A digital sketch grammar of Yawarana

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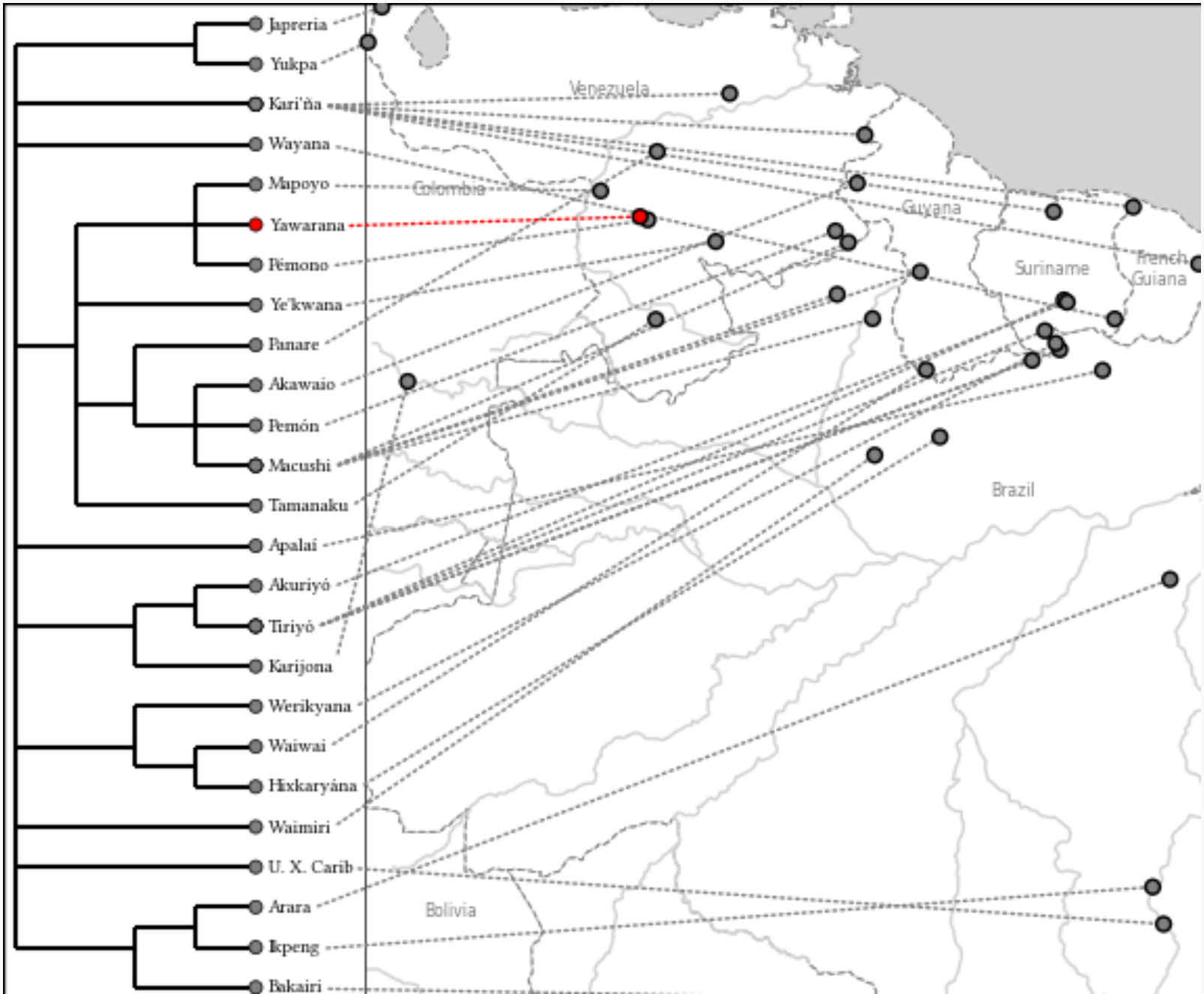
Amazonicas IX; June 9, 2023

Yawarana

- a member of the Cariban family (Venezuelan branch?)
- spoken in the upper Orinoco (and Puerto Ayacucho)
- critically endangered, ongoing revitalization efforts (Conde Pérez and Bolívar 2023)

Geanological and geographic location



Yawarana

- existing work
  - wordlist (Koch-Grünberg 1928)
  - wordlist (Méndez-Arocha 1959)
  - BA thesis (Colina Amaro 1991)
  - comparison with Pémono (Mattéi-Müller 2003)
- NSF-funded project 'Documenting Linguistic Structure and Language Change in Yawarana'
  - documentary corpus (Cáceres Arandia 2022)
  - dictionary in preparation (Mattéi-Müller and Cáceres Arandia 2023)
- collaboration on digital grammar sketch

My approach to digital grammars

- ideally: a standard, widely accepted, ontology for descriptive linguistics
  - would enable fully machine-readable (and comparable) descriptions
  - could be rendered into human-readable output?
- **grammars are prose interspersed with data** (Nordhoff 2012b)
  - also true for other linguistic documents

My approach to digital grammars

- everything referenced in linguistic texts are abstract entities
  - language
  - ...
  - wordform
  - ...
  - phone
- entities are stored in a database
  - every kind of entity has a table
  - every entity has an ID
- these entities are referenced in the descriptive prose
  - no actual data in text, only pointers
  - (on-the-fly) compilation to readable output

Benefits

- output:
  - multiple formats
  - interactive / non-linear
  - media-rich
- consistency
- explicitness
- “reproducibility”
- accessibility of data for other researchers
- consistent formatting (not trivial)

Implementation

- my weapons of choice:
  - CLDF for data
  - markdown for prose
  - CLLD for non-linear consumption
- **the suggested approach could be implemented with other components**

Implementation: CLDF into Markdown

- Robert Forkel implemented a text component for CLDF
- markdown link notation is co-opted for referencing entities from the database
  - `[label](http://www.target.com)`
  - `[label](FormTable#cldf:form-1)`
  - rendered with `Jinja2` templates
- I added functionality with `lingdocs`:
  - simpler database references (`[f](form-1)`)
  - cross- and example references
  - tables (as CSV files)
  - multi-file documents
  - different output formats (LaTeX and HTML created with pandoc)
  - general-purpose rendering application for data-rich linguistic documents

Implementation: commands in text

```
# Nouns [label](nouns)

## Pronouns [label](sec:pronouns)
The personal pronouns of [lg](yab) are shown in [ref](tab:pronouns).
The system shows the usual Cariban inclusive/exclusive ([gl](1+2) and [gl](1+3)) distinction, though the
1+2 pronoun [mp](ejne-1-2pro?nt) does not have the /k/ found elsewhere in the family.
It is likely a reflex of an old copula + infinitive *\*eti-në*. [todo](do we have parallel cases
elsewhere?)
Regarding plural marking, it should be noted that [mp](kontomopl?nt), which appears on the second person
plural pronoun, is usually restricted to verbs, while *-santomo* is only found with third person
pronouns and demonstratives.[todo](tajne)

[table](pronouns)

Reduced forms of the first and second person pronouns occur as proclitics/prefixes[todo](proclitics or
prefixes?) attaching to nouns to indicate possessor (see [ref](sec:nominalperson)), attached to verbs to
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The occurrence of bound [mp](u1) on members of all three parts of speech is illustrated in [exref](
1marking); [exref](2marking) illustrates the same distribution for [mp](me2).

[ex](histyarirdi-723,convrisamaj-46?example_id=1marking)

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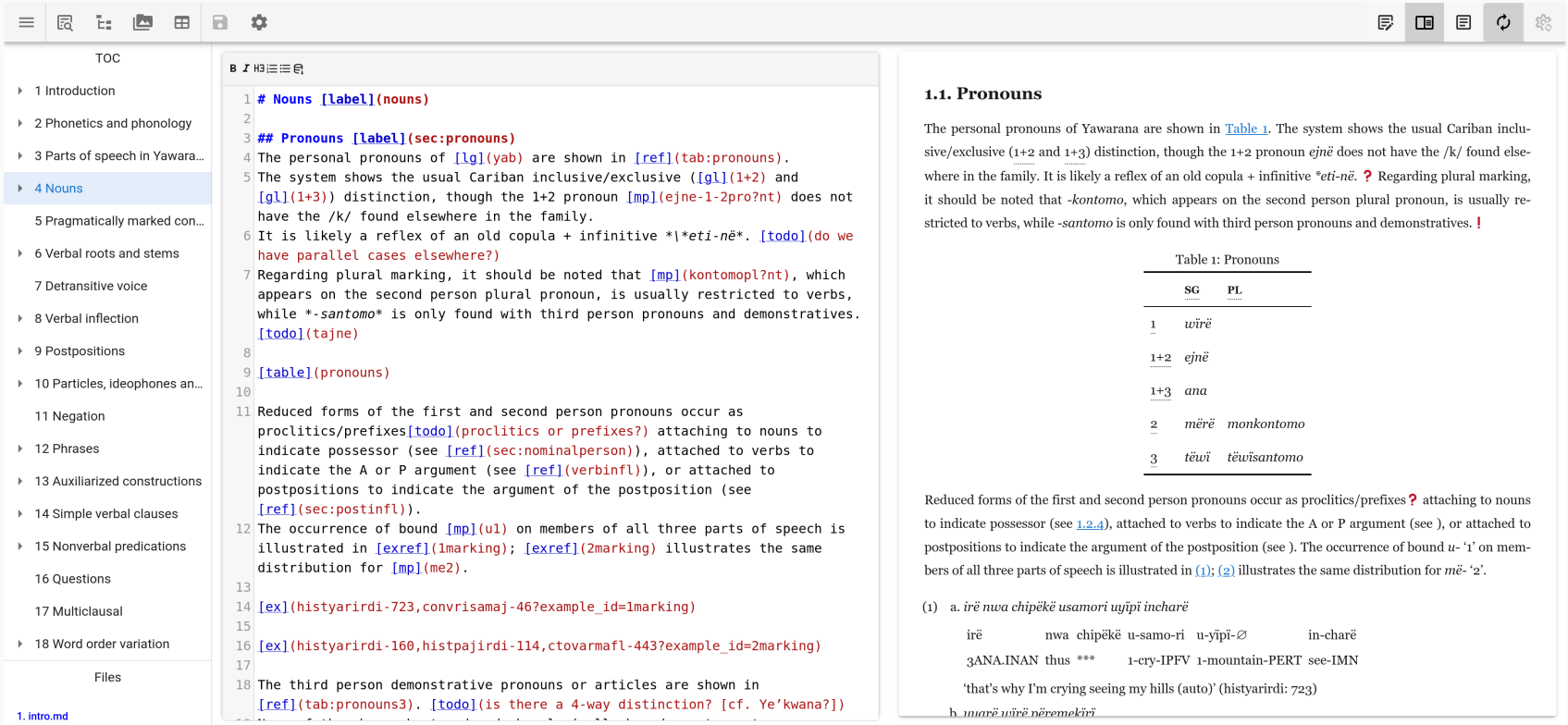
Implementation: HTML preview



Implementation: from text to PDF (via LaTeX)

4.1 Pronouns

The personal pronouns of Yawarana are shown in Table 4.1. The system shows the usual Cariban inclusive/exclusive (1+2 and 1+3) distinction, though the 1+2 pronoun *ejnë* does not have the /k/ found elsewhere in the family. It is likely a reflex of an old copula + infinitive **eti-në*. Regarding plural marking, it should be noted that *-kontomo*, which appears on the second person plural pronoun, is usually restricted to verbs, while *-santomo* is only found with third person pronouns and demonstratives.

Table 4.1: Pronouns

	SG	PL
1	*wïrë*	
1+2	*ejnë*	
1+3	*ana*	
2	*mërë*	*monkontomo*
3	*tëwï*	*tëwïsantomo*

Reduced forms of the first and second person pronouns occur as proclitics/prefixes attaching to nouns to indicate possessor (see Section 4.2.4), attached to verbs to indicate the A or P argument (see Chapter 6), or attached to postpositions to indicate the argument of the postposition (see Section 7.2). The occurrence of bound *u-* '1' on members of all three parts of speech is illustrated in (1); (2) illustrates the same distribution for *më-* '2'.

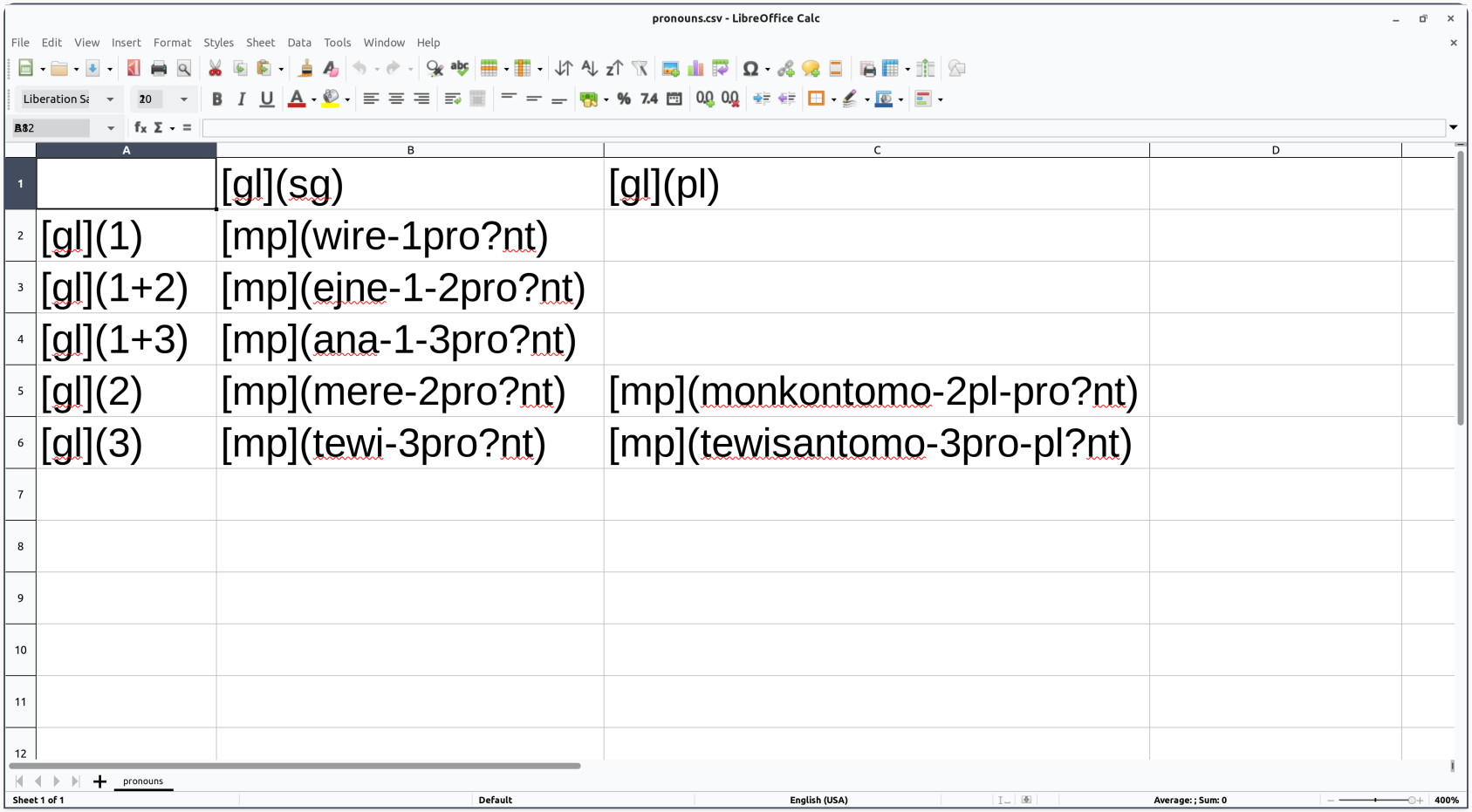
(1) a. uyarë wïrë përemekïrï

u-yarë *wïrë* *përemekï-rï*
1-alone 1PRO talk-IPFV
'I just talk.'

b. irë nwa chipëkë usamori uyïpï incharë

irë *nwa* *chipëkë* *u-samo-ri* *u-yïpï-∅* *in-charë*
3ANA.INAN thus *** 1-cry-IPFV 1-mountain-PERT see-IMN
'that's why I'm crying seeing my hills (auto)'

Implementation: tables



Implementation: CLDF dataset

- morphs and morphemes
- lexemes, stems, and wordforms (with POS)
- inflectional categories and values
- derivational processes
- phonemes
- “examples” / text records / utterances
- texts
- speakers
- can be found on github
- (fairly rudimentary) ontology bundled in CLDF-LDD

Implementation: interactive data-rich web app

- the CLLD web framework allows for rapid development of powerful interactive web apps for linguistic projects
- I developed (reusable and modular) CLLD plugins:
  - `clld-markdown-plugin` (w/ R. Forkel)
  - `clld-document-plugin` (chapters, example references, tables…)
  - `clld-morphology-plugin` (morphological structure)
  - `clld-corpus-plugin` (texts, link entities to tokens in corpus)
- bundled in template called InDiCoGram

Implementation: interactive web app

Go live

Comparison: other approaches

- Abesabesi grammar (Lau 2022; Lau 2021)
  - structure: XML description + FLEx converted to better XML
  - writing: manually coding XML
  - consumption: web app
- online grammars of Eastern Cree (Junker 2000–2014) and Nunggubuyu (Thieberger, Musgrave, and Baker 2018; Musgrave and Thieberger 2012)
  - structure, writing, consumption: HTML

References

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