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Building semantic maps for closely related languages: Words for ‘grain’ and their kin in South Mande

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Abstract: This study is an exercise in micro-scale comparison based on the semantic map approach. A semantic map is constructed for meanings associated with the word for ‘grain’ in four closely related South Mande languages: Dan Blowo, Tura, Mwan, and Wan. Although non-cognate, the words show remarkable similarity in their range of meanings, suggesting that newly introduced words are associated with the same networks of meanings as the words they come to replace. Differences between the languages boil down to the unavailability or reduced productivity of particular uses in one or two of the languages (Wan and to some extent Mwan). The original network is shown to have become significantly reduced in Wan, and to a lesser extent in Mwan.

A major challenge in micro-comparison is due to the small sample size and the idiosyncratic nature of some of the semantic relationships, which together make it hard to explore the network’s internal structure. Language-internal evidence can occasionally be used to compensate for the missing evidence from large-scale typological sampling. Overall, the approach proves promising for research on the history of closely related languages and has the potential to help lexicographers and fieldworkers identify possible gaps in lexical descriptions.

Keywords: Mande languages, semantic map, quantification, number, singulative, lexicalization

1 Introduction

This study is an exercise in applying a semantic map approach to a small network of meanings in a group of closely related languages. The questions I aim to address are whether such an approach may be used to shed new light on the historical relationship between the languages of the group and whether it can help uncover

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instances of polysemy and semantic change that are difficult to observe based on large-scale typological samples.

The study assumes a standard notion of a semantic map as discussed extensively in the Introduction (also Georgakopoulos and Polis 2018) and relies on a standard methodology, described most recently and in great detail by Georgakopoulos and Polis (2021). Lexemes with the lexical meaning ‘grain’ are taken as a point of departure. At the first step, words of individual languages are identified that are used to express that lexical meaning (this is known as the onomasiological stage). At the next step other meanings are identified that can be expressed by the same words (the semasiological stage). A graph model is inferred from the resulting list of meaning-to-word correspondences: individual meanings are transformed into nodes, individual words are assumed to map onto continuous portions of the graph, and a map is constructed so as to achieve maximum connectivity (Croft 2001; for a detailed description of a plotting technique, see Levinson et al. 2003).

This study departs from the standard representation in two insignificant details. First, the number of languages in which two specific meanings are expressed by the same word is represented visually by the number of lines connecting the two nodes in the graph (four is the maximum number, since the study only treats four languages, and one word per language). Such representation is used to identify the relative strength of each particular semantic connection, in the same way as thickness and length of edges are used in some other work (see Cysouw 2007 for thickness; Nikitina 2009 for length; van der Auwera 2013 for a general discussion). Second, broken lines are used to introduce meanings that are highly lexicalized or obsolete (e. g., meanings that are only reconstructible based on etymological evidence; cf. Georgakopoulos and Polis 2021 for a similar representational convention).

The data comes from four related languages: Tura, Dan Blowo, Mwan, and Wan (Idiatov 2008; Erman 2005; Perekhval'skaya and Yegbé 2008; own field-notes). All four languages are spoken in Côte d'Ivoire and belong to the South Mande family (a subgroup of Southeastern Mande according to a previous classification). I take as a starting point an excellent study by Erman (2005), which is the first one to describe some of the unusual functions of words for ‘grain’ in South Mande languages. I depart from Erman, however, in the classification and interpretation of some of the crucial examples, and I complement her data with additional examples from dictionaries, corpora of spontaneous narrative discourse (for Wan and Mwan), and targeted elicitation (for Wan).

The paper is structured as follows. Section 2 describes and illustrates the meaning-word correspondences attested in the four individual languages. In Section 3, a semantic map is inferred that covers the attested mappings. Section 4

identifies important differences among the languages of the group in the way their word for ‘grain’ maps onto the abstract semantic map. Section 5 assesses the outcome of this exercise and discusses some outstanding issues.

2 Words for ‘grain’ and their meanings

2.1 Preliminaries

This section illustrates the meanings associated with the word for ‘grain’ in our four sample languages. The order of presentation is based loosely on the degree of abstractness: more specific lexical meanings are followed by more abstract and grammaticalized ones. The resulting network is semi-lexical in the sense that it subsumes propositional as well as non-propositional meanings.

The term *meaning* is used here in a loose and informal way: in addition to full-fledged lexical meanings, it covers highly lexicalized and syntacticized uses that may no longer be perceived by speakers as synchronically motivated. This decision is justified by the general lack of concern for the synchronic status of a semantic relationship characteristic of classical semantic map approaches (Jurafsky 1996; van der Auwera 2013, *inter alia*).

2.2 Lexical meanings: ‘grain, seed’ – ‘bone’ – ‘fruit’

The words for ‘grain’ in the four languages are non-cognate. Since the same words are used to refer to grain and seed, these two meanings will not be distinguished in our micro-model, despite the fact that they are coded by different words in some languages outside the group. In all four languages, the word behaves as a relational noun and combines with plant terms in a so-called “inalienable possession” construction (a construction without explicit marking of possession, see Nikitina 2008: 64–67 for details).

- | | | | |
|-----|---------------------------------------|---|-------------|
| (1) | <i>gā</i> ‘grain; seed’: | <i>sŷ</i> ‘palm’ – <i>sŷ gā</i> ‘palm grain’ | [Dan Blowo] |
| | <i>wéé</i> ‘grain; seed’: | <i>kpū</i> ‘millet’ – <i>kpū wéé</i> ‘grain of millet’ | [Tura] |
| | <i>bē</i> ‘grain; seed’: | <i>kàkàó</i> ‘cacao’ – <i>kàkàó bē</i> ‘grain of cacao’ | [Mwan] |
| | <i>ǝŋ</i> ¹ ‘grain; seed’: | <i>sí</i> ‘oil palm’ – <i>sí ǝŋ</i> ‘oil palm grain’ | [Wan] |

In Dan Blowo and Tura, the same word is associated with the meanings ‘bone’ and ‘core of a fruit’ (2a). In Mwan, the meaning ‘bone’ is not attested, but the word for

1 The tone of the marker varies in Wan depending on the environment (Nikitina 2019b).

‘bone’ seems to be historically related to ‘grain’ (2b). In Wan, the word for ‘bone’ is not cognate with ‘grain’, and no other lexical meanings are attested with the noun meaning ‘grain, seed’.

- (2) a. ‘bone’: *gô* ‘head’ – *gô gā* ‘skull’ [Dan Blowo]
 wûn ‘head’ – *wûn wéé* ‘skull’ [Tura]
 b. *bēlé* ‘bone’ (< *bē* ‘grain’ + **lé*) [Mwan]

In Tura – but not in the other languages – the same word is attested in the meaning ‘fruit’.

- (3) ‘fruit’: *yíli* ‘tree’ – *yíli wéé* ‘fruit of a tree’ [Tura]

2.3 Individual unit of a mass

The same noun is used to identify units of all sorts of masses, ranging from grains of rice and individual hairs to individual teeth and insects of the swarming type. As discussed extensively in the literature on the count-mass distinction, languages vary substantially in the way they draw the line between individual entities and unbounded masses. The objects mentioned below in particular are prone to cross-linguistic variation: they are referred to by count nouns in some languages but by mass nouns in others (such nouns can be described, following Talmy (1988) or Haspelmath and Karjus (2017), as *multiplex-prominent*). These are, most characteristically, objects that are encountered and handled in groups, such as food consisting of small components (grains, peas, berries), body parts made up of multiple identical parts (hair, feathers, teeth), and swarming insects (bees, ants, mosquitoes).

With such nouns, the words for ‘grain’ are used in South Mande to refer to the entity’s individual units. The examples in (4) refer to units of various mass-like food items.

- (4) a. [Dan Blowo]
 mlú ‘rice’ *mlú gā* ‘grain of rice’
 kéé ‘peanuts’ *kéé gā* ‘individual peanut’
 bèè ‘manioc’ *bèè gā* ‘piece of manioc that escaped pounding’
 b. [Tura]
 góô ‘cola nuts’ *góô wéé* ‘cola nut’
 sê ‘palm nuts’ *sê wéé* ‘palm nut’

- c. [Mwan]
m̀l̀ ‘rice’ *m̀l̀ b̄ē* ‘grain of rice’
ẁà̀ ‘palm grain’ *ẁà̀ b̄ē* ‘individual palm grain’
- d. [Wan]
k̀ɛ̀ŋ̀g̀l̀ ‘kind of yam’ *k̀ɛ̀ŋ̀g̀l̀ ð̀j̀* ‘tubercle of a species of yam’
b̄l̀ ‘peanuts’ *b̄l̀ ð̀j̀* ‘peanut’

It is important to remember that the singular-plural distinction is drawn differently in South Mande than in European languages: in the relevant South Mande languages nouns without a plural marker can be used to refer to plural entities as well as in some types of contexts where plurality is marked by another element in the sentence (for example, the plural marker is not used in combinations with numerals or adjectives meaning ‘many’). Hence the distribution of the singular and plural in the translations is just an approximation intended to describe, for European readers, the atomizing (*uniplex*) meaning of the ‘grain’ element. In reality, both bare nouns and the noun + ‘grain’ combinations can refer to multiple entities.

The examples in (5) illustrate the use of the ‘grain’ element with terms for body parts composed of multiple individual units. In this category, examples from Wan are scarce and turn out to depend on quantification (see Section 2.6). The combinations marked with # are listed in Erman (2005) but do not seem to be allowed outside quantifying expressions (on which see below).

- (5) a. [Dan Blowo]
ẁj̀ ‘hair’ *ẁj̀ g̀ā* ‘individual hair’
k̀ā̀ ‘feathers’, ‘fur’ *k̀ā̀ g̀ā* ‘feather’, ‘strand of fur’
s̀j̀ ‘teeth/tooth’ *s̀j̀ g̀ā* ‘tooth’
s̀ò̀ ‘nail(s)’ *s̀ò̀ g̀ā* ‘nail’
- b. [Tura]
s̀ó̀ ‘teeth/tooth’ *s̀ó̀ w̄́é́* ‘tooth’
ẁj̀ẁj̀ ‘(body) hair’ *ẁj̀ẁj̀ w̄́é́* ‘individual (body) hair’
- c. [Mwan]
s̀j̀ ‘tooth/teeth’ *s̀j̀ b̄ē* ‘individual tooth’
ẁj̀ ‘hair’ *ẁj̀ b̄ē* ‘individual hair’
c̄ì̀ ‘fur; feather’ *c̄ì̀ b̄ē* ‘strand of fur; individual feather’

- d. [Wan]
- | | | | |
|--------------|-------------------------|---------------------|---------------------------------------|
| <i>sɔ̃ŋ</i> | ‘tooth/teeth’ | # <i>sɔ̃ŋ ɔ̃ŋ</i> | (with quantification only) |
| <i>kāŋ</i> | ‘hair; fur; feather(s)’ | # <i>kāŋ ɔ̃ŋ</i> | (with quantification only) |
| <i>srɔ̃ŋ</i> | ‘nail’ | ?? <i>srɔ̃ŋ ɔ̃ŋ</i> | (not readily accepted in elicitation) |

The expressions in (6) refer to different species of insects. There is remarkable consistency across the languages as to which species are attested with the ‘grain’ element: these are mostly swarming insects encountered in quantities. The semantic contribution of the marker is clearly described in Erman (2005) for Dan Blowo, but my sources for other languages do not always discuss it; in such cases I represent the marker as optional, and do not specify its meaning (the available textual examples are consistent with Erman’s interpretation).

- (6) a. [Dan Blowo]
- | | | | |
|---------------|----------------|------------------|------------|
| <i>gbɔ̃ɔ̃</i> | ‘wasp(s)’ | <i>gbɔ̃ɔ̃ gā</i> | ‘wasp’ |
| <i>zɪɔ̃</i> | ‘mosquito(es)’ | <i>zɪɔ̃ gā</i> | ‘mosquito’ |
| <i>zɔ</i> | ‘bee(s)’ | <i>zɔ gā</i> | ‘bee’ |
| <i>zlū</i> | ‘ant(s)’ | <i>zlū gā</i> | ‘ant’ |
- b. [Tura]
- | | |
|----------------------------|------------------------------|
| <i>zɔɔ</i> (<i>wéé</i>) | ‘bees’ |
| <i>bāō</i> (<i>wéé</i>) | ‘kind of small insect’ |
| <i>bábá</i> (<i>wéé</i>) | ‘species of termites’ |
| <i>béé</i> (<i>wéé</i>) | ‘species of termites’ |
| <i>dóô</i> (<i>wéé</i>) | ‘species of flying termites’ |
| <i>zûlû</i> (<i>wéé</i>) | ‘species of ants’ |
- c. [Mwan]
- | | | | |
|-----------------|-----------|--------------------|--------|
| <i>zrɔ̃</i> | ‘bee(s)’ | <i>zrɔ̃ bē</i> | ‘bee’ |
| <i>kpēcìēnē</i> | ‘ant(s)’ | <i>kpēcìēnē bē</i> | ‘ant’ |
| <i>gbèsáǻ</i> | ‘wasp(s)’ | <i>gbèsáǻ bē</i> | ‘wasp’ |
- d. [Wan]
- | | | | |
|---------------|------------------|----------------------|---------------------------------------|
| <i>zrɔ̃</i> | ‘bee(s)’ | <i>zrɔ̃ ɔ̃ŋ</i> | ‘bee’ |
| <i>zrōŋ</i> | ‘species of ant’ | # <i>zrōŋ ɔ̃ŋ</i> | (with quantification only) |
| <i>zùmɔ̃ŋ</i> | ‘wasp(s)’ | ?? <i>zùmɔ̃ŋ ɔ̃ŋ</i> | (not readily accepted in elicitation) |

The examples in (7) illustrate the use of the ‘grain’ element with other kinds of mass-like objects and materials.

- (7) a. [Dan Blowo]
- | | | | |
|-------------|---------------|----------------|------------------------|
| <i>kwēē</i> | ‘salt’ | <i>kwēē gā</i> | ‘grain of salt’ |
| <i>yáŋ</i> | ‘sand’ | <i>yáŋ gā</i> | ‘grain of sand’ |
| <i>yēē</i> | ‘cotton’ | <i>yēē gā</i> | ‘ball of cotton’ |
| <i>dé</i> | ‘leaves/leaf’ | <i>dé gā</i> | ‘leaf’ |
| <i>gbō</i> | ‘excrement’ | <i>gbō gā</i> | ‘individual excrement’ |
| <i>buiŋ</i> | ‘rope’ | <i>buiŋ gā</i> | ‘piece of rope’ |
| <i>gûŋ</i> | ‘stone’ | <i>gûŋ gā</i> | ‘pebble’ |
- b. [Tura]
- | | | | |
|-------------|------------|-----------------|--------------------|
| <i>wī</i> | ‘salt’ | <i>wī wéé</i> | ‘grain of salt’ |
| <i>bēéé</i> | ‘rope’ | <i>bēé wéé</i> | ‘piece of rope’ |
| <i>gógó</i> | ‘straw’ | <i>gógó wéé</i> | ‘stem of straw’ |
| <i>bôô</i> | ‘medicine’ | <i>bôô wéé</i> | ‘pill’ |
| <i>yèi</i> | ‘cotton’ | <i>yèi wéé</i> | ‘thread of cotton’ |
- c. [Mwan]
- | | | | |
|----------------|------------|-------------------|-----------------|
| <i>yì</i> | ‘water’ | <i>yì bē</i> | ‘drop of water’ |
| <i>yrḡ</i> | ‘oil’ | <i>yrḡ bē</i> | ‘drop of oil’ |
| <i>gââ</i> | ‘straw’ | <i>gââ bē</i> | ‘stem of straw’ |
| <i>drḡdrḡḡ</i> | ‘medicine’ | <i>drḡdrḡḡ bē</i> | ‘pill’ |
| <i>cḡ</i> | ‘gold’ | <i>cḡ bē</i> | ‘grain of gold’ |
- d. [Wan]
- | | | | |
|------------|------------|---------------|----------------------------|
| <i>yī</i> | ‘water’ # | <i>yī òŋ</i> | (with quantification only) |
| <i>wlé</i> | ‘straw’ | <i>wlé òŋ</i> | ‘stem of straw’ |
| <i>lāŋ</i> | ‘medicine’ | <i>lāŋ òŋ</i> | ‘pill’ |
| <i>ó</i> | ‘salt’ | <i>ó òŋ</i> | ‘grain of salt’ |

Finally, the examples in (8) illustrate some of the less trivial combinations. These are all objects that are commonly encountered and treated together: matches are bought and stored in packs; cowry shells were traditionally associated with symbolic significance and used as currency (in which function they were handled in quantities); stars are observed in groups and recognized in relation to each other. There is again remarkable consistency here across the languages.

- (8) a. [Dan Blowo]
- | | | | |
|--------------|--------------------------|-----------------|------------------|
| <i>síŋkó</i> | ‘match(es)’, ‘match box’ | <i>síŋkó gā</i> | ‘match’ |
| <i>kplḡḡ</i> | ‘cowry shell(s)’ | <i>kplḡḡ gā</i> | ‘cowry shell’ |
| <i>plḡ</i> | ‘piece(s) of money’ | <i>plḡ gā</i> | ‘piece of money’ |
| <i>súsōŋ</i> | ‘star(s)’ | <i>súsōŋ gā</i> | ‘star’ |

- b. [Tura]
tákálá (wéé) ‘match’
kpēéé (wéé) ‘cowry shell’
sù (wéé) ‘coin of 10 cents’ (from French *sou*)
- c. [Mwan]
táklá ‘matches’ *táklá bē* ‘match’
kpòò ‘cowry shells’ *kpòò bē* ‘cowry shell’
gòlí ‘money’ *gòlí bē* ‘coin’
wlō ‘ancient money’ *wlō bē* ‘piece of ancient money’
- d. [Wan]
tāklá ‘match(es)’ ?? *tāklá òj*
gòlí ‘money’ ?? *gòlí òj*
péj̄péj̄ ‘star’ ?? *péj̄péj̄ òj*
**mlènì* *mlènì-òj* ‘cowry shell(s)’

The irregularity of the Wan data suggests that combinations with the ‘grain’ element are no longer productive. The word for ‘cowry shell(s)’ is especially telling in this respect. The original word for ‘cowry’ most likely combined with the word for ‘grain’, as in the other languages, but the combination has become reinterpreted as a non-decomposable word, and at present describes indiscriminately individual shells or their sets.

The examples in (9a)–(9b) illustrate contexts in which combinations with ‘grain’ appear. In (9a), the number of teeth is underspecified and unimportant. The ‘grain’ element in (9b), on the other hand, identifies the referent as an individual part of the object, making it likely that the referent is a single tooth.

- (9) a. *n̄* *s̄j̄* *ȳx̄* *n̄* *k̄l̄* *n̄â* [Dan Blowo]
 1SG tooth it 1SG make PROG
 ‘My teeth are aching.’ or ‘My tooth is aching.’
- b. *n̄* *s̄j̄* *ḡā* *ȳx̄* *n̄* *k̄l̄* *n̄â*
 1SG tooth grain it 1SG make PROG
 ‘My tooth is aching.’

2.4 Conventional unit of material

This use is similar to the previous one, but the meaning of the combinations has become conventionalized. Instead of singling out units composing a mass, whatever they happen to be in a given context, the expressions in (10) refer to entities that are characterized by a specific shape (iron bar rather than a piece of metal),

are associated with a specific function (whip rather than an instance of a $z\dot{z}\dot{z}$ plant) or belong to a specific ontological kind (river rather than a quantity of water). Normally, such entities are common representatives of the material: iron is often encountered in the form of bars (this is the form in which iron was traditionally sold, and sometimes served as a local currency), the $z\dot{z}\dot{z}$ plant is used to make whips, and rivers are prominent sources of water.

The conventionalized use is a matter of lexicalization. While it can be easily illustrated for Dan Blowo, very few examples are found in the dictionary of Tura, most of them open to alternative interpretations. In Mwan and in Wan, it is hardly ever attested. In Mwan, the only remnant that I could identify is the word for ‘iron’, which seems to derive historically from a combination of an unknown noun with a ‘grain’ element. Such an origin could explain the word’s otherwise unexpected second meaning, ‘ring’: rings are among the few artefacts made of iron that were traditionally present in the Mwan culture, and as such are a natural candidate for the conventionalization of ‘grain of iron’. In Wan, the combination reported by Erman is in fact better described as an instance of the *unit of mass* interpretation: it can refer to pieces of iron independent of their shape and function, and is not restricted to a specific type of an iron object.

- (10) a. [Dan Blowo]
 $p\hat{i}\hat{y}$ ‘iron’ $p\hat{i}\hat{y} g\bar{a}$ ‘iron bar’
 $z\dot{z}\dot{z}$ ‘kind of plant’ $z\dot{z}\dot{z} g\bar{a}$ ‘whip made of the $z\dot{z}\dot{z}$ plant’
 $y\acute{i}$ ‘water’ $y\acute{i} g\bar{a}$ ‘river’
- b. [Tura]
 $b\hat{e}$ ‘wound’ $b\hat{e} w\acute{e}\acute{e}$ ‘tattoo’
- c. [Mwan]
 $p\bar{u}b\bar{e}$ ‘iron; ring’, < from $*p\bar{u}$ ‘iron’ + $b\bar{e}$ ‘grain’
- d. [Wan]
 $p\acute{e}l\acute{i}$ ‘iron’ $p\acute{e}l\acute{i} \dot{\delta}\acute{y}$ ‘iron bar’, ‘iron ball’, ‘piece of iron’
 (probably representative of the ‘unit of mass’ meaning)

2.5 Singulative use with paired body parts

The boundary between the atomizer (unit of a mass) use and singulative use with body terms is rather subtle. The singulative use is characteristic of paired body parts which normally function together but are clearly distinguishable and can hardly be thought of as units of an unbounded entity. Rather, they tend to be

conceived of as individual parts of a composite organ. The singulative use is attested in Dan Blowo, Tura, and Mwan, but not in Wan (the combination in (11d), for example, is only attested with quantifying expressions, described in the next section).

- (11) a. [Dan Blowo]
yá ‘eye(s)’ *yá gā* ‘individual eye(s)’
sɣ ‘horn(s)’ *sɣ gā* ‘individual horn(s)’
tó ‘ear(s)’ *tó gā* ‘individual ear(s)’
- b. [Tura]
yá (*wéé*) ‘eyes’
yɔ́ (*wéé*) ‘(woman’s) breasts’
- c. [Mwan]
yrè ‘eye(s)’ *yrè bē* ‘individual eye(s)’
- d. [Wan]
lɔ̀ŋ ‘eye(s)’ # *lɔ̀ŋ ɔ̀ŋ* (with quantification only)

The examples in (12)–(13) illustrate the singulative use in context. In (12b), reference is narrowed down to just one of the pair of eyes. Even though the example is superficially similar to (9b), it would be difficult to explain in terms of individuation of components of a mass-like object, and its distribution across our languages is not the same.

- (12) a. *yɣ* *ɣ̄* *yá* *kāà* *nâ* [Dan Blowo]
 3SG REFL eyes rub PROG
 ‘He is rubbing his eyes.’
- b. *yɣ* *ɣ̄* *yá* *gā* *kāà* *nâ*
 3SG REFL eyes grain rub PROG
 ‘He is rubbing his eye.’
- (13) *ê* *yá* *wéé* *dô* *létâi* *yáá* *yúá* *kósɔ̀* [Tura]
 3SG eye grain one close sun pain because.of
 ‘He closes an eye because of the sun.’ (lit. ‘because of the pain of the sun’)

2.6 Unit in a quantifying expression

In Dan Blowo, Tura, and Mwan, the ‘grain’ element appears in combinations with numerals and quantifiers such as those meaning ‘some’, ‘several’, and ‘all’. This

use is attested primarily with individuated units of a mass (14)–(16), but in these constructions quantification is usually obligatory. In (15), the ‘grain’ element combines with an anaphoric pronoun referring to fish, showing that the combination is fully compositional as opposed to lexicalized.

(14) *dóô wéé kpáá* [Tura]
 flying.termite grain many
 ‘many flying termites’

(15) *ā yúx̂ kplù yx̂ á gā yâagā kû*
 1SG fish group see 1SG + 3SG grain three catch
mâ tē guí [Dan Blowo]
 1SG.POSS net POSTP
 ‘I saw a school of fish and caught three of them in my net.’

(16) *ké b́é b́é líí gbènè é pēgée*
 and that that mouth big DEF and
b́é ŝ́ b́ē é kp̂é plóō-lé bàá é tā [Mwan]
 that teeth grain DEF all stick-NMLZ rice DEF in
 ‘And he [= the dog] sank his big mouth and all of his teeth into the rice.’

The word for ‘grain’ is occasionally attested with regular count nouns, as in (17) from Dan Blowo or (18) from Mwan (in Mwan, it appears with regular count nouns in delimiting expressions with the marker *kp̂ó* ‘only’, but I do not have enough data to explore this correlation in detail).²

(17) *p̂x̂dē nè ā kp̂á á mē gā b́áá b́á* [Dan Blowo]
 village FOC 1SG meet 3SG person grain some POSTP
 ‘I met some people in that village.’

(18) *ñ pē mēē vū nū b́éé*
 1SG tell person ten come and
mēē b́ē plē kp̂ó lē ñwà [Mwan]
 person grain two only be came
 ‘I invited ten people but only two people came.’

In Wan, the quantifying use is only attested to a very limited extent; the only context where the ‘grain’ element regularly appears is the expression *ɔ̂ɔ̂ dō* ‘(a single) one’, with or without the marker *kp̂ó* ‘only, unique’ (19).³ As we already saw in Sec-

² Such uses are reminiscent of classifier languages, but the same element is used for counting all kinds of objects, independent of their ontological class.

³ This marker is cognate with the delimiter *kp̂ó* ‘only’ used in (18).

tion 2.3, among the nouns that combine with ‘grain’ to refer to individual units of a mass in Wan, quite a few only do so in constructions with quantifiers. The quantifying construction with *dō* ‘one’ admits the ‘grain’ element with all sorts of nouns, count or mass, suggesting that the presence of such an element is motivated structurally rather than by the noun’s meaning.

- (19) *bé è bō dèè lòn̄ nì òn̄ dō*
 and 3SG remained father hare little grain one
ní kp̄ɔ̄-ní-kp̄ɔ̄ yā [Wan]
 little only-little-only with
 ‘And there remained mister Hare alone.’ (lit. ‘And he remained just one single mister Hare.’)

2.7 Part of a complex numeral

The words for ‘grain’ are attested in complex numerals. The form of the complex numerals in (20) is not sensitive to the type of quantified noun, and such numerals may combine with another ‘grain’ element in a unitizing function (for example, in expressions like ‘twelve bees’). The complex numeral construction is productive, i. e. it can feature different numbers of tens and ones.

- (20) a. *ḡɔ̄ dō ɣ̄ gā pl̄è* [Dan Blowo]
 ten one 3SG grain two
 ‘twelve’
- b. *būū nī wéé-p̄l̄è* [Tura]
 ten and grain-two
 ‘twelve’
- c. *mēē mīā-pl̄ē bē vū s̄íí* [Mwan]
 people twenty-two grain ten maybe
 ‘perhaps about fifty people’
- d. *ml̄n̄ p̄l̄ɔ̄n̄ ɔ̄n̄ s̄ón̄ȳɔ̄l̄ú* [Wan]
 twenty two grain ten
 ‘fifty’

2.8 Functional object (with body parts and tools)

In Dan Blowo and Tura, the word for ‘grain’ can be used to describe an object as a functional unit. Such uses are especially common with certain body parts and sharp tools, i. e. objects that are associated with a clearly defined function, and capable of malfunctioning. The ‘grain’ element in this function is normally optional, and its presence depends on contextual factors.

The expressions in (21) refer to body parts. In some cases, the ‘grain’ element is lexicalized and difficult to identify at the synchronic level without comparative evidence.

- (21) a. [Dan Blowo]
gb̄l̄ŋ̄ (*gā*) ‘intestine’
z̄ùx̄ (*gā*) ‘heart’
nē (*gā*) ‘tongue’
k̄ûx̄ (*gā*) ‘male genitals’
p̄ēnē (*gā*) ‘female genitals’
- b. [Tura]
z̄ōwéé ‘heart’ < ‘spirit’ + ‘grain’
n̄ééé ‘tongue’ < ‘tongue’ + ‘grain’
w̄iéé ‘tail’ < ‘tail’ + ‘grain’
ȳūū (*wéé*) ‘nose’

Another class of nouns most likely to combine with ‘grain’ are the terms for iron tools with a sharp point or surface (tools that are capable of cutting or pricking; note that whips are also commonly found in this class, presumably because of their surface damaging ability).

- (22) a. [Dan Blowo]
kl̄ââ (*gā*) ‘whip made of rope’
m̄īŋ̄ (*gā*) ‘needle’
p̄ìx̄ (*gā*) ‘hook’
t̄âq̄ (*gā*) ‘nail’
- b. [Tura]
s̄àb̄il̄i (*wéé*) ‘whip’
n̄ūē (*wéé*) ‘blade’
p̄óŋ̄t̄i (*wéé*) ‘nail’ < from French *pointe*
b̄òâ (*wéé*) ‘dagger’
b̄iā (*wéé*) ‘tail tip’ (an object of symbolic power)

This use is only attested in Dan Blowo and Tura; no relevant examples have been identified in the available sources on Mwan and Wan.

2.9 Essential part of a tool

The word for ‘grain’ combines with terms for certain tools to describe the tool’s essential part or an accessory essential to its functioning.⁴ It is very often the part made of metal and capable of cutting, pricking or otherwise affecting a surface (but this is only a tendency, as the examples of ‘twigs of a broom’ and ‘key’ suggest).⁵

- (23) a. [Dan Blowo]
- | | | | |
|-------------|-----------|-----------------|------------------|
| <i>dāa</i> | ‘machete’ | <i>dāa gā</i> | ‘blade’, ‘knife’ |
| <i>bū</i> | ‘gun’ | <i>bū gā</i> | ‘bullet’ |
| <i>séé</i> | ‘bow’ | <i>séé (gā)</i> | ‘arrow’ |
| <i>só</i> | ‘trap’ | <i>só gā</i> | ‘rope of a trap’ |
| <i>dúúń</i> | ‘balafon’ | <i>dúúń gā</i> | ‘balafon sticks’ |
- b. [Tura]
- | | | | |
|------------|----------------|----------------|---------|
| <i>sáá</i> | ‘bow’ | <i>sáá wéé</i> | ‘arrow’ |
| <i>kóń</i> | ‘fishing line’ | <i>kóń wéé</i> | ‘hook’ |
- c. [Mwan]
- | | | | |
|---------------|---------|------------------|---------------------------|
| <i>dì</i> | ‘spear’ | <i>dì bē</i> | ‘spearhead’ |
| <i>dúléń</i> | ‘line’ | <i>dúléń bē</i> | ‘hook’ |
| <i>kpòò</i> | ‘hoe’ | <i>kpòò bē</i> | ‘the metal part of a hoe’ |
| <i>màfá</i> | ‘gun’ | <i>màfá bē</i> | ‘bullet’ |
| <i>sá</i> | ‘bow’ | <i>sá bē</i> | ‘arrow’ |
| <i>wlā</i> | ‘knife’ | <i>wlā bē</i> | ‘blade of a knife’ |
| <i>gbóóló</i> | ‘lock’ | <i>gbóóló bē</i> | ‘key’ |
| <i>màá</i> | ‘broom’ | <i>màá bē</i> | ‘twigs of a broom’ |

⁴ Here my interpretation of Erman’s data differs significantly from hers: I suggest that the uses she describes as purely “classifying” and motivated by the object’s shape, can be subsumed under other categories, since they are actually triggered by other factors, such as the object’s functionality.

⁵ This use is most likely related to the *functional object* use described in the previous section, but there is an important difference: the presence of the ‘grain’ element seems to have no effect on reference in (22), but in (23) it creates an expression that refers to a different type of object.

- d. [Wan]
séŋgè ‘knife’ *séŋgè òŋ* ‘blade of a knife’
klāŋ ‘bow’ *klāŋ ɔŋ* ‘arrow’
sāgblē ‘gun’ *sāgblē ɔŋ* ‘bullet’

2.10 The essence/material use

In Dan Blowo and Tura, the word for ‘grain’ combines with terms for certain unbounded entities to refer to the entity’s physical characteristics, such as darkness, color, and transparency. In (24a)–(24c), the noun meaning ‘grain’ combines with an anaphoric possessor pronoun; the pronoun’s antecedent is an extraposed noun phrase referring to an unbounded entity.

- (24) a. *dāŋ bāl dèè â gā yà tr̄* [Dan Blowo]
 sky DEF today 3SG grain 3SG+be darken
 ‘The sky is dark today.’ (Literally, ‘The sky, today its grain is dark.’)
- b. *yí nè â gā y̆ tr̄ŋtr̄ŋ dèè*
 water FOC 3SG grain 3SG+be transparent very
 ‘How transparent is this water!’ (lit. ‘This water, its grain is so transparent!’)
- c. *sé nè â gā n̄ɛɛz̄l*
 soil FOC 3SG grain red
 ‘This soil is red.’ (lit. ‘This soil, its grain is red.’)

As discussed by Erman, such uses are only possible with some physical characteristics – those that apply to individual units of the mass as well as the mass as a whole. With soil, for example, such a characteristic can be color but not softness – since softness is a property of the soil’s surface rather than its individual bits. With hair and feathers, the ‘grain’ element can be used to characterize length or color; but with fur, it only appears with descriptions of length – since individual hairs and feathers are normally longer and thicker than fur, making it easier to perceive the color of an individual unit.

In Tura, the ‘grain’ element seems to be lexicalized in a combination with the word for ‘sky’, as *lɔŋwéé* ‘sky’ + ‘grain’ (Idiatov 2008). There is also evidence for the use of the word for ‘grain’ with a topographic notion (similar examples are attested in Mwan and in Wan). The nouns in (25) can be used with or without the ‘grain’ element, presumably depending on whether reference is made to an abstract topographic feature or the actual physical space delineated by it.

- (25) a. [Dan Blowo]
kɸĩĩŋ (*gā*) ‘road’
zĩā (*gā*) ‘road’
- b. [Tura]
zāā (*éé*) ‘road’
bôlô (*wéé*) ‘valley, enclosed depression’
gũlũ (*wéé*) ‘hole, cavity’
lōŋ (*wéé*) ‘small hole’
yí wéé ‘in the water’ (locative meaning only)
- c. [Mwan]
gbā ‘field’ *gbā bē* ‘arable surface; surface cleared up for a field’
- d. [Wan]
bā ‘field’ *bā ɔŋ* ‘arable surface of land’

The example in (26) shows a context where the ‘grain’ element appears with the noun for ‘road’ in Mwan, referring to a physical aspect of the road, its surface.

- (26) *ǵ fáá é bwà zĩ bē é tā* [Mwan]
 1SG hat DEF stay road grain DEF on
 ‘I lost my hat on the road.’ (lit. ‘My hat remained on the road’s surface.’)

In Wan, the essence/material use is very restricted. Besides combinations with the noun for ‘field’ (25d), it is only attested with one other noun: it can be used to single out the most prominent manifestation of a thunderstorm, the lightning (cf. a parallel example in Dan Blowo: *dā* ‘rain’ – *dā gā* ‘lightning’).

- (27) *gblāŋ* ‘thunderstorm’ *gblāŋ ɔŋ* ‘lightning’ [Wan]

2.11 Laudatory use

The ‘grain’ element is used in Dan Blowo to emphasize an object’s exceptional quality. In (28a)–(28c), it qualifies different objects as somehow extraordinary: the house is understood to be especially big or beautiful, the clothes pretty, and the forest, big or dense.

- (28) a. *ā bā kó bā kó gā mu* [Dan Blowo]
 3SG POSS house DEF house grain be
 ‘His house is very big/beautiful.’

- b. *yà gbâwúx̂ gā ŝl dō dâ x̄ b̂â*
 3SG.PERF traditional.shirt grain pretty one wear REFL POSTP
 ‘He wore a very pretty shirt.’
- c. *bluí gā x̄ wó̂ nū kx̄ kwáâ â k̄l b̄l*
 forest grain that 3PL+3SG give for 1PL 3SG cultivate DEF
 ‘It’s a big/thick forest that we were given to cultivate.’

The same use is not described for Tura, but at least one of the lexical items from Idiatov (2008) suggests that it may involve a laudatory meaning:⁶

- (29) [Tura]
bàlà wéé ‘run’ + ‘grain’ ‘best runner; winner of a running competition’

No laudatory use is attested in Mwan or in Wan.

3 Inferring relationships between the meanings

Table 1 summarizes the lexical data presented above, listing the different meanings of ‘grain, seed’ attested in the four languages (highly lexicalized and reconstructed uses are indicated by square brackets).

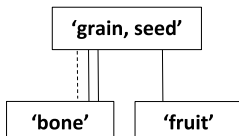
The next step is to infer a semantic map based on the overall inventory of uses. Here we run into difficulties because of the limited nature of our data: four words are hardly enough to give us solid evidence for the internal structure of the network. The types of polysemy we are interested in seem, moreover, to be rather exotic: they are not represented in either the CLICS³ database (Rzyski et al. 2020) or the Database of Semantic Shifts (Zalizniak et al. 2016–2020), and neither are they covered in Heine and Kuteva (2002) or Kuteva et al. (2019). The proposed internal structure of the map relies solely on the distribution of the attested meanings in the four languages, and follows the principle of achieving maximum connectivity between the nodes (Croft 2001). It should, however, be treated with caution until tested against additional typological evidence.

To start with the lexical meanings, ‘bone’ is attested in Dan Blowo and Tura, and reconstructible in Mwan, while ‘fruit’ is only attested in Tura. There is not enough data in this sample to decide whether ‘bone’ and ‘fruit’ should be treated as independent meanings or ‘bone’ should be an intermediate node between

⁶ It is also possible that the emphatic particle *wé* derives in Tura from the laudatory use of the same singulative marker – but I have no further evidence to support that scenario.

Table 1: Meanings of ‘grain, seed’ in the four languages.

‘bone’	Dan Blowo, Tura; [Mwan]
‘fruit’	Tura
individual unit of a mass	Dan Blowo, Tura, Mwan, Wan
conventional unit of material	Dan Blowo; [Tura, Mwan]
singulative use with paired body parts	Dan Blowo, Tura, Mwan
unit in a quantifying expression	Dan Blowo, Tura, Mwan; [Wan]
part of a complex numeral	Dan Blowo, Tura, Mwan, Wan
functional object	Dan Blowo, Tura
essential part of a tool	Dan Blowo, Tura, Mwan, Wan
essence/material	Dan Blowo, Tura, Mwan; [Wan]
laudatory use	Dan Blowo, Tura

**Figure 1:** Lexical meanings related to ‘grain’.

‘grain’ and ‘fruit’, but in this case the CLICS database is in favor of the former solution (‘fruit’ is regularly related to ‘grain’ and ‘seed’, and ‘seed’ is related, considerably less often, to ‘bone’).⁷ In Figure 1 the number of lines connecting any two nodes represents the number of languages in which both meanings are attested; broken lines represent languages where evidence for the semantic relationship comes from a lexicalized form or from the etymology of a synchronically non-decomposable word.

The remaining meanings form two clusters: meanings related to quantification, and meanings roughly related to a notion of essence and value. Quantification-related uses show different degrees of productivity across the four languages. The highest regularity characterizes the *individual units of a mass* meaning, as in ‘wasp(s)’ – ‘single wasp(s)’. The lowest productivity characterizes the use of terms for conventional units of material, which seem to be lexicalized (as in ‘water’ – ‘river’, ‘ẓẓ plant’ – ‘a whip made of ẓẓ plant’) in two of the languages (Mwan and Wan). The singulative use is similarly scarcely represented in Mwan and absent

⁷ A reviewer points out that the word for ‘grain’ may derive from the word for ‘bone’ in Dan Blowo and Tura, but not in Mwan. I agree that it is entirely possible, but have no empirical evidence to support this view. The semantic map model I am using here does not include directionality information, and the map I am proposing is compatible with this alternative scenario.

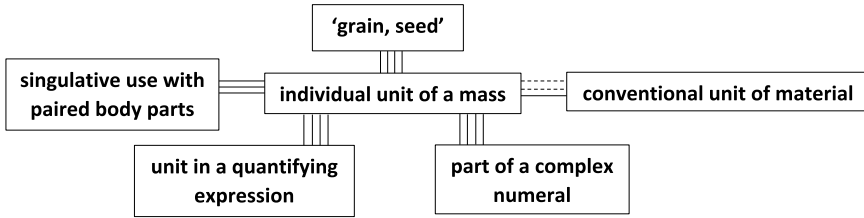


Figure 2: Quantification-related meanings related to 'grain'.

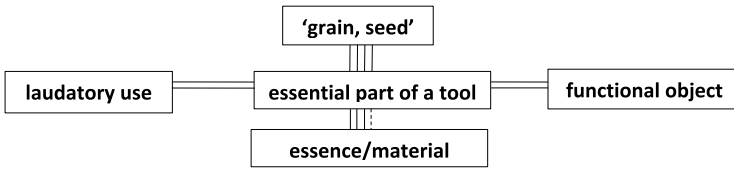


Figure 3: Essence/value-related meanings related to 'grain'.

in Wan, suggesting that it, too, should be placed at the periphery of the semantic map (on the assumption that central meanings should be attested in a maximum number of languages).

The two remaining quantification-related uses are highly construction-dependent: one pertains to constructions with quantification, the other, to the formation of complex numerals. It seems reasonable to tentatively relate them both to the individual units of mass use, since atomization of unbounded entities is a pre-requisite for quantification, and complex numerals likely derive historically from free combinations of atomizers with number terms. The resulting network is presented in Figure 2.

Let us now turn to the uses related to the notion of essence and value. Only one of these uses – “essential part of a tool” – is well attested in all four languages. The rest of the meanings are either unattested in one of the languages (Wan, sometimes Mwan) or only attested in a highly lexicalized form. It is assumed in Figure 3 that the “essential part of a tool” use is related to ‘grain’ and serves as an intermediate node in the partial network.

Figure 4 represents the entire resulting semantic map, composed of the partial structures from Figures 1–3.

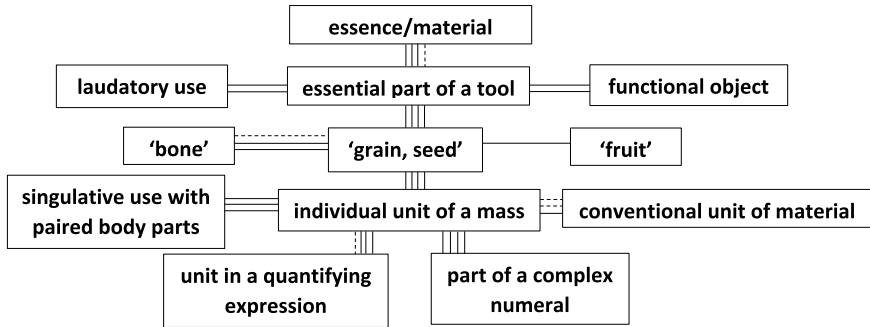


Figure 4: Semantic map for 'grain'-related words.

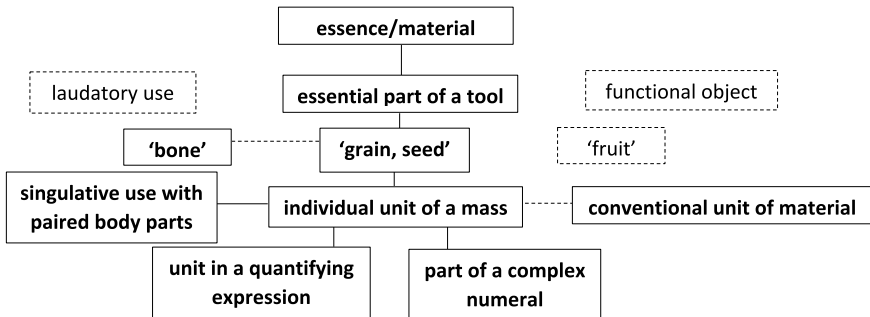


Figure 5: The network of 'grain'-related words in Mwan.

4 The profiles of individual languages

Comparison of data from individual languages reveals an important difference between Dan Blowo and Tura on the one hand, and Mwan and Wan on the other. Dan Blowo and Tura pattern very closely together: all of the meanings in Figure 4 are present in both languages, with the exception of 'fruit' which is unique to Tura. In Mwan and especially in Wan (Figures 5–6), the networks are significantly reduced (the unconnected nodes in broken line frames represent meanings that are missing compared to Figure 4).

This situation corresponds well to independent evidence from another semi-lexical domain: the semantic network related to the notion 'child', discussed in Nikitina (2019a) as a network of diminutive meanings. As in the case of 'grain'-related meanings, the diminutivity maps are very similar in Dan Blowo, Tura, and to some extent in Mwan, yet they differ significantly from the map inferred for

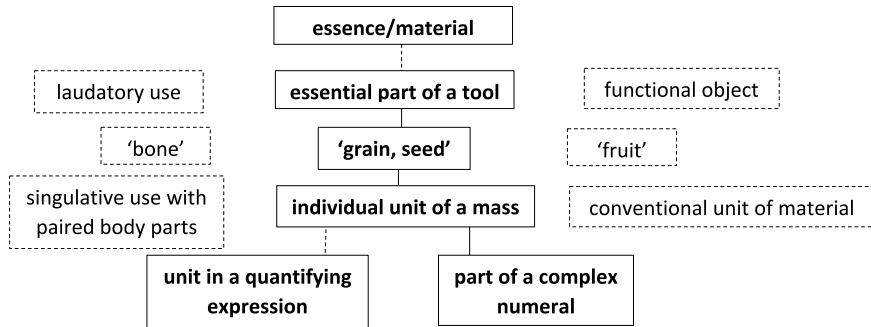


Figure 6: The network of 'grain'-related words in Wan.

Wan: the latter is dramatically reduced (and in the case of diminutives, discontinuous). The fact that two different semantic networks point to similar group-internal divisions is likely to reflect the history of South Mande languages; it is consistent, in particular, with the most recent classification of South Mande languages which treats Wan as the earliest offshoot of the branch, followed by Mwan (Vydrin 2009).

5 Conclusion

The exercise in building a semantic map for closely related languages has proven to be both fruitful and challenging. A major challenge came from the small sample size and the rather idiosyncratic nature of the semantic relationships. The latter in particular made it impossible to rely on typological evidence in deciding how the map should be organized. Another challenge consisted of taking account of the information on different degrees of productivity and different restrictions on specific uses. The binary distinction drawn here between well represented and highly lexicalized or reconstructed uses is too crude to capture in detail all the relevant cross-linguistic differences, such as differences in the sets of quantifying expressions licensing the use of the 'grain' element. Integrating frequency information along the various lines suggested for example in Rice and Kabata (2007), Narrog and Ito (2007), Cysouw (2007), may address this problem to some extent but few languages are documented well enough to provide sufficient quantitative information for such an approach.

Despite the challenges, the study has yielded some tentative answers to the questions raised in the introduction. First, it has uncovered important differences

among the languages of the group. These differences are consistent with the evidence of another semantic domain (Nikitina 2019a) and with the genetic classification in (Vydrin 2009). Dan Blowo and Tura in particular pattern very closely together, while Wan behaves as an outlier the farthest removed from the common lexical network.

Second, the small-scale comparison has revealed a number of rather idiosyncratic meanings and semantic relationships that may have been difficult to observe based on large-scale typological sampling. Without the comparative evidence, some of these relationships could easily escape the fieldworker's notice. It is only in the comparative context, for example, that some of the functions of the 'grain' element in Wan and Mwan become evident (such as its etymological relation to the word 'bone' or its potential to describe conventional units of material). Semantic mapping can therefore be used as a methodological tool that helps make sense of synchronically unrelated uses based on micro-scale language comparison (including comparison between just two languages, cf. Nikitina and Treis 2020). Such a tool could also become a welcome part of a lexicologist's toolbox as it pinpoints potential gaps in the existing lexical description.

The final point that deserves mention is the fact that the words explored in this study are non-cognate, and the similarity between the networks cannot be attributed merely to common ancestry of the relevant words. When new words for 'grain' were introduced in the system they often became associated with the same meanings as the words they came to replace. The diachronic resilience of the semantic network suggests that at least some semantic map models correspond to some extent to cognitive reality (Croft 2001; Haspelmath 2003, but cf. Cristofaro 2010).

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Abbreviations

1, 3	first, third person
DEF	definite
FOC	focus
NMLZ	nominalizer

PERF	perfect
PL	plural
POSS	possessive
POSTP	postposition
PROG	progressive
SG	singular
REFL	reflexive

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