by providing a brief overview of the flagging pattern in Ende ditransitives, followed by a detailed discussion of the indexing pattern in these constructions.

Argument flagging: In Ende ditransitives, themes are always flagged as accusative with a case clitic, just like objects are in monotransitives. Pronominal recipients are obligatorily flagged as dative (68a), giving rise to a classic indirective pattern, while non-pronominal recipients can be flagged as either dative or accusative (69a) and (69b), leading to either indirective or neutral alignment. Themes generally precede recipients in linear order, which helps to disambiguate when both arguments are flagged as accusative (69b).

(68) a.

Ede	*adawatta*	*obo*	*bin* ***di***	*ngämlle*
ede	ada=wa͡ʂ=a	[obo	bin=di]$_T$	[ŋəmɽe]$_R$
so	thus=ABL=NOM	his (3SG.POSS)	name=ACC	me (1SG.DAT)

*(*ngänäm) danttogän.*
(*[ŋənəm]$_R$) d-a-n͡ʈʂog-ən
(*1SG.ACC) REM.TR-TV-give.NPL-3SGA.REM
'So it is for this reason that he gave me his name.'
Ende (Geser 2018b: ln. 27.1)

(69) a. *Ngänäm* *Kaoga* ***bom*** *danttogän.*
[ŋənəm]$_T$ [kawga=bom]$_R$ d-a-nʧ͡ʂog-ən
me (1SG.ACC) personal_name=3SG.ACC REM.TR-TV-give.NPL-3SGA.REM
'[He] gave me to Kaoga.'
Ende (Kurupel 2018a: ln. 333)

b. *Ngänäm* *Kaoga* ***bälle*** *danttogän.*
[ŋənəm]$_T$ [kawga=bəɽe]$_R$ d-a-nʧ͡ʂog-ən
me (1SG.ACC) personal_name=3SG.DAT REM.TR-TV-give.NPL-3SGA.REM
'[He] gave me to Kaoga.'
Ende (Elicited)

Argument indexing: As previously mentioned in Section 4.2, Ende verb forms exhibit distributed exponence. For example, each morpheme in (70) has as many as five potential interpretations and the actual interpretation for the verb is only disambiguated through the co-occurrence of these morphemes:

(70) *nälläntmenyaemeyo*
n$_O$-ə$_O$-ɽəntmeɲ$_O$-ajm$_O$-ejo
FUT.2>3PL-3PLO-tell.PLO-NSG>PLO-FUT.2NSGA
'You all will tell them/those stories.'
Ende (Kurupel (Suwede) and Warama 2009: ln. 855)

In transitive verbs with a single O argument like in (70), these morphemes all agree with the person and number features of that O argument and by association also accord with one another. However, in Ende ditransitives, these same four morphemes can variably index either the theme or the recipient arguments, depending on the φ-features bared on these arguments. In short, these object-oriented verbal morphemes exhibit two types of sensitivities: The tense prefix and the pluractional suffix are sensitive to an animacy hierarchy, where first and second persons are higher than third persons; while the object prefix and the verbal stem are sensitive to number, where dual and plural arguments are preferentially indexed.

6.2.1 Ditransitive indexing and animacy

Two of the morphemes, the tense prefix and the pluractional suffix, agree with whichever of the T and R arguments is more animate, according to the animacy hierarchy in (71).

(71) Animacy hierarchy: 1, 2 > 3 > non-human

In this hierarchy, first and second person arguments are equally animate and are more animate than third-person human referents, which are more animate than third-person non-human or inanimate referents. If the T and R arguments are equal in animacy, these affixes will index the recipient argument by default.

Example (72) illustrates how object-marking affixes in ditransitive verbs preferentially agree with R arguments as opposed to T arguments when the animacy and number are equal. In (72a), the tense prefix indexes second-person, corresponding with a second-person R argument, and in (72b), the tense prefix indexes first-person, corresponding with the first-person R argument.

(72) Recipient argument preference in ditransitive verbs

a. *Bogo* *ngänäm* *bablle*
bogo [ŋənəm]$_{T}$ [babɽe]$_{R}$
he (3SG.NOM) me (1SG.ACC) you (2SG.DAT)
nanttogän.
n$_{R}$-a-nʧog-∅-ən
FUT.3>2-TV-give.NPL-NPLO-3SGA.FUT
'He will give me to you.'
Ende (Elicited)

b. *Bogo* *bam* *ngämlle*
bogo [bam]$_{T}$ [ŋəmɽe]$_{R}$
he (3SG.NOM) you (2SG.ACC) me (1SG.DAT)
banttogän.
b$_{R}$-a-nʧog-∅-ən
FUT.3>1-TV-give.NPL-NPLO-3SGA.FUT
'He will give you to me.'
Ende (Elicited)

However, if the T argument of the ditransitive verb ranks higher on the animacy scale than the R argument, the tense prefix will agree with whichever argument is more animate. In (73), the verb indexes the more animate second-person T as opposed to the third-person R argument.

(73) *Bogo* *ngämim* *oblle*
bogo [ŋəmim]$_{T}$ [obɽe]$_{R}$
he (3SG.NOM) us (1NSG.INCL.ACC) her (3SG.DAT)
beyasinigän.
b-ej$_{T}$-a-si$_{T}$-nig$_{T}$-ən
FUT-NSGO-TV-GIVE.PLO-SG>PL-3SGA.FUT
'He will give us (3+) to her.'
Ende (Elicited)

In (73), all three O-indexing morphemes have a non-singular or plural value, indicating that they all index the first-person plural T argument.

6.2.2 Ditransitive indexing and number

The other two O-indexing morphemes—the O-prefix and the stem—do not index person, only number. Thus, these morphemes are not sensitive to the above animacy hierarchy. The O-prefix indexes the dual argument if either or both the patient and recipient are dual. The stem indexes the plural argument if either or both the patient and recipient are plural. Because the O-prefix and the stem are not sensitive to the animacy hierarchy, the grammar may generate forms with concordant agreement where all affixes agree, that is, when the plural or dual argument is also the most animate. However, this system also allows forms with discordant agreement, with some morphemes indexing the theme and others the recipient. This discordance may arise if the less animate argument is plural or dual.

The examples below show multiple giving scenarios, which show concordance or discordance among the object-indexing markers in the verb. The forms in (74a) and (74b) show concordant agreement with the T and R argument, respectively. In both examples, the most animate argument is also plural. In (a), the most animate argument is the first-person nonsingular theme, and all three object-marking affixes agree with the theme. This pattern is repeated in (b) for the more animate first-person nonsingular recipient.

(74) a. *Bogo* *mɨnyi* *ngämim* *oblle*
bogo mɪŋi [ŋəmim]$_{T}$ [obɭe]$_{R}$
he (3SG.NOM) FUT us (1NSG.ACC) him (3SG.DAT)
beyasinigän.
b-ej$_{T}$-a-si$_{T}$-nig$_{T}$-ən
FUT.3>1|3-NSGO-TV-give.PLO-NSG>PLO-3SGA.FUT
'He will give us to him.'
Ende (Elicited)

b. *Bogo* *mɨnyi* *obom* *ŋgämira*
bogo mɪŋi [obom]$_{T}$ [ŋəmira]$_{R}$
he (3SG.NOM) FUT him (3SG.ACC) us (1NSG.DAT)
beyasinigän.
b-ej$_{R}$-a-si$_{R}$-nig$_{R}$-ən
FUT.3>1|3-NSGO-TV-give.PLO-NSG>PLO-3SGA.FUT
'He will give him to us.'
Ende (Elicited)

Conversely, the forms in (75a) and (75b) show discordant agreement. In (75a), the tense prefix is zero-marked, indicating indexation with the R argument (second-person singular) while the O-prefix indexes the T argument (first-person dual). As stated earlier, the tense prefix will agree with the R argument by default, unless the

T argument is more animate. The O-prefix, however, must agree with whichever object is dual, which in this case is the T argument.

(75) a. *Bogo* *mɨnyi* *ngämim* *bablle*
bogo mɪɲi [ŋəmim]$_{T}$ [babɽe]$_{R}$
he (3SG.NOM) FUT us (1NSG.ACC) you (2SG.DAT)
yanttogän.
∅$_{R}$-j$_{T}$-a-n͡ʂog$_{R}$-∅$_{R}$-ən
FUT.3>2-NSGO-TV-give.SGO-NPLO-3SGA.FUT
'He will give us two to you (one).'
Ende (Elicited)

b. *Bogo* *mɨnyi* *bibim* *ngämlle*
bogo mɪɲi [bibim]$_{T}$ [ŋəmɽe]$_{R}$
he (3SG.NOM) FUT you (2NSG.ACC) me (1SG.DAT)
basiwän.
b$_{R}$-∅$_{R}$-a-si$_{T}$-∅$_{R}$-wən
FUT.3>1|3-SG|3PLO-TV-give.PLO-NPLO-3SGA.FUT
'He will give you (3+) to me.'
Ende (Elicited)

Example (75b) is similar in that the theme and recipient arguments are equal in animacy. Again, the tense prefix and the unrealized pluractional suffix indicate agreement with the recipient by default. The dual-sensitive O-prefix is unrealized, indicating default agreement with the recipient as neither the theme nor the recipient is dual. Finally, the plural-sensitive stem agrees with the theme argument because the theme argument is plural, while the recipient is singular.

The examples in (76) differ from those of (75) in that the arguments now differ in animacy. In (76), the theme argument is inanimate plural while the recipient argument is second-person dual. The unrealized tense prefix and the unrealized pluractional suffix indicate indexation of the most animate argument: the recipient. The dual-sensitive O-prefix also agrees with the recipient because it is dual. On the other hand, the plural-sensitive stem demonstrates agreement with the inanimate theme argument because it is plural.

(76) a. *Bogo* *mɨnyi* *ma de* *bibra*
bogo mɪɲi [ma=de]$_{T}$ [bibra]$_{R}$
he (3SG.NOM) FUT house=ACC you (2NSG.DAT)
yasiwän.
∅$_{R}$-j$_{R}$-a-si$_{T}$-∅$_{R}$-wən
FUT.3>2-NSGO-TV-give.PLO-NPLO-3SGA.FUT
'He will give those houses (3+) to you two.'
Ende (Elicited)

b. *Bogo* *mɨnyi ma de* *ubira*
bogo mɪŋi [ma=de]$_{T}$ [ubira]$_{R}$
he (3SG.NOM) FUT house=ACC them (3NSG.DAT)
beyasinigän.
b-ej$_{T}$-a-si$_{R}$-nig$_{R}$-ən
FUT.3>1|3-NSGO-TV-give.PLO-NSG>PLO-3SGA.FUT
'He will give those two houses to them (3+).'
Ende (Elicited)

The discordant agreement in (76b) follows the same pattern. The animacy-sensitive pluractional suffix agrees with the third-person plural recipient argument as it is more animate than the inanimate theme argument. The plural-sensitive stem agrees with the only plural argument: again the recipient. However, the dual-sensitive O-prefix deviates from the rest of the form, indexing the dual theme argument.

This pattern whereby the stem is sensitive to the distinction between nonplural and plural while the prefix is sensitive to the distinction between nondual and dual is opposite to the pattern in Yam languages like Nen, where stems are sensitive to dual and prefixes distinguish singular and nonsingular (Evans 2014, 2017, 2019b). It is premature to conjecture on the source of this discordant agreement, but it is clear that languages in this region feature inflectional patterns by which differing categories of number are distributed across multiple exponents in the verbal form.

7 Conclusion

In presenting this typological portrait of the Pahoturi River family, we shed light into an incredibly diverse but understudied linguistic area, by providing an overview of the phonology, morphology, and syntax of PR languages. This profile illustrates that although the nominal morphology of PR languages straightforwardly relies on case-marking clitics, the verbs in these languages are typologically unusual and exhibit multiple and distributed exponence, leading to a holistic interpretation of verbal agreements (that the meaning of a given affix in a verb is only disambiguated by other suffixes). This is further complicated by the alternation between synthetic and analytic constructions, where the inflectional material occurs on a separate auxiliary element instead of the lexical verb in the latter and the abundance of object-oriented verbal affixes, wherein verbal affixes are shown to be able to index both theme and recipient arguments in ditransitives and are subject to both an animacy and a number hierarchy.

Although this profile provides a relatively comprehensive overview of some of the most interesting aspects of PR languages, it is far from an exhaustive investigation of these phenomena and leaves many puzzles due to both the constraint of space and the understudied nature of these languages. For example, the semantics and pragmatics

of participant numbers might warrant more exploration, as a paucal number interpretation is sometimes possible in addition to the three-way singular, dual and plural contrast. It is important to note that examples in this article are often limited to Idi and Ende except when adequate supplements from other PR languages arise. It is possible that some typological generalizations given here could be refuted in the future for a specific language in light of new data. But we hope that by presenting both the complex genius of the family through Idi and Ende verbs and our unanswered questions regarding these languages, our work may excite and stimulate future research through use of our openly-accessible corpora and independent fieldwork.

Grammatical glosses

1	first person
2	second person
3	third person
A	agent argument
ABL	ablative
ACC	accusative
AGT	agentivizer
ALL	allative
APPL	applicative
ATT	attributive
AUX	auxiliary
COM	comitative
COP	copular clitic
CORE	core argument
DAT	dative
DEM	demonstrative
DIST	distal
DISTR	distributive
DU	dual
DUR	durative
EM	extension marker
EXCL	exclusive
EXT	extended
FOC	focus
FUT	future
HAB	habitual
II	verb conjugation class two
III	verb conjugation class three
INCL	inclusive
INT	interrogative
INTR	intransitive

IRR	irrealis
IV	verb conjugation class four
LOC	locative
MOD	modal particle
NDU	nondual
NEG	negative
NOM	nominative
NPL	nonplural
NSG	nonsingular
O	object argument
PC	paucal
PFV	perfective
PL	plural
POSS	possessive
PROX	proximal
PRS	present
PST	past
PURP	purposive
Q	question particle
R	recipient argument
REC	recent past
REFL	reflexive
REM	remote past
RST	restrictive
S	subject argument
SG	singular
SIM	simultaneous aspect
T	theme argument
TR	transitive
TV	thematic vowel
VB	verbalizer
VEN	ventive

Acronyms

AOV	agent-object-verb
NP	noun phrase
PARADISEC	pacific and regional archive for digital sources in endangered cultures
PE	predicative expression
PR	Pahoturi River
SV	subject-verb
SVC	serial verb construction
TAM	tense-aspect-mood

Acknowledgment: Our gratitude extends to all members of the Pahoturi River language communities who assisted us in understanding the complexity and diversity within their language family. A special thank you goes to the Ende and Idi language communities who hosted us in our data collection trips. We would also like to thank the CartoGIS Services at Australian National University, the archival and processing teams at PARADISEC, especially Julia Miller, and the following granting organizations, which made data collection possible: the Australian Research Council (grant #FL130100111), the Firebird Foundation for Anthropological Research, and the American Philosophical Society.

Appendix A: Orthographic conventions

Table 6 illustrates the orthographic conventions used for Ende, Kawam, Idi, and Taeme. The Ende orthographic conventions are used in Lindsey's (2015) corpus and several books, including the Ende Alphabet book (Karao et al. 2016). The Kawam orthographic conventions were deduced from the 2009 translation of the Book of Mark into Kawam by Usumop (Nukme) Yowade and other members of the Kawam Language Committee in cooperation with the Lewada Bible Translation Centre (The Kawam Language Committee and The Lewada Bible Translation Centre 2010). The Idi orthographic conventions are those used by Schokkin in her (2014) corpus. The Taeme orthographic conventions are those used by Philip Tama in his 2019 presentation on the Taeme pronominal system (Tama 2019).

Table 6: Pahoturi River orthographic conventions.

Phoneme	Ende	Kawam	Idi	Taeme
p	*p*	*p*	*p*	*p*
b	*b*	*b*	*b*	*b*
t	*t*	*t*	*t*	*t*
d	*d*	*d*	*d*	*d*
k	*k*	*k*	*k*	*k*
g	*g*	*g*	*g*	*g*
k͡p^{w}	–	–	*q*	*kw*
g͡b^{w}	–	–	*ḡ*	*gw*
t͡s	*tt*	–	*th*	*tt*
t͡ʃ	–	*ch*	–	–
d͡ʐ	*dd*	–	*dh*	*dd*
d͡ʒ	–	*jh*	–	–
s	*s*	*s*	*s*	*s*
z	*z*	*z*	*z*	*z*
m	*m*	*m*	*m*	*m*
n	*n*	*n*	*n*	*n*

Table 6: (continued)

Phoneme	Ende	Kawam	Idi	Taeme
ɲ	*ny*	*ny*	*ny*	*ny*
ŋ	*ng*	*ng*	*ng*	*ng*
l	*l*	*l*	*l*	*l*
ɹ	*r*	*r*	*r*	*r*
ɾ	*ll*	–	–	–
ʎ	–	–	*ly*	*ly*
j	*y*	*y*	*y*	*j*
w	*w*	*w*	*w*	*w*
i	*i*	*i*	*i*	*i*
u	*u*	*u*	*u*	*u*
ɪ	*ɨ*	*not written*	*é*	–
e	*e*	*e*	*e*	*e*
ə	*ä*	*ɨ*	*not written*	*é*
o	*o*	*o*	*o*	*o*
æ	–	*ä*	*ä*	*ä*
ɐ	*a*	*a*	*a*	*a*

Appendix B: Pahoturi River pronoun inventories

This section of the appendix provides the form of pronouns in all PR languages. Table 7 contains the nominative pronouns, Table 8 contains the accusative pronouns, Table 9 contains the dative pronouns, and Table 10 contains the possessive pronouns. Note that other pronominal forms exist, including the past possessive and copular compounds.

Table 7: Pahoturi River nominative pronouns.

	Ende	Em	Kawam	Agob	Taeme	Idi
1SG	ŋəna	ŋəna	ŋəna	ŋəna	ŋən	ŋən
2SG	boŋo	boŋo	buŋo	boŋo	bæ	bæ
3SG	bogo	bogo	bo	bo	bo	bo
1NSG.EXCL	ŋəmi	ŋumi	ŋəmi	ŋumi	ŋəmi	bi
1NSG.INCL	ibi	ibi	ibi	ibi	jəbi	jəbi
2NSG	bibi	bibi	bibi	bibi	bæ	bæ
3NSG	ubi	ubi	ubi	ubi	bo/wəbi	bo/ubi

Table 8: Pahoturi River accusative pronouns.

	Ende	Em	Kawam	Agob	Taeme	Idi
1SG	ŋənəm	ŋənam	ŋonom	ŋənam	ŋənəm	bom
2SG	bam	bæm	bæm	bæm	babom	babom
3SG	obom	obom	obom	obom	obom	obom
1NSG.EXCL	ŋəmim	ŋumim	ŋəmim	ŋənam	ŋəmim	bim
1NSG.INCL	ibim	ibam	ibim	ibom	jəbim	jəbim
2NSG	bibim	bæm	bibim	bæm	bibim	bibim
3NSG	ubim	obæm	ubim	obam	ubim	ubim/wəbim

Table 9: Pahoturi River dative pronouns.

	Ende	Em	Kawam	Agob	Taeme	Idi
1SG	ŋəmɽe	ŋəmɽe	ŋəmre	ŋəmɽe	ŋəmʌæ	blæ
2SG	babɽe	babɽe	bæbre	bæɽe	bæbʌe	bæblæ
3SG	obɽe	obɽe	obo	obɽe	obʌe	oblæ
1NSG.EXCL	ŋəmira	ŋumra	ŋəmira	ŋəmra	ŋəmʌi	bli
1NSG.INCL	ibra	ibra	ibra	ibra	jəbʌi	jəbli
2NSG	bibra	babra	bibra	bæra	bibʌi	bibli
3NSG	ubira	obra	ubira	obra	ubʌi	ubli

Table 10: Pahoturi River possessive pronouns.

	Ende	Em	Kawam	Agob	Taeme	Idi
1SG	ŋəmo	ŋəmo	ŋomo	ŋəmo	ŋəmo	bo/bænæ
2SG	bəne	bəne	bəne	bəne	bənæ	bənæ
3SG	obo	obo	obo	obo	obo	obo/obænæ
1NSG.EXCL	ŋəma	ŋəma	ŋəma	ŋəma	ŋəma	ba
1NSG.INCL	iba	iba	iba	iba	jəba	jəba
2NSG	bina	bina	bina	bina	bəna	bəna
3NSG	oba	oba	oba	oba	wəba	oba

Appendix C: Nominal clitics

This appendix presents the nominal case clitics as observed in Idi (Table 11) and example sentences that showcase the nominal case clitics in Em (Table 12).

Table 11: Nominal case clitics in Idi (Schokkin, fieldnotes).

Semantic role	Form
Nominative	*=a*
Inanimate patient	*=a*
Animate patient	*-m*
Recipient	*-m*, *=blä*
Beneficiary	*=blä*
Instrument	*=ändä*
Comitative	*=ala*, *=along*, *peang*
Close possessive	*=bo* (SG), *=ba* (NSG)
Distant possessive	*=bänä* (SG), *=bana* (NSG)
Animate locative	*bo ply=mä*
Inanimate locative	*=mä*
Animate allative	*=pätä*
Inanimate allative	*=awa*
Animate ablative	*bo ply=atha*
Inanimate ablative	*=atha*
Perlative	*=e*
Proprietive	*-ang*, *-äg*
Privative	*-mnd*
Restrictive	*=däbe*
Similative	*=nganda*

Table 12: Example sentences in Em for each nominal case (Munu 2018).

Case marker	Em example	English translation
Subject (SG)	*Llabo **da** nugabollo(n).*	The man stood up.
Subject (NSG)	*Llabo **ya** nugabollaebo.*	The men (3) stood up.
Agent	*Llabo **da** up de noton.*	The man ate a banana.
Inanimate object	*Llabo da up **de** noton.*	The man ate a banana.
Animate object	*Llabo da mon **de** ikop négagon.*	The man saw the woman.
Recipient (SG)	*Llabo da mon **bélle** ngoe kop de nonttogon.*	The man gave the coconut to the woman.
Beneficiary (NSG)	*Llabo ya mélle**yabira** otot e angnemenyo.*	The man cooked for the woman.
Instrument	*Ttongodae llabo da era ddia de giri **allong** noboddon.*	The man cut the deer with a knife.
Comitative	*Ngumira ngomo mang **allong** nalla polle we.*	I went to the garden with my brother.
Possessor	*Ttongo llabo da **bo** polle da ulle dan.*	The man's garden is big.
Past possessor	*Llabo da **bo** eka da mer dan. (cf. Ende: Lla **bäne** eka da mer dan.)*	The man's word is good.
Animate locative	*Kate **bo sére me** lla bo daden.*	The man is at Kate's house.

Table 12: (continued)

Case marker	Em example	English translation
Inanimate locative	*Llabo da ma **me** dan.*	The man is in the house.
Animate allative	*Mélla da llabo **bo sére** iballo(n).*	The woman is walking towards the man.
Inanimate allative	*Llabo da ma **we** nallon.*	The man went towards the house.
Animate ablative	*Llabo da malla **bo sératt** angoson.*	The man returned from the woman.
Inanimate ablative	*Llabo da ma **watta** ngos allon.*	The man is coming from the house.
Perlative	*Llabo da nyongo **dae** ibnen allon.*	The man is walking along the road.
Proprietive	*Ge ngoe era kuko**n** dan.*	This is a coconut with shoot.
Privative	*Ge ngoe era kuko**meny** dan.*	This is a coconut without shoot.
Restrictive	*Llabo ya era sana **dae** noto.*	The men only ate sago.
Similative	*Ttongo llabo da era borke **ingoll** ibub di nullutun.*	One man sang songs like a parrot.

Appendix D: Syncretism

The *second-person quirk* is an interesting morphological phenomenon in PR (first observed in Idi and coined by Gast [2014]). It refers to an alternation in syncretic person/number indexing in the future tense. This type of syncretism is not uncommon among nearby Papuan languages, although where these person/number syncretisms can be found differs language by language (Baerman 2005; Lee 2016). In all PR languages, future tense verbs with second-person subjects and transitive verbs with third-person agents and second-person objects exhibit syncretism, such that future and recent past share the same prefix for these verbs(FUT=REC). Table 13

Table 13: Subset of the perfective auxiliary paradigm [Ende].

Arguments	Remote past	Recent past	Future
1SG > 2SG	*d-a-g*	*n-a-g-an*	*b-a-g*
1SG > 3SG	*d-ä-gag*	*n-ä-gag-an*	*b-ä-gag*
2SG > 1SG	*d-a-g*	*n-a-g-alle*	*n-a-g*
2SG > 3SG	*d-ä-gag*	*n-ä-gag-alle*	*n-ä-gag*
3SG > 1SG	*d-a-gän*	*n-a-g-an*	*b-a-gän*
3SG > 2SG	*d-a-gän*	*n-a-g-an*	*n-a-g-än*
3SG > 3SG	*d-ä-gag-än*	*n-ä-gag-än*	*b-ä-gag-än*

shows this for Ende, where the *n-* prefix is observed in both the recent past and the future forms.

Beyond the tense prefix, there is also a syncretic alternation in the final A-indexing suffix. In Ende, second- and third-person nonsingular A arguments are marked identically in the future tense (2NSG=3NSG; Table 14). These syncretisms are a marked contrast from the remote past and recent past paradigms, which show syncretism between the first- and second-person nonsingular (1NSG=2NSG; Table 14) and the recent past paradigm, which shows syncretism between the first- and third-person singular (1SG=3SG; Table 13). The situation looks different in Idi, where second-person nonsingular and third-person singular are marked identically in the future tense (but not in other tenses).

Table 14: Subset of the perfective auxiliary paradigm [Ende].

Arguments	Remote past	Recent past	Future
1NSG > 3SG	*d-ä-gag-eya*	*n-ä-gag-alla*	*b-ä-gag-eya*
2NSG > 3SG	*d-ä-gag-eya*	*n-ä-gag-alla*	*n-ä-gag-eyo*
3NSG > 3SG	*d-ä-gag-eyo*	*n-ä-gag-allo*	*b-ä-gag-eyo*

Appendix E: Verbal templates

This section of the appendix provides a number of inflection paradigms for various types of verbs from PR languages.

Tables 15 and 16 provide the forms of copular clitics in Ende and Idi, which only inflect for number and two tenses (*i.e.* they do not inflect for person).

Table 15: Ende copular clitics.

	Subject number		
Tense	**Singular**	**Dual**	**Plural**
Present	*=n(än)*	*=gaeyo*	*=g(än)*
Past	*=aeya*	*=gwaeya*	*=gaeya*

Table 16: Idi copular clitics.

	Subject number		
Tense	**Singular**	**Dual**	**Plural**
Present	*=nd*	*=go*	*=g(mo)*
Past	*=ndäyä*	*=gwäyä*	*=gäyä*

Table 17 provides the inflection template for perfective intransitive verbs in Ende, and Table 19 provides the inflection template for perfective transitive verbs in Ende. Table 18 provides the inflection template for Idi intransitive verbs, and

Table 17: Ende perfective intransitive template.

Prefix (tense)	Root	Suffix (pluractional)	Suffix (aspect)	Suffix (subject/tense)		
				REM	REC	FUT
go- REM	*g* AUX	*-neg* 3PLS	*-n(e)* DUR	*-∅* 1|2SG	*-an* 1|3SG	*-∅* 1|2SG
a-/o- REC|FUT.2		*-n,-ny,-l,-ll* NPL;II		*-än* 3NDU	*-alle* 2SG	*-än* 3NDU
bo- FUT		*-Ng* NPL;III		*-eya* 1|2DU	*-alla* 1|2DU	*-eya* 1DU
		-Nmeny PL;III		*-eyo* 3DU	*-allo* 3DU	*-eyo* 2|3DU
		-ab,-am NPL;IV		*-mam* 1|2PL	*-malla* 1|2PL	*-mam* 1PL
		-aeb,-aem PL;IV		*-mom* 3PL	*-mallo* 3PL	*-mom* 2|3PL

Table 18: Idi perfective intransitive template.

Prefix (tense)	Prefix (O)	Prefix (tv)	Root	Suffix (plur)	Suffix (aspect)	Suffix (verbal #)	Suffix (S & tense)		
							REM	REC	FUT
g-	*w-*	*a-*		*-mle*	*-nd(e)*	*-m*	*-(e)n*	*-(a)n*	*-∅/-o/-e*
REM.EXT	INTR	TV		DISTR	DUR	PLS	1|3SG	1|3SG	1|2SG
∅-				*-mnd*			*-ä*	*-älä*	*-(e)n*
REM.RST|				EM			2SG	2SG	3SG|2NSG
REC|FUT.2							*-(e)a*	*-ala*	*-(e)a*
b-							1|2NSG	1|2NSG	1NSG
FUT							*-(e)o*	*-alo*	*-(e)o*
							3NSG	3NSG	3NSG

Table 19: Ende perfective transitive template.

TAM/patient prefixes			root	plur	plur/APPL		TAM/agent suffixes		
							REM	REC	FUT
d-	*i-*	*ä-*	*g*	*-n,-ny,-l,-ll*	*-neg*	*-n*	*-∅*	*-an*	*-∅*
REM	VEN	3NDUP	AUX	NPL;II	SG>PL	DUR	1|2SG	1|3SG	1|2SG
n-	*i-*	*a-*	*ga(g)*	*-Ng*	*-aeb*		*-än*	*-alle*	*-än*
REC| FUT.2	NSG	TV	AUX.3SGP	NPL;III	NSG>PL		3SG	2SG	3SG
b-	*i-*			*-Nmeny*	*-Ng*		*-eya*	*-alla*	*-eya*
FUT	IRR			PL;III	NPL.APPL		1|2NSG	1|2NSG	1NSG
				-ab,-am	*-Nmeny*		*-eyo*	*-allo*	*-eyo*
				NPL;IV	PL.APPL		3NSG	3NSG	2|3NSG
				-aeb,-aem			*-alle* IRR.SGS		
				PL;IV			*-allo* IRR.NSGS		

Table 20: Idi perfective transitive template.

Prefix (tense & O)	Prefix (O)	Prefix (TV)	Root	Suffix (plur)	Suffix (aspect)	Suffix (verbal #)	Suffix (S/A & tense)		
							REM	REC	FUT
g-	*a-*	*a-*		*-mle*	*-nd(e)*	*-m*	*-(e)n*	*-(a)n*	*-∅/-o/-e*
REM.1|2SG.EXT|	1|2SG.RST	TV		DIST	DUR	PLS|A	1|3SG	1|3SG	1|2SG
REM.NSG.PLroot	*y-*			*-mnd*		*-g*	*-ä*	*-älä*	*-(e)n*
d-	3SG			EXT		NPLA>PLO	2SG	2SG	3SG|2NSG
REM.NSG.NPLroot	*ea-*			*-na(ne)*			*-(e)a*	*-ala*	*-(e)a*
∅-	NSG			PLO			1| 2NSG	1| 2NSG	1NSG
REM.SG.RST|	*∅-*						*-(e)o*	*-alo*	*-(e)o*
REC.3SG.RST	NSG.PLroot|						3NSG	3NSG	3NSG
n-	1|2SG.EXT								
REC.1|2SG.RST|									
REC.EXT|FUT.2									
b-									
FUT|REM.3SG.EXT									

Table 20 provides the inflection template for Idi transitive verbs. Allomorphy in the S/A suffixes is based on whether the stem is restricted or extended. Also, allomorphs shown are for roots from the dark harmony set only, and some categories, e.g., ventive, have been left out.

Table 21 provides the inflection paradigm for the intransitive auxiliary in Ende, and Table 22 provides the inflection paradigm for the perfective transitive auxiliary in Ende.

Table 21: Ende intransitive auxiliary paradigm.

Subject	PRS	REM	REC	FUT
1SG	*allan*	*go-g*	*a-g-an*	*bo-g*
1DU	*alla*	*go-g-eya*	*a-g-alla*	*bo-g-eya*
1PL	*amalla*	*go-g-mam*	*a-g-malla*	*bo-g-mam*
2SG	*alle*	*go-g*	*a-g-alle*	*a-g*
2DU	*alla*	*go-g-eya*	*a-g-alla*	*a-g-eyo*
2PL	*amalla*	*go-g-mam*	*a-g-malla*	*a-g-mom*
3SG	*allan*	*go-g-on*	*a-g-an*	*bo-g-on*
3DU	*allo*	*go-g-eyo*	*a-g-allo*	*bo-g-eyo*
3PL	*amallo ~ anggan*	*go-g-mom ~ go-g-neg-än*	*a-g-mallo ~ a-g-neg-an*	*bo-g-mom ~ bo-g-neg-än*

Table 22: Ende perfective transitive auxiliary paradigm.

A	O	REM	REC	FUT
1SG	2SG	*d-a-g*	*n-a-g-an*	*b-a-g*
	3SG	*d-ä-gag*	*n-ä-gag-an*	*b-ä-gag*
	2DU	*d-ey-a-g*	*y-a-g-an*	*b-ey-a-g*
	3DU	*d-ey-a-g*	*y-a-g-an*	*b-ey-a-g*
	2PL	*d-ey-a-g-neg*	*y-a-g-neg-an*	*b-ey-a-g-neg*
	3PL	*d-ä-g-neg*	*n-ä-g-neg-an*	*b-ä-g-neg*
	REFL	*go-g*	*a-g-an*	*bo-g*
2SG	1SG	*d-a-g*	*n-a-g-alle*	*n-a-g*
	3SG	*d-ä-gag*	*n-ä-gag-alle*	*n-ä-gag*
	1DU	*d-ey-a-g*	*y-a-g-alle*	*y-a-g*
	3DU	*d-ey-a-g*	*y-a-g-alle*	*y-a-g*
	1PL	*d-ey-a-g-neg*	*y-a-g-neg-alle*	*y-a-g-neg*
	3PL	*d-ä-g-neg*	*n-ä-g-neg-alle*	*n-ä-g-neg*
	REFL	*go-g*	*a-g-alle*	*a-g*
3SG	1SG	*d-a-g-än*	*n-a-g-an*	*b-a-g-än*
	2SG	*d-a-g-än*	*n-a-g-an*	*n-a-g-än*
	3SG	*d-ä-gag-än*	*n-ä-gag-an*	*b-ä-gag-än*
	1DU	*d-ey-a-g-än*	*y-a-g-an*	*b-ey-a-g-än*
	2DU	*d-ey-a-g-än*	*y-a-g-an*	*b-ey-a-g-än*
	3DU	*d-ey-a-g-än*	*y-a-g-an*	*b-ey-a-g-än*
	1PL	*d-ey-a-g-neg-än*	*y-a-g-neg-an*	*b-ey-a-g-neg-än*
	2PL	*d-a-g-neg-än*	*y-a-g-neg-an*	*y-a-g-neg-än*
	3PL	*d-ä-g-neg-än*	*n-ä-g-neg-an*	*b-ä-g-neg-än*
	REFL	*go-g-on*	*a-g-an*	*bo-g-on*
1NSG	2SG	*d-a-g-eya*	*n-a-g-alla*	*b-a-g-eya*
	3SG	*d-ä-gag-eya*	*n-ä-gag-alla*	*b-ä-gag-eya*
	2DU	*d-ey-a-g-eya*	*y-a-g-alla*	*b-ey-a-g-eya*
	3DU	*d-ey-a-g-eya*	*y-a-g-alla*	*b-ey-a-g-eya*
	2PL	*d-ey-a-g-aeb-eya*	*y-a-g-aeb-alla*	*b-ey-a-g-aeb-eya*
	3PL	*d-ä-g-aeb-eya*	*n-ä-g-aeb-alla*	*b-ä-g-aeb-eya*
	REFL.DU	*go-g-eya*	*a-g-alla*	*bo-g-eya*
	REFL.PL	*go-g-mam*	*a-g-malla*	*bo-g-mam*
2NSG	1SG	*d-a-g-eya*	*n-a-g-alla*	*n-a-g-eyo*
	3SG	*d-ä-gag-eya*	*n-ä-gag-alla*	*n-ä-gag-eyo*
	1DU	*d-ey-a-g-eya*	*y-a-g-alla*	*y-a-g-eyo*
	3DU	*d-ey-a-g-eya*	*y-a-g-alla*	*y-a-g-eyo*
	3PL	*d-ey-a-g-aeb-eya*	*y-a-g-aeb-alla*	*y-a-g-aeb-eyo*
	3PL	*d-ä-g-aeb-eya*	*n-ä-g-aeb-alla*	*n-ä-g-aeb-eyo*
	REFL.DU	*go-g-eya*	*a-g-alla*	*a-g-eyo*
	REFL.PL	*go-g-mam*	*a-g-malla*	*a-g-mom*
3NSG	1SG	*d-a-g-eyo*	*n-a-g-allo*	*b-a-g-än*
	2SG	*d-a-g-eyo*	*n-a-g-allo*	*n-a-g-än*
	3SG	*d-ä-gag-eyo*	*n-ä-gag-allo*	*b-ä-gag-än*

Table 22: (continued)

A	O	REM	REC	FUT
	1DU	*d-ey-a-g-eyo*	*y-a-g-allo*	*b-ey-a-g-eyo*
	2DU	*d-ey-a-g-eyo*	*y-a-g-allo*	*y-a-g-eyo*
	3DU	*d-ey-a-g-eyo*	*y-a-g-allo*	*b-ey-a-g-eyo*
	1PL	*d-ey-a-g-aeb-eyo*	*y-a-g-aeb-allo*	*b-ey-a-g-aeb-eyo*
	2PL	*d-ey-a-g-aeb-eyo*	*y-a-g-aeb-allo*	*y-a-g-aeb-eyo*
	3PL	*d-ä-g-aeb-eyo*	*n-ä-g-aeb-allo*	*b-ä-g-aeb-eyo*
	REFL.DU	*go-g-eyo*	*a-g-allo*	*bo-g-eyo*
	REFL.PL	*go-g-mom*	*a-g-mallo*	*bo-g-mom*

Appendix F: Pahoturi River literature

Of the seven PR varieties, we know the most about Idi and Ende. Idi is spoken in the Dimsisi, Dimiri, and Sibidiri villages by approximately 1,600 people. We have the best coverage of the Dimsisi variety, through publications by Dineke Schokkin and collaborators (e.g., Kashima and Schokkin Forthcoming; Lindsey and Schokkin 2021; Schokkin Forthcoming, 2021a, 2021b, 2022a, 2022b; Schokkin et al. 2021), with an archived corpus in PARADISEC (Schokkin 2014). Additional data are available on the Sibidiri variety from the work of Volker Gast (see e.g., Gast 2013, 2014, 2015a, 2015b, 2017a, 2017b). A comparison of Dimsisi and Sibidiri Idi reveals dialectal variation. There is an anonymous sketch grammar based on data gathered in Dimsisi, probably written by missionaries Tom and Robin Coleman (Unknown 1988). No data are available on Dimiri Idi. Dimsisi Idi is in close and stable contact with Nen (Yam; see e.g., Evans 2012, 2014, 2015a, 2015b, 2019a).

Ende is spoken in Limol, Malam, and Kinkin, by 600–1000 people. The documentation of Limol Ende was initiated by the Ende Language Committee (headed by Warama Kurupel, Wagiba Geser, and Tonny Warama), who hosted seven linguistic data collections led by Kate Lindsey and Catherine Scanlon. This work resulted in two archival collections in PARADISEC (Lindsey 2015; Scanlon 2018) and multiple scholarly works. For an overview, see Lindsey (2019: 236–239) More recent works include Lindsey and Schokkin (2021), Lindsey (2021a, 2021b), Reed and Lindsey (2021), Scanlon (2021), Strong et al. (2020, 2022).

Very limited work has been done on Taeme, which is spoken in the villages of Bok, Kondobol, Kinkin and Kuiwang. Some stories and songs are archived in Lindsey's (2015) PARADISEC collection. A deposit of Philip Tama's work on Taeme between 2012 and 2013 is being prepared for PARADISEC, and should be available

soon under collection ID LSNG15, within the Languages of Southern New Guinea project.

A group of Kawam translators, including Usumop (Nukme) Yowade, worked with the Lewada Bible Translation Centre in the mid 2000s on a translation of *The Book of Mark* into Kawam. This book was published by Wycliffe (The Kawam Language Committee and The Lewada Bible Translation Centre 2010). Limited materials on Kawam, Agob, and Em are available in Lindsey's (2015) corpus of Ende and other Pahoturi River languages.

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