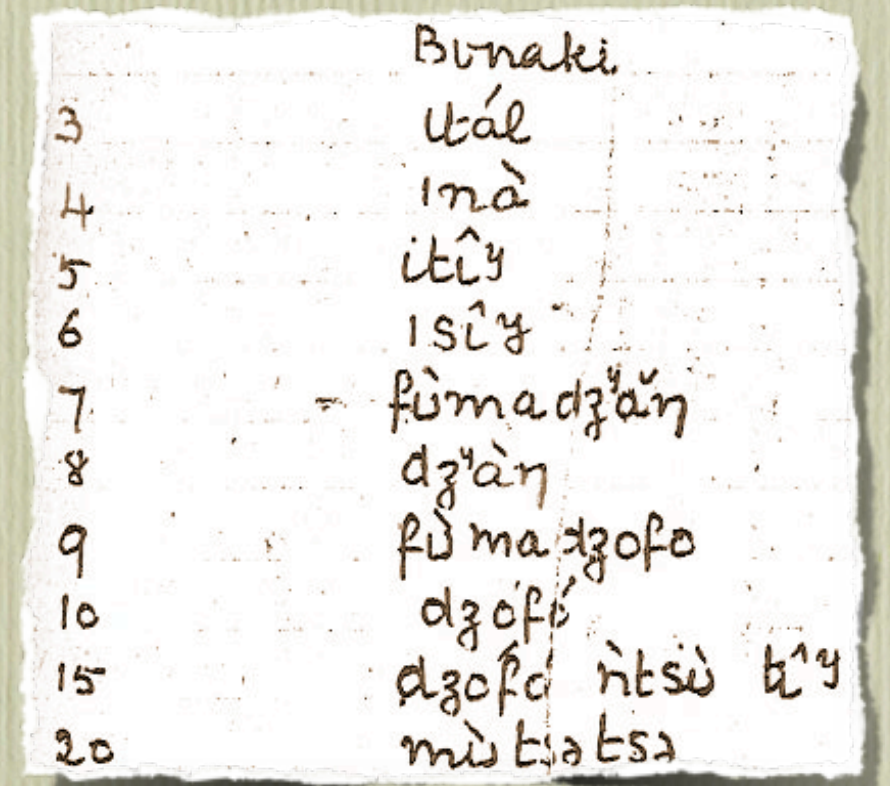
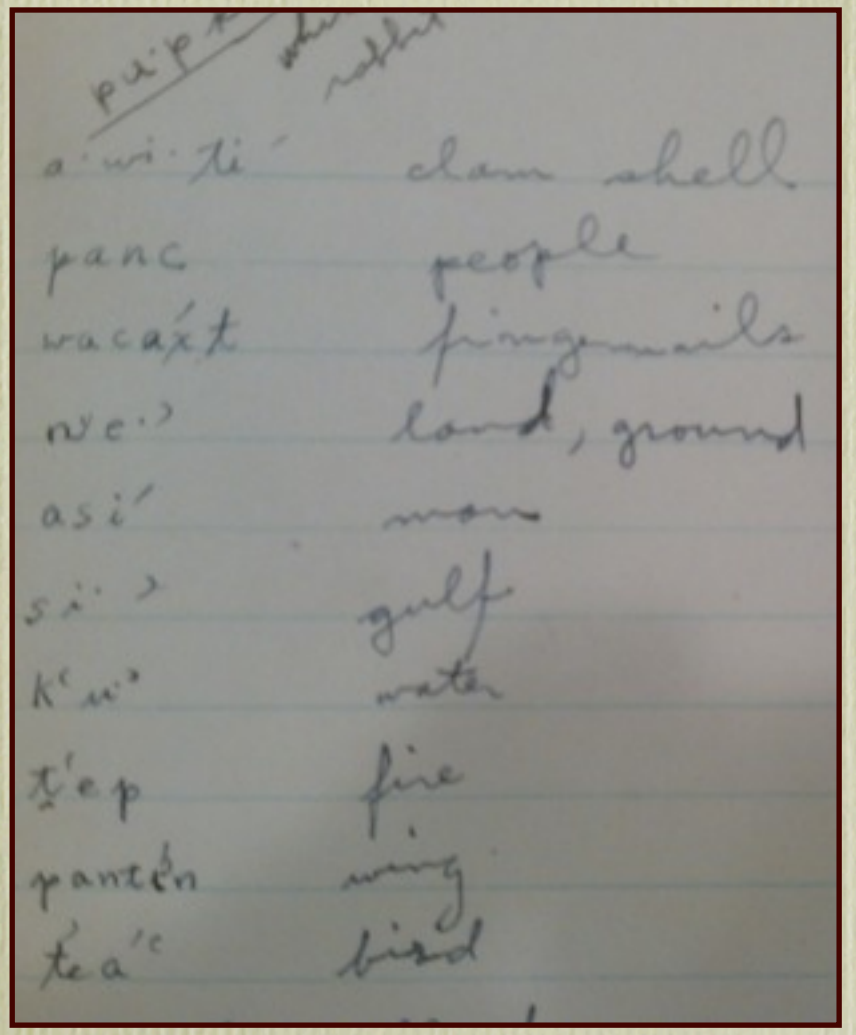


Wordlists as a test case for lexical interoperation

Jeff Good
University at Buffalo
jcgood@buffalo.edu

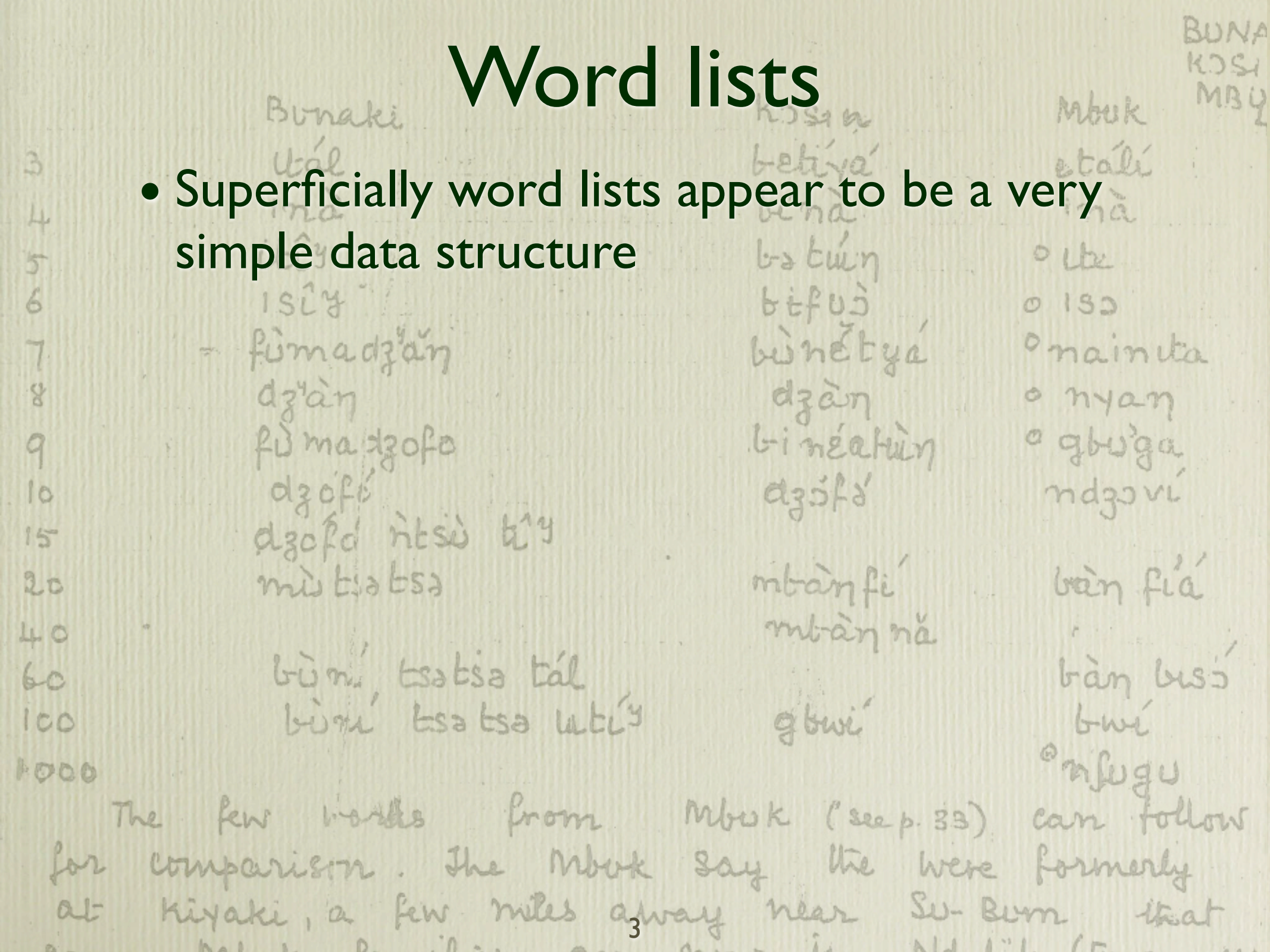
Overview



- Introduce word lists as a data structure
- Show how word lists can inform the development of
  - Annotation schemes for semantic fields
  - A linked data "cloud" for linguistics

Word lists

- Superficially word lists appear to be a very simple data structure



	Bunaki	Kosa	Mbuk
3	Utál	betiyá	etálí
4	[illegible]	bena	[illegible]nà
5	[illegible]	batún	° ute
6	isîy	bifuò	° iso
7	fùmadz'ăn	bùnětyá	° nainita
8	dz'àn	dzàn	° nyan
9	fù ma dzofo	binéatùn	° gbu'ga
10	dzofó	dzófá	ndzovi
15	dzofó ntsù tî'y		
20	mù tsatsa	mbànfí	bàn fiá
40		mbànnă	
60	bùní tsatsa tál		bàn bisó
100	bùní tsatsa utî'y	gbwí	bwí
1000			° nfugu

The few words from Mbuk (see p. 33) can follow for comparison. The Mbuk say the were formerly at Kiyaki, a few miles away near Su-Bum that

Chilver and Kaberry (1974:40)

BUNA
KOSI
MBU

	Bunaki	Kosin	Mbuk
3	Utál	betíyá	etálí
4	Inà	bínà	inà
5	itîy	batúŋ	° ite
6	isîy	bifuɔ̀	° iso
7	fùmadzʸǎŋ	bùnětyá	° nainita
8	dzʸàŋ	dzàŋ	° nyaŋ
9	fù ma dzofo	binéatùŋ	° gbu'ga
10	dzofó	dzɔ́fɔ́	ndzɔví
15	dzofó ntsù tîy		
20	mù tsatsa	mbànfí	bàn fiá
40		mbàn nǎ	
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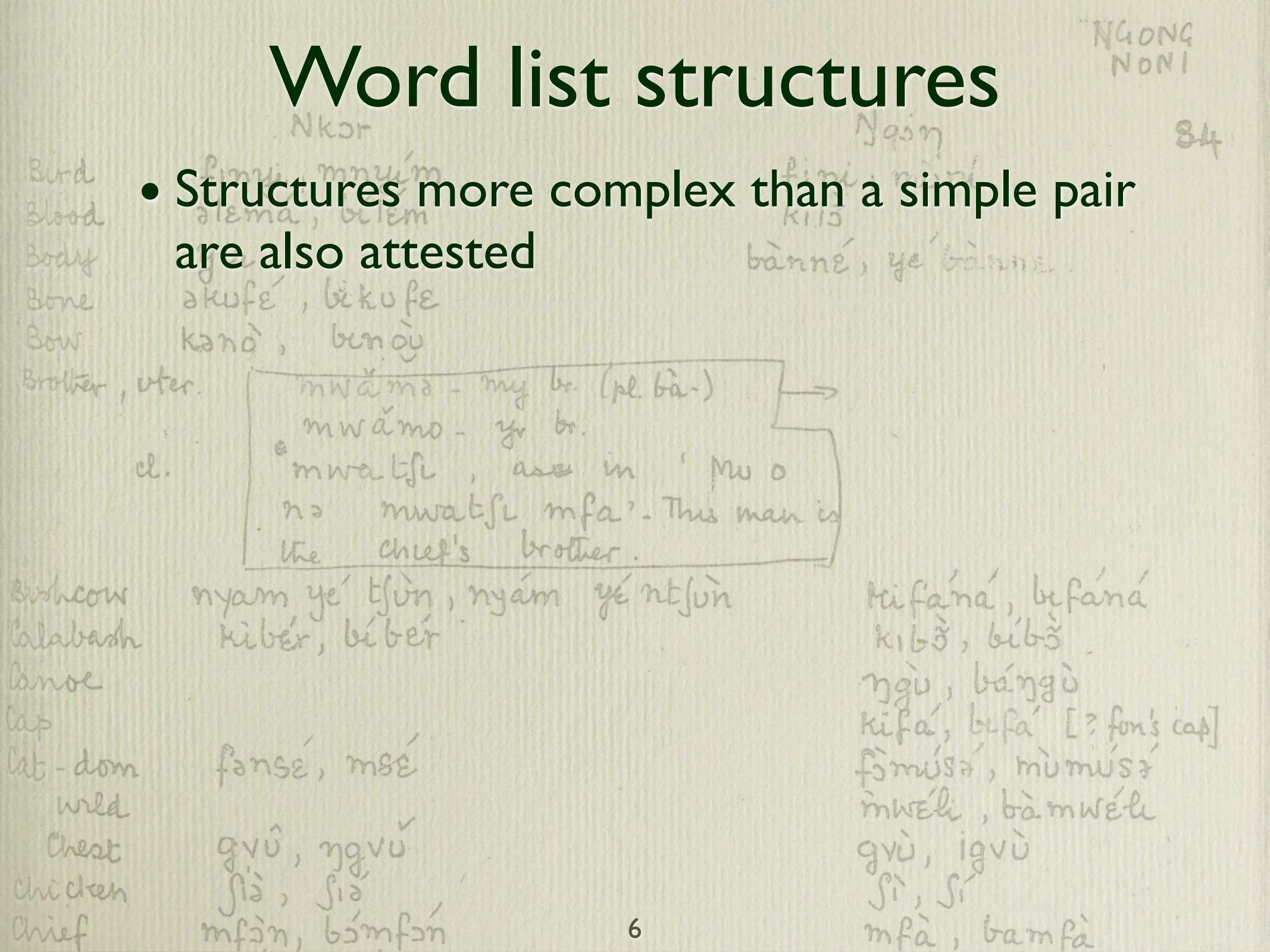
Word lists

- Superficially word lists appear to be a very simple data structure
- They can be represented as a pair
- With labels for each half of the pair

GLOSS	WORD
7	fùmadʒᶣǎŋ

Word list structures

- Structures more complex than a simple pair are also attested



	Nkɔr	Ngɔ́ŋ
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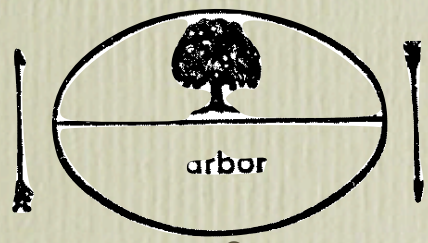
Chicken	ʃìà, ʃiá	ʃì, ʃí
Chief	mfɔ̀n, bɔ́mfɔ́n	mfà, bamfà

Key features

- Two important questions
  - *What is a gloss?*
  - *What is the nature of the relationship between a gloss and the target word?*



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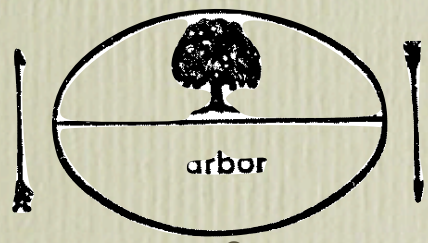

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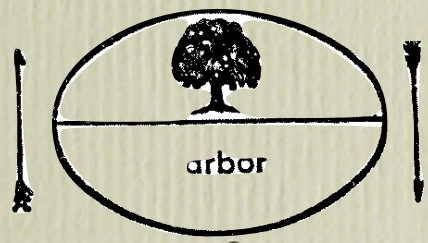

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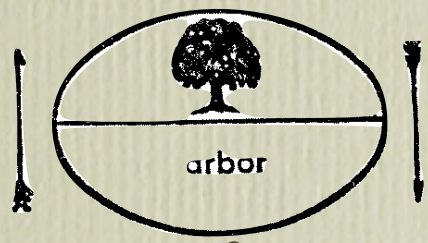

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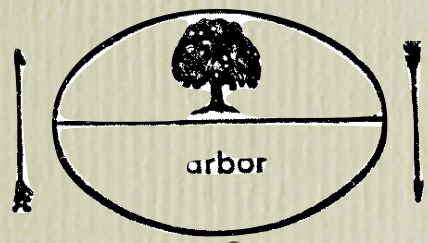

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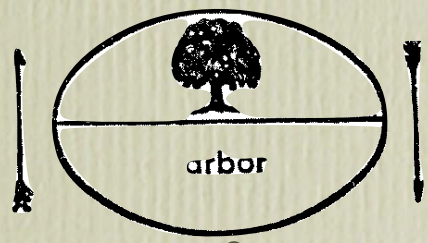

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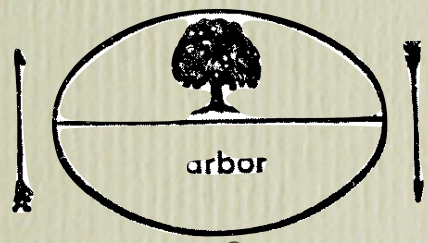

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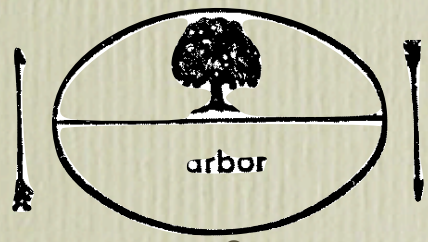

Concepticons

- Concept lists are curated objects in their own right, which we term concepticons
  - The Swadesh list
  - Intercontinental Dictionary Series
- Comparable to an interlingua
- Possibly associated with a simple taxonomy
- Each concept minimally described via a label drawn from a major language

WORLD LOANWORD DATABASE (WOLD)

Meaning 1.21: the land

Description: 'the hard surface of the earth, when compared to the area covered by sea'
Typical context: The captain sighted land in the distance.
Semantic field: The physical world
Semantic category: Noun
Borrowed score : 0.27
Age score : 0.90
Simplicity score : 0.94

Counterpart words in the World Loanword Database

Voc. ID ↓	Vocabulary	Word Form	Original Script	Borrowed status	Borrowed score	Age score	Simplicity score	Source Words
1	Swahili	*nchi kavu*		5. no evidence for borrowing	0.00	0.50	0.50	
2	Iraqw	*hhapee*		5. no evidence for borrowing	0.00		1.00	
3	Gawwada	*piye*		4. very little evidence for borrowing	0.25	1.00	1.00	*biyya* (Oromo)
4	Hausa	*ɓásáa*		5. no evidence for	0.00	1.00	1.00	

World Loanword Database (WOLD)

http://wold.livingsources.org/meaning/1.21

WORLD LOANWORD DATABASE (WOLD)

Home | Vocabularies | Languages | Meanings | Authors | Newsblog | Contact | Help

Meanings by Semantic Field | All Meanings | RDF+XML

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- Rather, it is something like *counterpart*

CONCEPT counterpartRelation *word*

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CAT	hasCounterpart	*cat*

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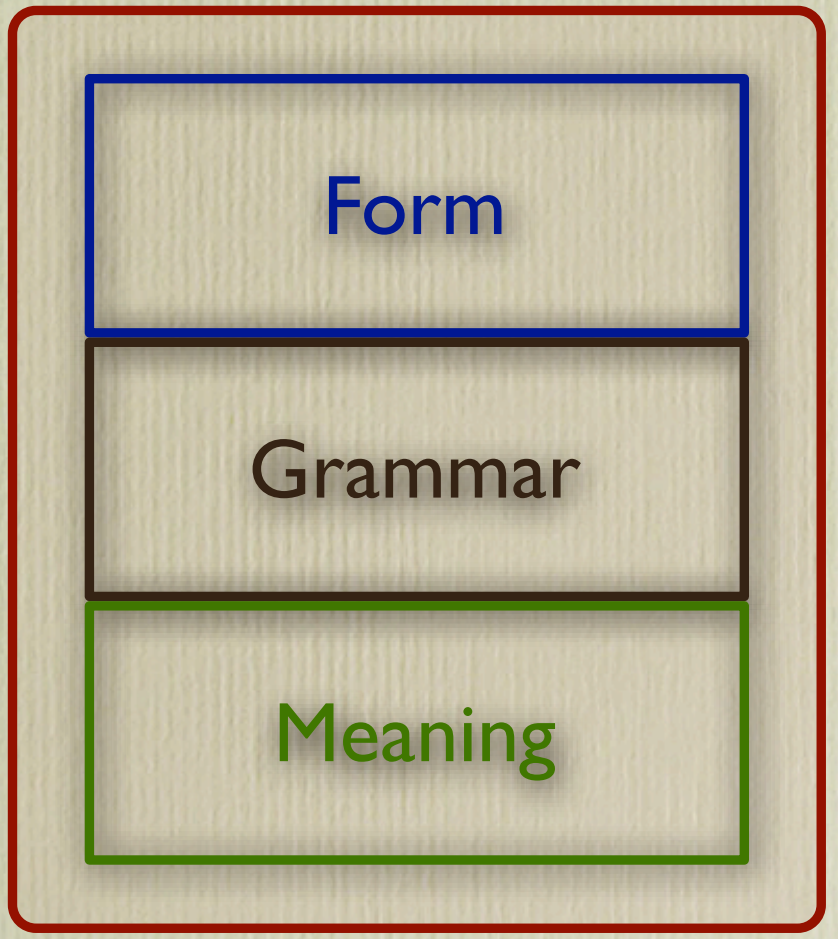
PARENT'S SIBLING	hasSubCounterparts	*aunt, uncle*

Forms

- The "words" in a wordlist can be modeled as defective signs



Schematic Sign

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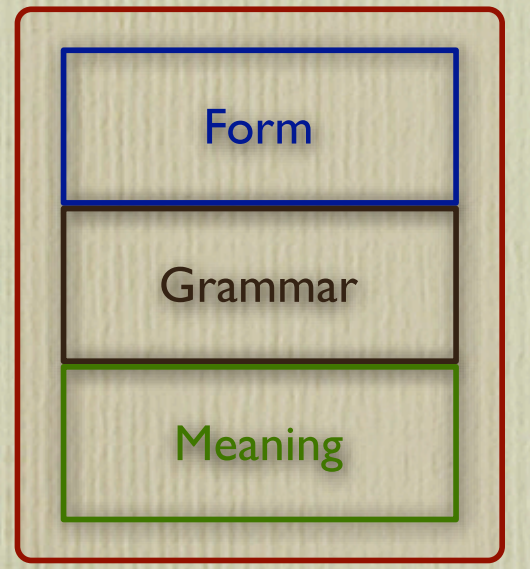

Schematic Sign

Lexicon entry

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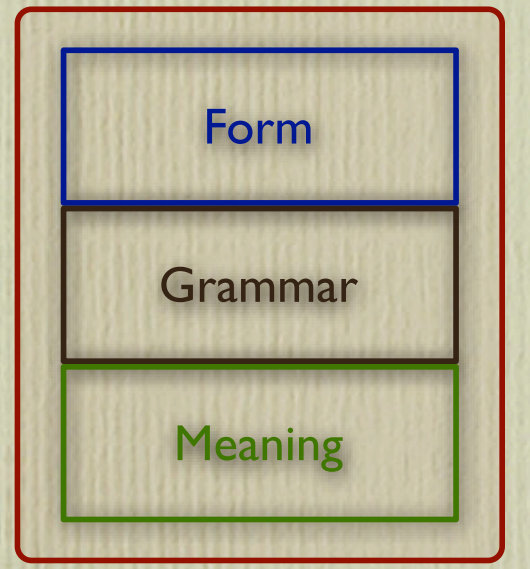

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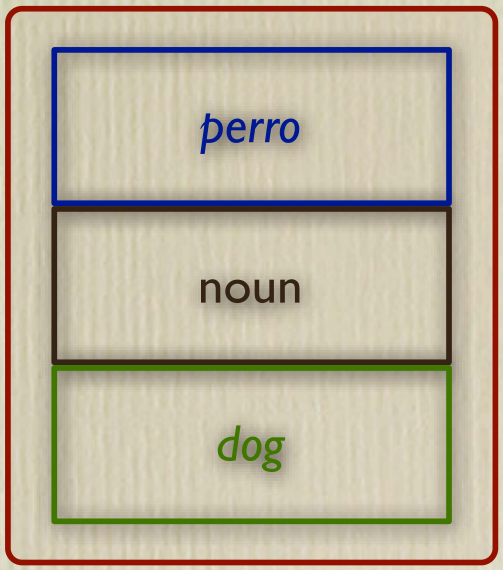
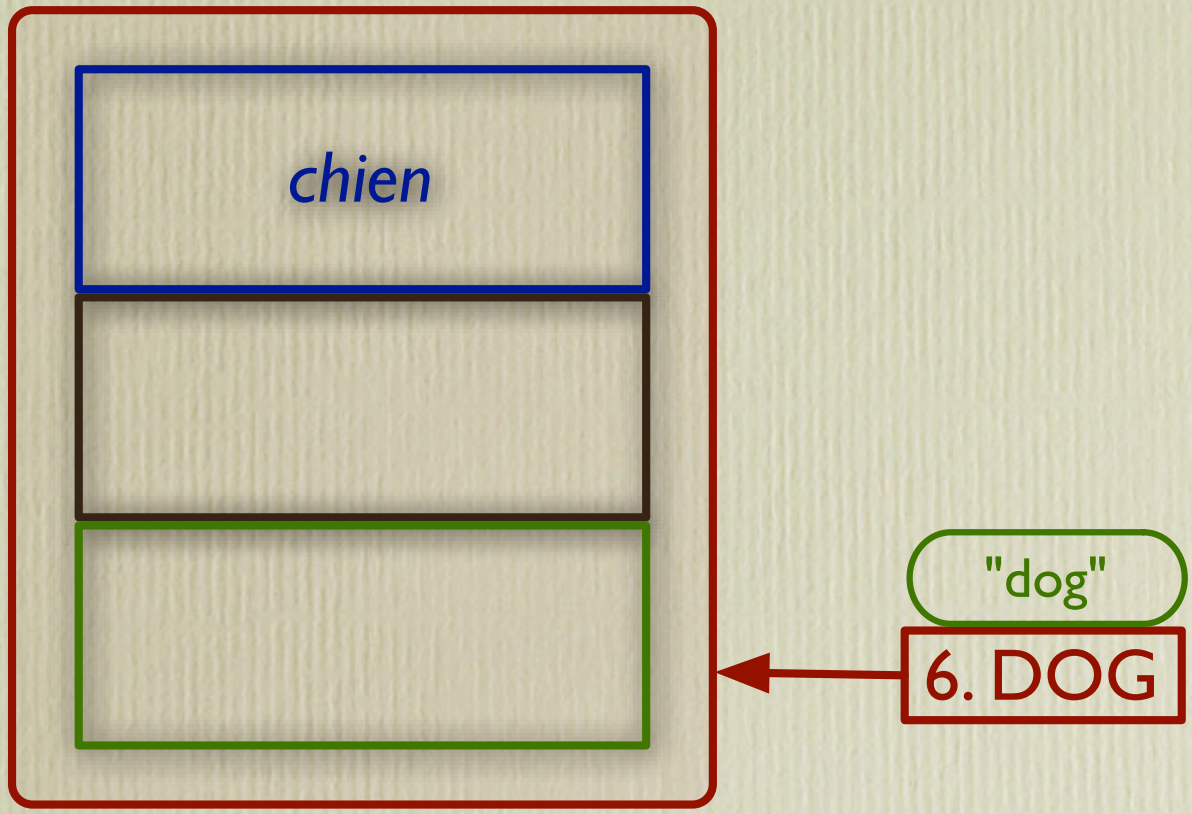


Lexicon entry

6. DOG

Lexicons and wordlists

- Interoperate with lexicons via the sign
- Infer from concept for specific applications



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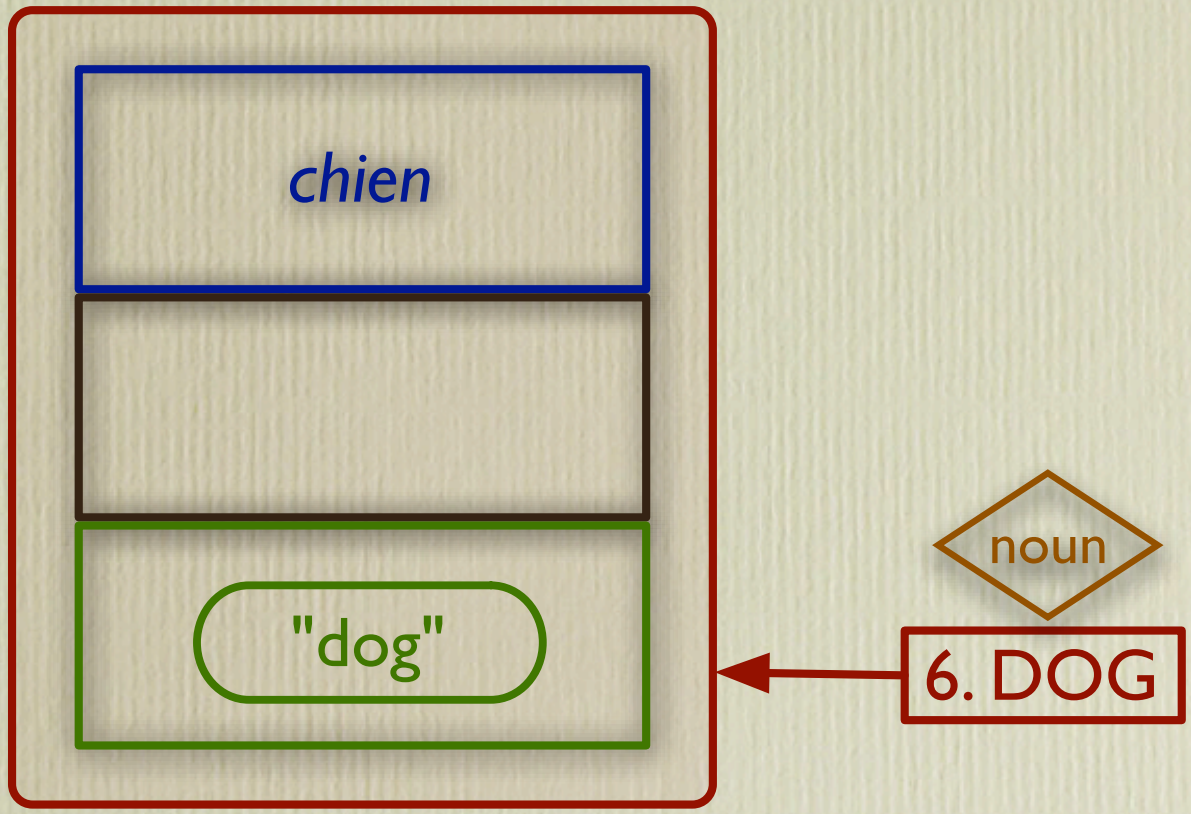

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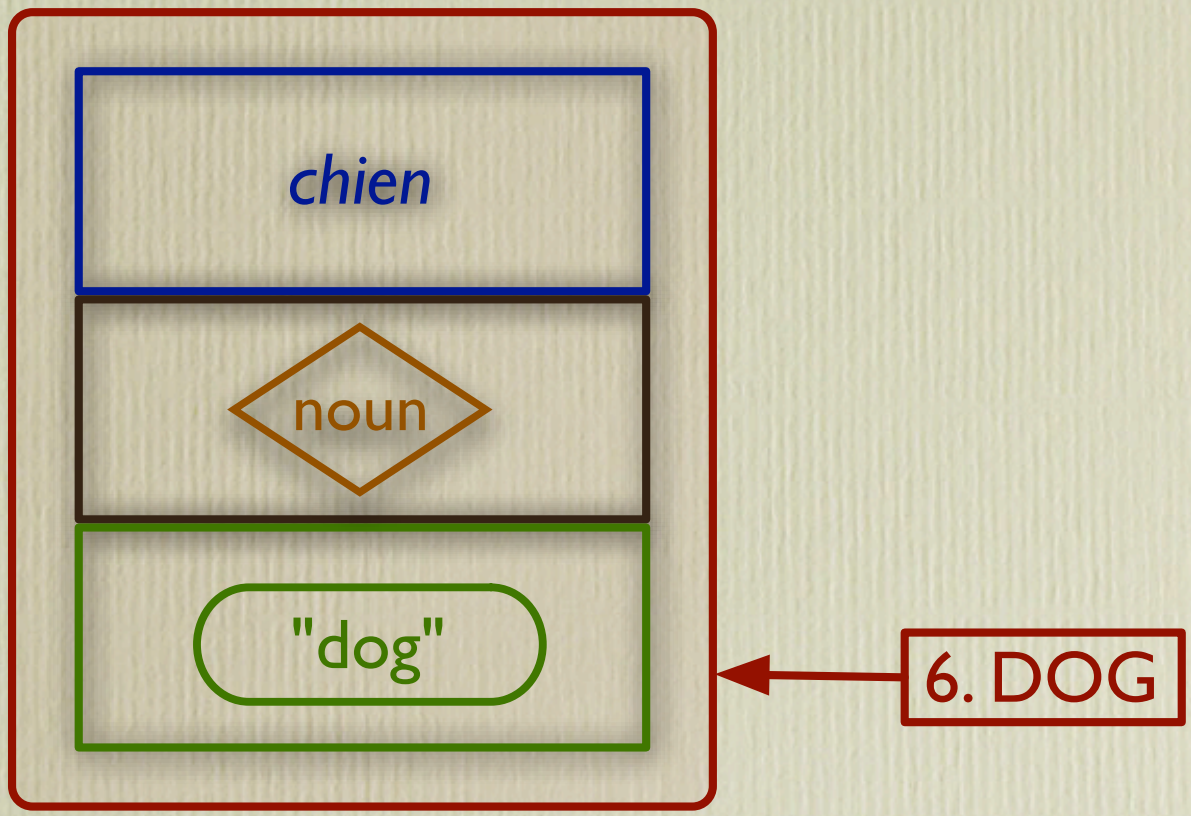

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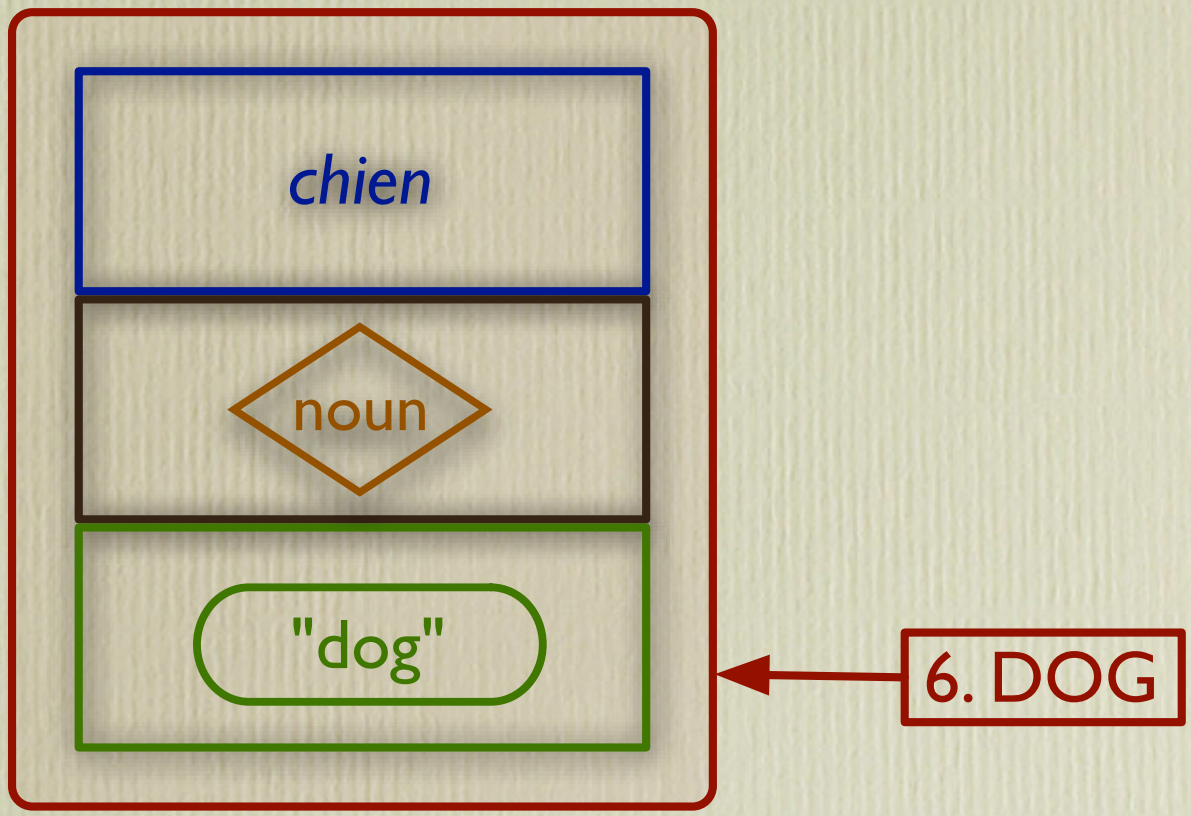

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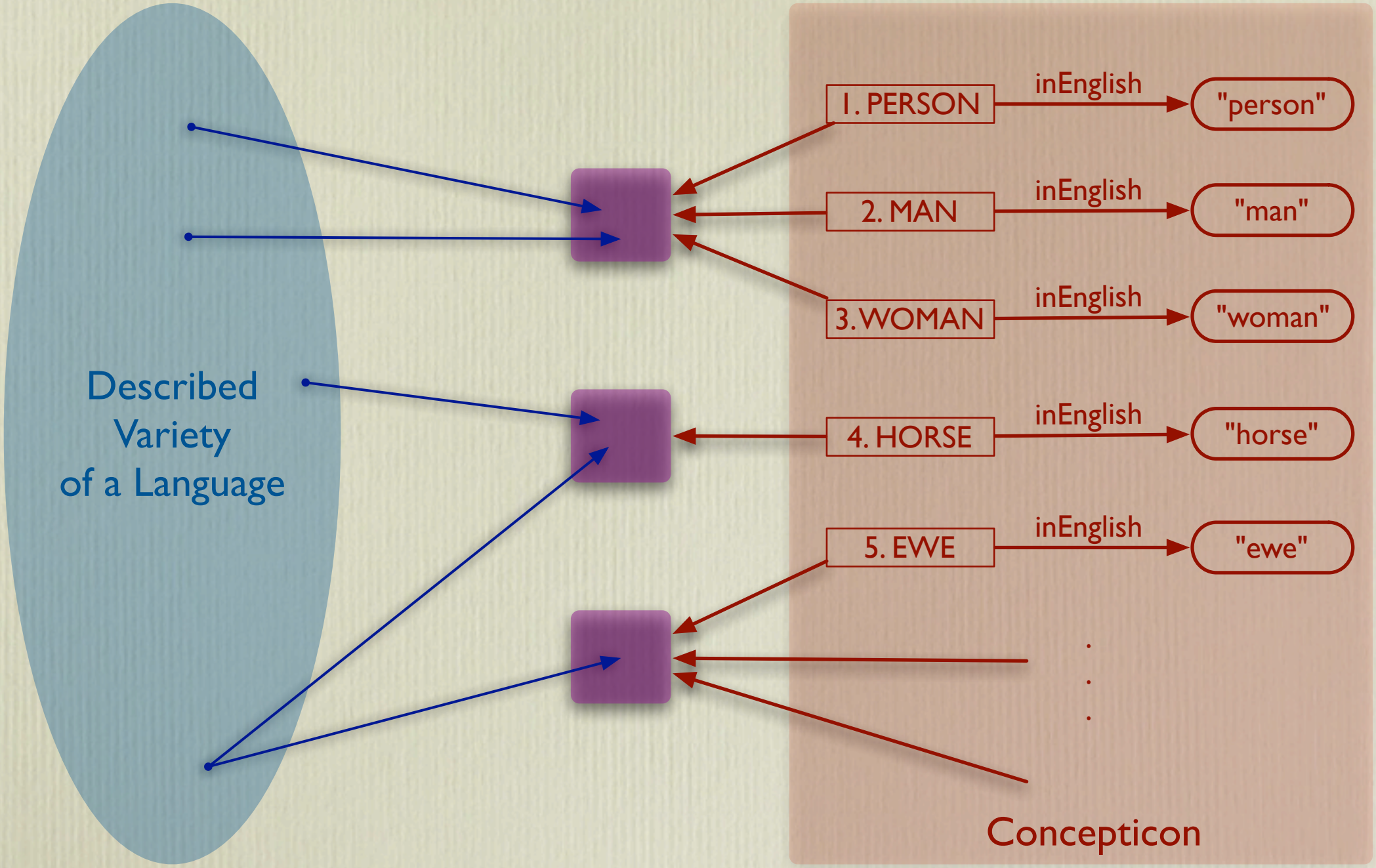
Developed from Haspelmath and Tadmor (2009)



Wordlist model

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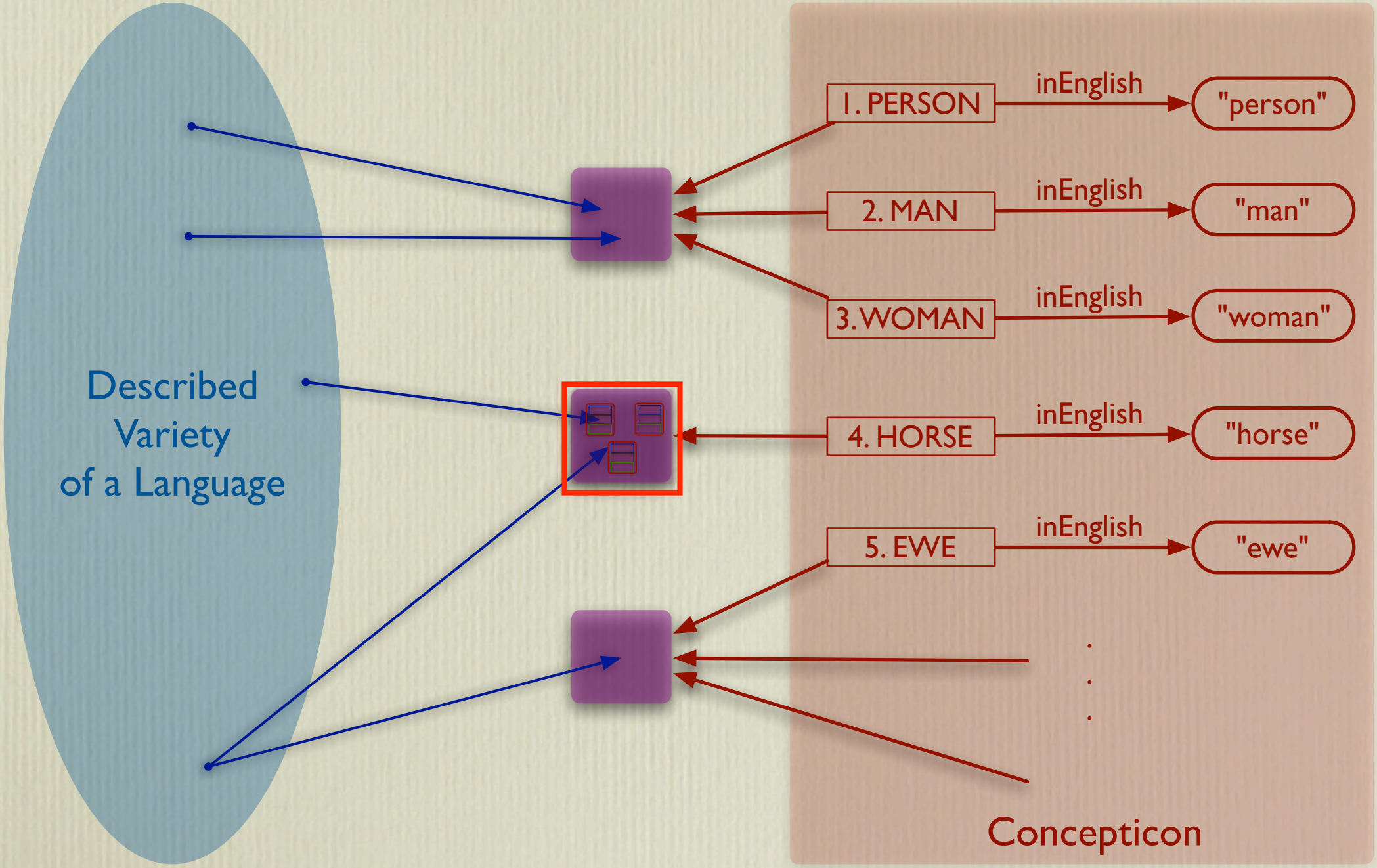

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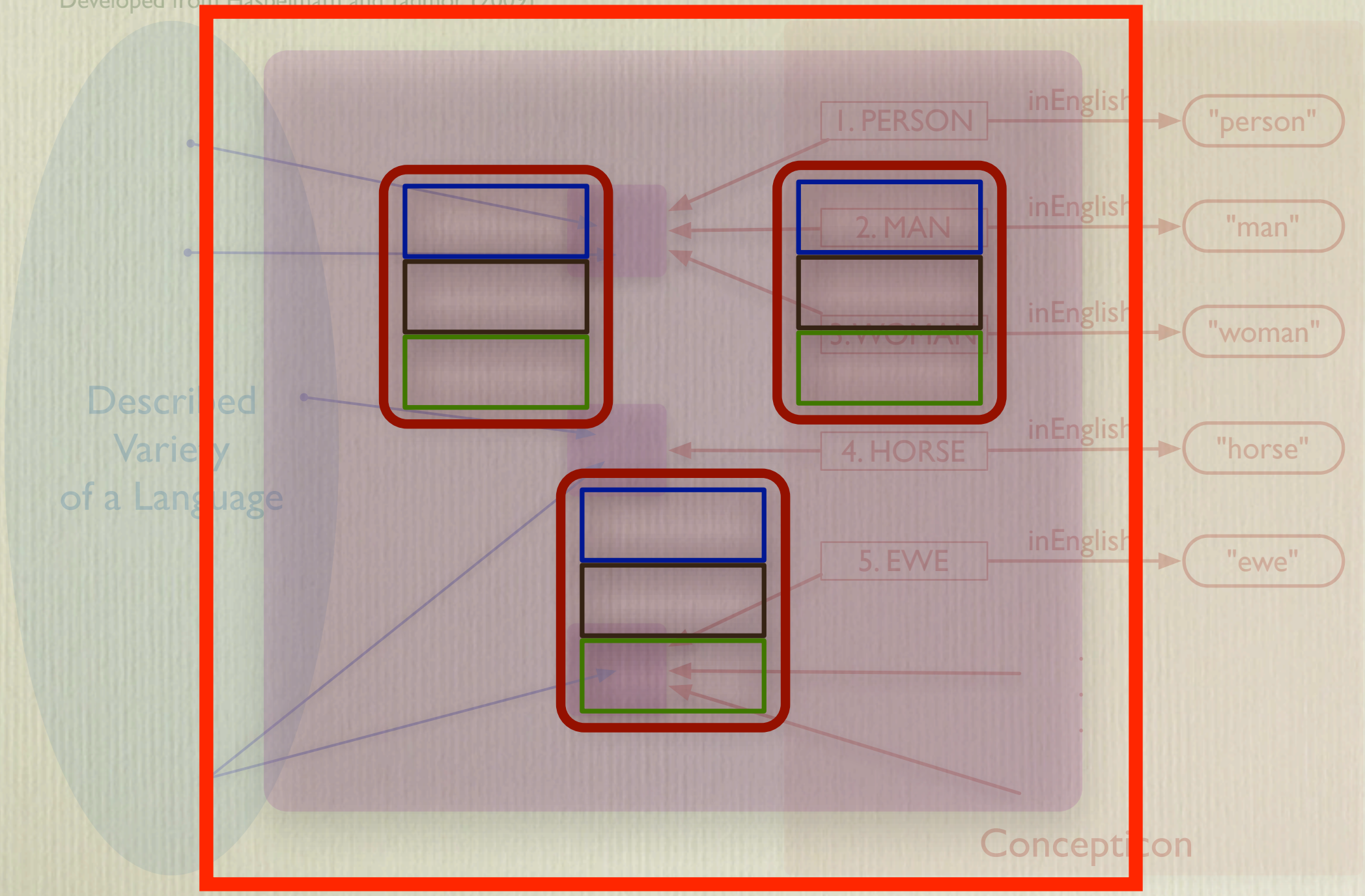

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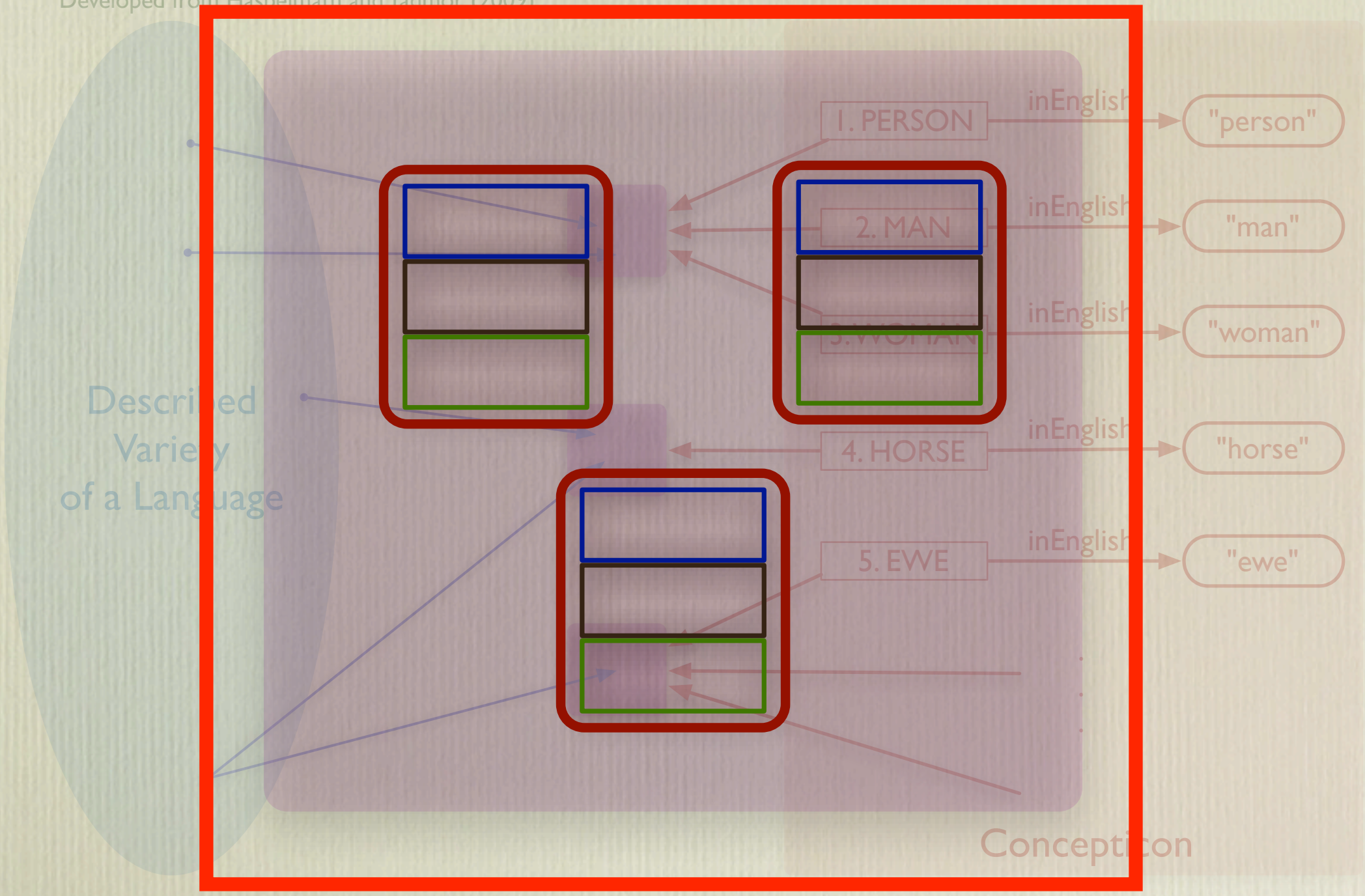

Mapping mediated by sign groups, usually of one sign

```
<entry id="_1934">
  <trait name="concept-id" value="1934" />
  <lexical-unit>
    <form lang="hig">
      <text>ɣàtʊ̀?</text>
    </form>
  </lexical-unit>
</entry>
<entry id="_1938">
  <trait name="concept-id" value="1938" />
  <lexical-unit>
    <form lang="hig">
      <text>wgyìvʊ̀</text>
    </form>
  </lexical-unit>
  <lexical-unit>
    <form lang="hig">
      <text>wgyì</text>
    </form>
  </lexical-unit>
</entry>
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Word list entries

```
<skos:concept>
  <lego:conceptId>1938</lego:conceptId>
  <dc:description
      xsi:type="lego:default"
      lego:source="LWT"
      lego:sourceID="17.310"
      lego:label="to finish" />
  <dc:description
      lego:source="IDS"
      lego:sourceID="14.27"
      lego:label="finish" />
  <dc:description
      lego:source="UW"
      lego:id="962"
      lego:label="finish, end, vb" />
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Concepticon entry

XML Implementation

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Word list entries

Concepticon entry

XML Implementation

```
<entry id="_1934">
  <trait name="concept-id" value="1934" />
  <lexical-unit>
    <form lang="hig">
      <text>ɣàtʊ́?</text>
    </form>
  </lexical-unit>
</entry>
<entry id="_1938">
  <trait name="concept-id" value="1938" />
  <lexical-unit>
    <form lang="hig">
      <text>wgyìvʊ̀</text>
    </form>
  </lexical-unit>
  <lexical-unit>
    <form lang="hig">
      <text>wgyì</text>
    </form>
  </lexical-unit>
</entry>
```

Word list entries

```
<skos:concept>
  <lego:conceptId>1938</lego:conceptId>
  <dc:description
      xsi:type="lego:default"
      lego:source="LWT"
      lego:sourceID="17.310"
      lego:label="to finish" />
  <dc:description
      lego:source="IDS"
      lego:sourceID="14.27"
      lego:label="finish" />
  <dc:description
      lego:source="UW"
      lego:id="962"
      lego:label="finish, end, vb" />
</skos:concept>
```

Concepticon entry

XML Implementation

Building on concepticons

- Concepticons were a kind of standard before linguists thought about "standards"
- They are the closest semantic equivalent to the International Phonetic Alphabet
- Standardizing how to interpret specific concepts should be relatively easy
- These can serve as the basis for more controversial semantic categorizations

WORLD LOANWORD DATABASE (WOLD)

Meaning 1.21: the land

Description: 'the hard surface of the earth, when compared to the area covered by sea'
Typical context: The captain sighted land in the distance.
Semantic field: The physical world
Semantic category: Noun
Borrowed score : 0.27
Age score : 0.90
Simplicity score : 0.94

Counterpart words in the World Loanword Database

Voc. ID ↓	Vocabulary	Word Form	Original Script	Borrowed status	Borrowed score	Age score	Simplicity score	Source Words
1	Swahili	*nchi kavu*		5. no evidence for borrowing	0.00	0.50	0.50	
2	Iraqw	*hhapee*		5. no evidence for borrowing	0.00		1.00	
3	Gawwada	*piye*		4. very little evidence for borrowing	0.25	1.00	1.00	*biyya* (Oromo)
4	Hausa	*ɓásáa*		5. no evidence for	0.00	1.00	1.00	

World Loanword Database (WOLD)

http://wold.livingsources.org/meaning/1.21

WORLD LOANWORD DATABASE (WOLD)

Home | Vocabularies | Languages | Meanings | Authors | Newsblog | Contact | Help

Meanings by Semantic Field | All Meanings | RDF+XML

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Concepticon alternatives?

- There are alternatives, e.g., LMF *SenseAxes*
- The value of wordlist concepticons
  - Intended to be universally applicable
  - Already applied to a substantial portion of the world's languages
  - Have a natural place in the descriptive linguist's workflow
- At the same time, they are not designed for translation

Wordlists as linked data

- Wordlists used for language comparison were an early kind of linked data
- Such data has become valuable in the context of the Semantic Web
- The simple structure of wordlists makes visible what is needed to link lexical data
- Wordlist concepts provide
  - An annotation system for semantic linking
  - A common target for the links

```xml
<rdf:RDF xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
         xmlns:lego="http://purl.org/linguistics/lego/"
         xmlns:gold="http://purl.org/linguistics/gold/"
         xmlns:skos="http://www.w3.org/2004/02/skos/core#">
      <skos:Concept rdf:about="http://www.purl.org/linguistics/lego/concept/539">
         <skos:prefLabel>bird</skos:prefLabel>
         <lego:hasCounterpart>
            <gold:LinguisticSign
               rdf:about="http://www.purl.org/linguistics/Ngong_ChilverPhyllis1974/12">
               <lego:fromLanguage>
                  <gold:Language rdf:about="http://www.sil.org/ISO639-3/documentation.asp?id=ncr"/>
               </lego:fromLanguage>
               <gold:hasForm>
                  <gold:formUnit><gold:stringRep>fini</gold:stringRep></gold:formUnit>
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RDF Implementation

Future directions

- The idea of a unified concepticon has garnered the most interest
- Some possibilities
  - Refining associated taxonomies
  - Linking to resources like WordNet
- A nice example of a traditional resource that is already almost "web-ready"

Acknowledgments

- Shakthi Poornima—Graduate Assistant
- National Science Foundation Award BCS-0753321

- More information: http://www.aclweb.org/anthology/W/W10/W10-2101.pdf