Chapter 7

The AWSOM correlation in comparative Bantu object marking

Jenneke van der Wal
Leiden University Centre for Linguistics

The Bantu languages show much variation in object marking, two parameters being (1) their behaviour in ditransitives (symmetric or asymmetric) and (2) the number of object markers allowed (single or multiple). This paper reveals that a combination of these parameter settings in a sample of 50+ Bantu languages results in an almost-gap, the AWSOM correlation: "asymmetry wants single object marking". A Minimalist featural analysis is presented of Bantu object marking as agreement with a defective goal (van der Wal 2015) and parametric variation in the distribution of ϕ features on low functional heads (e.g. Appl) accounts for both the AWSOM and Sambaa as the one exception to the AWSOM.

1 Introduction: Bantu object marking

The Bantu languages are around 500 in number (Nurse & Philippson 2003: 1), spread over most of sub-Saharan Africa. General typological properties include noun classes, agglutinative morphology and SVO basic word order. Finite verbs typically include derivational suffixes and inflectional prefixes. One of these prefixes can be the object marker, as shown in (1b).

(1) Lugwere

a. Swáya y-á-ßona óDéo.[1]
1.Swaya 1SM-FUT-see 1.Deo
'Swaya will see Deo.'

b. Swáya y-á-**mu**-ßoná.
1.Swaya 1SM-FUT-1OM-see
'Swaya will see him.'

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Within the Bantu languages that show object marking in a verbal prefix, there is much variation, which has been described along the following parameters (see Hyman & Duranti 1982; Polak 1986; Morimoto 2002; Beaudoin-Lietz et al. 2003; Marten et al. 2007; Riedel 2009; Marten & Kula 2012; Zeller 2014; Marlo 2015, for typological overviews of Bantu object marking):

1. behaviour in ditransitives: only the highest object can be marked (asymmetric) or either object can be marked (symmetric);
2. number of object markers allowed: one-two-multiple;
3. nature of the object marker: syntactic agreement (doubling) or pronominal clitic (non-doubling);
4. types of objects marked, specifically locative object markers, and animacy, definiteness, givenness (differential object marking);
5. position of object marker: pre-stem or enclitic.

In the current paper I focus on parameters 1 and 2.[2] In Section 2, I illustrate these two parameters and show their settings for 50+ Bantu languages. It is the first time that the parametric settings for such a large group of Bantu languages have been gathered, but this by itself is not the most interesting fact. What makes this overview of object marking typologically and theoretically fascinating is the interaction between the settings for both parameters. Riedel (2009: 78) remarks that "Across the Bantu family, it has been observed that the languages which allow more than one object marker [...] tend to be symmetric. [...] these three properties [parameters 1-2-3, JvdW] do not correlate systematically with one another. For example, Sambaa is an asymmetric language with multiple object markers." As will be shown in Section 3, Sambaa turns out to be quite special in its combination of parameter settings, and all other languages in the current systematic comparative overview of object marking parameters provide evidence for the AWSOM correlation: "asymmetry wants single object marking". After providing a Minimalist featural analysis of object marking in Section 4, I will use this analysis to answer the following questions about the AWSOM in Sections 5 and 6,

[1]Object markers referring to the Theme object are underlined, and object markers referring to the Recipient/Benefactive are in **boldface**. Where no source is mentioned, the data come from fieldwork.

[2]See Beaudoin-Lietz et al. (2003) and Marlo (2015) for parameter 5, and see van der Wal (2017b) for the interaction between parameters 1 and 3/4, which shows a gap described as the RANDOM (the "relation between asymmetry and non-doubling object marking").

proposing an explanation in the distribution of ϕ features on heads in the clausal spine:

1. What causes the correlation between symmetry and multiple object marking?
2. How can we account for object marking in Sambaa?
3. Why is this parameter setting for object marking so apparently rare?

The paper is thus intended to contribute to the ongoing debate on the theory of Agree, as well as the upcoming field of Bantu typology, and formal approaches to language variation in general.

2 Parameters of variation in number of object markers and symmetry

Bresnan & Moshi (1990) divided Bantu languages into two classes – symmetric and asymmetric – based on the behaviour of objects in ditransitives. Languages are taken to be symmetric if both objects of a ditransitive verb behave alike with respect to object marking (see Ngonyani 1996 and Buell 2005, for further tests). In Zulu, for example, either object can be object-marked on the verb (2), making this a "symmetric" language.[3,4]

(2) Zulu (S42, Adams 2010: 11)

a. U-mama u-nik-e aba-ntwana in-cwadi.
1a-mama 1SM-give-PFV 2-children 9-book
'Mama gave the children a book.'

[3]One should, however, be careful in characterising a whole language as one type, since it has become more and more evident that languages can be partly symmetric (Baker 1988; Rugemalira 1991; Alsina & Mchombo 1993; Schadeberg 1995; Simango 1995; Ngonyani 1996; Ngonyani & Githinji 2006; Thwala 2006; Riedel 2009; Zeller & Ngoboka 2006; Jerro 2015; 2016; van der Wal 2017a, etc.).

[4]In this research I focus on recipient/benefactive/malefactive ditransitives, leaving aside instrumental/locative/reason applicatives, for which see Kimenyi (1980); Baker (1988); Alsina & Mchombo (1993); Moshi (1998); Ngonyani (1998); Ngonyani & Githinji (2006); Jerro (2016), among others. This is partly to keep ditransitives comparable across languages, and partly because it is debatable whether multitransitives with other thematic roles are underlyingly true double object constructions (the alternative being some sort of prepositional construction with a different hierarchical structure from that treated here).

b. U-mama u-**ba**-nik-e in-cwadi (aba-ntwana).
1a-mama 1SM-**2OM**-give-PFV 9-book 2-children
'Mama gave them a book (the children).'

c. U-mama u-yi-nik-e aba-ntwana (in-cwadi).
1a-mama 1SM-9OM-give-PFV 2-children 9-book
'Mama gave the children it (a book).'

Conversely, in asymmetric languages only the highest object (Benefactive, Recipient) can be object-marked; object-marking the lower object (Theme) is ungrammatical.

(3) Swahili (G42)

a. A-li-**m**-pa kitabu.
1SM-PST-1OM-give 7.book
'She gave him a book.'

b. * A-li-ki-pa Juma.
1SM-PST-7OM-give 1.Juma
int. 'She gave it to Juma.'

This parameter splits the Bantu languages into two groups (where languages are classified as symmetric as soon as the Theme can be object-marked in any ditransitive construction, even if not all constructions are symmetric), as seen in Table 1.

Table 1: Parameterisation of Bantu languages according to the behaviour in ditransitives

asymmetric	Bemba, Chichewa, Chimwiini, Chingoni, Chuwabo, Kagulu, Kiyaka, Lika, Lunda, Makhuwa, Matengo, Nsenga, Ruwund, Sambaa, Swahili, Tumbuka, Yao
symmetric	Bembe, Chaga, Changana, Digo, Gitonga, Ha, Haya, Herero, Kimeru, Lugwere, Kikuyu, Kinande, Kinyarwanda, Kirundi, Kuria, Lozi, Lubukusu, Luganda, Luguru, Maragoli, Mongo, Ndebele, Nyaturu, Tshiluba, Totela, Setswana, Shona, Swati, Sotho, Tharaka, Xhosa, Zulu
symm unknown	Ekoti, Fuliiru, Lucazi, Makwe, Rangi, Shimakonde

A second parameter distinguishes the number of object markers allowed. Many languages are restricted to only one object marker – whether asymmetric as in (4) or symmetric as in (5). Other languages allow multiple markers to occur on the verb, the famous constructed example in (6) illustrating the extreme of six object markers.

(4) Tumbuka (N20, Jean Chavula, personal communication)

a. Wa-ka-cap-il-a mwaana vyakuvwara.
2SM-T-wash-APPL-FV 1.child 8.clothes
'They washed clothes for the child.'

b. Wa-ka-**mu**-cap-il-a vyakuvwara.
2SM-T-1OM-wash-APPL-FV 8.clothes
'They washed the clothes for him.'

c. * Wa-ka-vi-cap-il-a mwaana.
2SM-T-8OM-wash-APPL-FV 1.child
int. 'They washed them for the child.'

d. * Wa-ka-vi-**mu**-cap-il-a.
2SM-T-8OM-1OM-wash-APPL-FV
int. 'They washed them for him.'

(5) Zulu (S42, Zeller 2012: 220)

a. * U-John u-**ba**-zi-nik-ile.
1a.John 1SM-2OM-9OM-give-PST

b. * U-John u-zi-**ba**-nik-ile.
1a.John 1SM-9OM-2OM-give-PST
int. 'John gave them to them.'

(6) Kinyarwanda (JD62, Beaudoin-Lietz et al. 2003: 183)
Umugoré a-ra-na-ha-ki-zi-ba-ku-n-someesheeshereza.
1.woman 1SM-DJ-also-16OM-7OM-10OM-2OM-2SG.OM-1SG.OM-read.CAUS.CAUS.APPL.APPL
'The woman is also making us read it (book, cl. 7) with them (glasses, cl.10) to you for me there (at the house, cl.16).'

There is a third type of languages where object marking is generally restricted to one marker, but under certain circumstances allows "extra" markers (1+). This is usually when the first marker is a reflexive, a 1st person singular or sometimes also an animate object, as in (7b). See Polak (1986) and Marlo (2014; 2015) as well as Sikuku (2012) for further discussion and illustration of this type of object marker.

(7) Bemba (M42, Marten & Kula 2012: 245)

a. * N-àlíí-yà-**mù**-péél-à.
1SG.SM-PST-6OM-1OM-give-FV
Int: 'I gave him it (e.g. water).'

b. À-chí-**m**-péél-é.
1SM-7OM-1SG.OM-give-OPT
'S/he should give it to me.'

Classified according to the number of object markers, again the Bantu languages can be split as in Table 2 (where languages are classified as "multiple object markers" as soon as they allow more than one object marker on the verb, even if the number is restricted, with the exception of the "extra" markers that are indicated as a separate group under "1+"):

Table 2: Parameterisation of Bantu languages according to the number of object markers

single OM	Bembe, Changana, Chichewa, Chimwiini, Chingoni, Chuwabo, Digo, Ekoti, Gitonga, Herero, Kagulu, Kimeru, Kinande, Lika, Lozi, Luguru, Lunda, Makhuwa, Makwe, Maragoli, Matengo, Ndebele, Nsenga, Rangi, Swahili, Shimakonde, Shona, Sotho, Swati, Tumbuka, Xhosa, Yao, Zulu
multiple OM	Chaga, Ha, Haya, Kinyarwanda, Kuria, Luganda, Lugwere, Kirundi, Sambaa, Setswana, Totela, Tshiluba
1+	Bemba, Fuliiru, Kikuyu, Kiyaka, Lubukusu, Mongo, Nyaturu, Ruwund, Tharaka

3 Interaction between multiple object markers and symmetry

Although the distribution of languages over parameter settings is quite even for the two parameters, the combination of parameters for behaviour in ditransitives and number of object markers is skewed, as already noted in the literature (Henderson 2006: 185, Zeller & Ngoboka 2015: 227). Riedel (2009) describes the correlations as follows:

> "Across the Bantu family, it has been observed that the languages which allow more than one object marker, such as Haya and Rundi, tend to be symmetric. Baker (2008b) suggests that this is a consequence of the properties of syntactic agreement as opposed to object clitics. Bentley (1994) also lumps together agreement, animacy-sensitivity, having only one object marker and asymmetry as related properties. However, although this may well be a tendency across Bantu, these three properties do not correlate systematically with one another. For example, Sambaa is an asymmetric language with multiple object markers." (Riedel 2009: 78)

The question is thus what distribution a larger sample of languages will reveal, and the result of the current survey is summarised in Table 3.

Table 3: Interaction between number of object markers and symmetry in Bantu languages

	number of object markers		
symmetry	multiple	single	1+
asymmetric	Sambaa	Chichewa, Chimwiini, Chingoni, Chuwabo, Kagulu, Lika, Lunda, Makhuwa, Nsenga, Swahili, Tumbuka, Matengo, Yao	Bemba, Kiyaka, Ruwund
symmetric	Dzamba, Chaga, Ha, Haya, Kinyarwanda, Kirundi, Kuria, Luganda, Lugwere, Setswana	Bembe, Changana, Digo, Herero, Gitonga, Kikongo, Kimeru, Kinande, Lozi, Luguru, Maragoli, Ndebele, Shona, Sotho, Swati, Tshiluba, Totela, Zulu, Xhosa	Kikuyu, Lubukusu, Mongo, Nyaturu, Tharaka
unknown		Ekoti, Makwe, Rangi, Shimakonde	Fuliiru

Perhaps surprisingly, in this combinations of parameters an almost-gap appears: there is a systematic correlation between multiple object marking and symmetry, which can be formulated as the AWSOM:

(8) *Asymmetry wants single object marking correlation* (AWSOM)
Asymmetric languages greatly prefer single object markers.
Languages with multiple object markers are overwhelmingly symmetric.

Despite this strong correlation, Riedel (2009) is correct to claim that Sambaa is an exception: Sambaa appears as the only language allowing multiple object markers but being asymmetric (and doubling). A first question to answer before any explanation is sought, then, is whether Sambaa is a true counterexample to the AWSOM. As can be seen in examples (9–11) the answer is "yes": any kind of Theme in Sambaa can only be object-marked in a ditransitive if the Benefactive/Recipient is object-marked first (comparable to Greek clitic doubling where the Theme can only be reached once the Benefactive is clitic-doubled, see Anagnostopoulou 2003; 2017). It is grammatical to object-mark only the Recipient (9b), or both the Recipient and the Theme (9c), but object marking just the Theme is ungrammatical (9d) and (9e).

(9) Sambaa (G23, Riedel 2009: 106)

a. N-za-nka ng'wana kitabu.
1SG.SM-PFV.DJ-give 1.child 7.book
'I gave the child a book.' (no OM)

b. N-za-**m**-nka ng'wana kitabu.
1SG.SM1-PFV.DJ-1OM-give 1.child 7.book
'I gave the child a book.' (OM only for R)

c. N-za-chi-**m**-nka ng'wana kitabu.
1SG.SM-PFV.DJ-7OM-1OM-give 1.child 7.book
'I gave the child a book.' (OM for both)

d. * N-za-chi-nka ng'wana kitabu.
1SG.SM-PFV.DJ-7OM-give 1.child 7.book
Int: 'I gave the child a book.' (*OM only for Th)

e. * N-za-chi-nka ng'wana.
1SG.SM-PFV.DJ-7OM-give 1.child
Int: 'I gave it to the child.' (*OM for null Th)

Since Sambaa prefers object marking for arguments high on the hierarchies of animacy and definiteness, one might suspect that the reason for the ungrammaticality of (9d) and (9e) lies not in the marking of the Theme, but the non-marking of the Recipient, i.e. the examples are out because the animate *ng'wana* 'child' is not object-marked. However, even with reversed animacy the same pattern holds: animate and even human Themes cannot be marked by themselves in the presence of an inanimate Benefactive (also indicated as "R" below) – the result is a reversal of the roles, as indicated in the translations of (10) and (11).[5]

(10) Sambaa (own data)
N-za-**jí**-ghúl-íyá nyumbá.
1SG.SM-PST.DJ-5OM-buy-APPL 9.house
*'I bought it for the house (a/the dog, class 5).' (*OM for Th)
instead: 'I bought a house for it (the dog).' (OM for R)

(11) a. Wá-zá-**zi**-ghul-iya **khói z-áwe** wátuunghwa.
2SM-PST.DJ-10OM-buy-APPL 10.farm 10-POSS.2 2.slaves
'They bought slaves for their farms.' (OM for inanimate R)

b. Wá-zá-wa-ghul-iya **khói z-áwe** watúúnghwa.
2SM-PST.DJ-2OM-buy-APPL 10.farm 10-POSS.2 2.slaves
'They bought farms for the slaves.' (OM for human R)
*'They bought slaves for their farms.' (*OM for inanimate Th)

Having established that the AWSOM correlation in (8) is real, and that Sambaa escapes it, the research questions are:

[5]There appears to be a restriction on the ordering of multiple markers in Sambaa as well, see also Section 5 on prefix ordering.

(i) *Wa-za-wa-**zi**-ghul-iya. (*OM order R-Th)
2SM-PST.DJ-2OM-10OM-buy-APPL

(ii) Wa-za-zi-**wa**-ghul-iya.
2SM-PST.DJ-10OM-2OM-buy-APPL
'They bought them (10, farms) for them (2, slaves).' (order Th-R)
*'They bought them (2, slaves) for them (10, farms).' (*order R-Th)

1. What causes the correlation between symmetry and multiple object marking?
2. How can we account for object marking in Sambaa?
3. Why is this parameter setting for object marking so apparently rare?

In order to address these questions, I first lay out my assumptions about object marking as involving Agree with a defective Goal (largely taken from van der Wal 2015), and about verbal head movement in the clause.

4 Agree and head movement

There are two key ingredients for the analysis. The first is that object marking involves an Agree relation, and the second is that verb-movement takes place in the lower part of the clause but stops just above little v.

With respect to the first, it might seem straightforward that object marking is some sort of agreement, but a longstanding debate for Bantu object marking concerns the question whether object marking involves syntactic agreement or pronoun incorporation, and how this may differ crosslinguistically (see for recent discussion on the status of object markers in Bantu, among others, Henderson 2006; Riedel 2009; Zeller 2012; Iorio 2014; Baker 2016; and object clitics in general Preminger 2009; Nevins 2011; Anagnostopoulou 2017; 2016; Kramer 2014; Harizanov 2014; Baker & Kramer 2016). As an alternative to this choice, Roberts (2010) proposes a hybrid account of clitics that *always* involves an Agree relation between a Probe and a Goal (Chomsky 2000; 2001). The Probe with an uninterpretable feature (uF) searches its c-command domain for valuation by the closest Goal with a matching interpretable feature (iF). Upon Agree, the features on the Goal are shared with the Probe (unlike Kalin 2020 [this volume], I assume Agree to consist of simultaneous match and value).

Roberts (2010) proposes that Goals can be defective, in the sense of having a subset of the features that are present on the Probe. In an Agree relation with a defective Goal, the Probe will contain the features of the Goal, and potentially additional features that the Probe does not share with the Goal (such as D or Person, though it does not need to be a proper subset). This makes the relation indistinguishable from a copy/movement chain, where normally only the highest copy is spelled out. The lower copy is not spelled out, due to chain-reduction (Nunes 2004). This gives the impression of "incorporation" of the Goal, because its features will be spelled out on the Probe.

Concretely for object marking, this can be seen as follows. Little v has uninterpretable ϕ features (uϕ), which probe down to find an internal argument (object) with interpretable ϕ features (iϕ). If the object Goal is a defective pronoun (a ϕP, following Déchaine & Wiltschko 2002), the Goal's nominal features are a subset of the Probe's (Figure 1). When Agree is established, the ϕ features are spelled out on v in the form of an object marker.

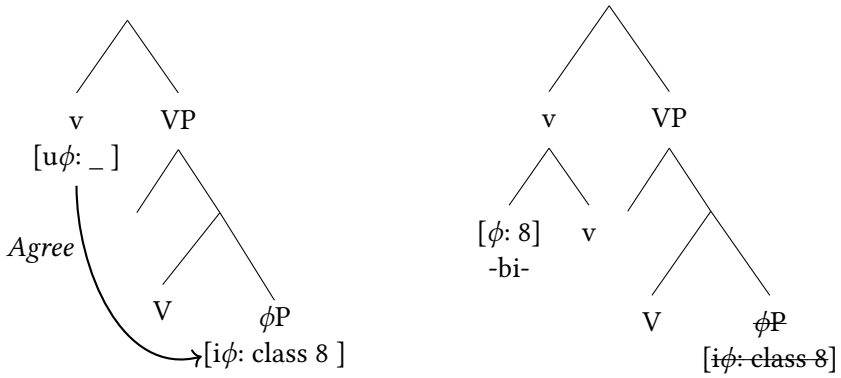

Figure 1: Left: Agree with a defective ϕP-Goal. Right: Spell-out of ϕ on v: object marker.

Assuming with Roberts (2010) that this Agree relation only spells out on the Probe if the Goal has a subset of the features on the Probe, this also implies that if the Goal's features are *not* a subset, the features will not be spelled out on the Probe.[6] If the Goal is a full DP, the Probe simply Agrees with it, valuing uϕ, but only the DP spells out. This is illustrated in Figure 2.

Object marking thus always involves an Agree relation, with the spell-out of the object marker depending on the structure of the Goal, resulting in incorporation effects.

Although it is not immediately relevant to the present discussion, I briefly discuss the difference between so-called doubling and non-doubling object marking here (Figure 3). The analysis presented thus far accounts for languages that have non-doubling object marking, that is, the pronominal or anaphoric kind of OM, with a complementary distribution between OM and DP. However, in other languages object marking "doubles" the object DP, and both the OM and the DP are overtly realised (i.e. "agreement"). The DPs that are object-marked

[6]This is the strongest hypothesis. A weaker version would claim that if the Goal is defective, the Probe has to be spelled out, and if the Goal is not defective, the features can still be spelled out on the Probe (but do not need to be) – see also the discussion below on doubling object marking.

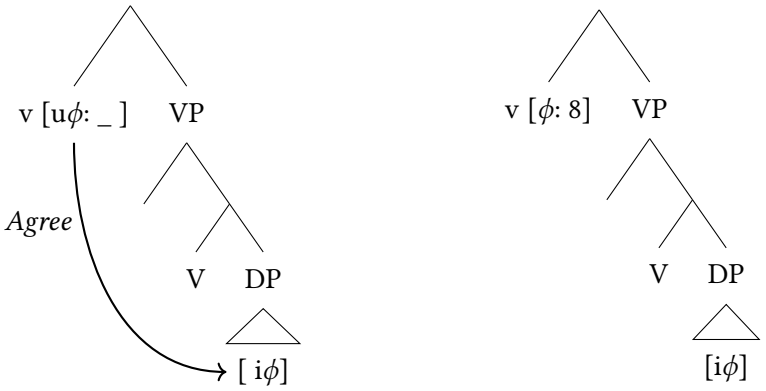

Figure 2: Left: Agree with DP object. Right: No spell-out of ϕ on v, but spell-out of DP.

in such languages are typically high in animacy, definiteness and givenness. As explained in more detail in van der Wal (2015), I assume that animate/definite/-given DPs have a Person feature (following Richards 2008; 2015), which in these languages projects a separate PersonP layer (following Höhn 2017). Where in a non-doubling language v agrees with the DP, in a doubling language v agrees with the features in the Person layer, if present. Since these form a subset of the Probe, this Agree relation spells out as an object marker, while the DP also spells out, leading to doubling. I refer to van der Wal (2015) for further details.

The second aspect needed in this anaysis is head movement in the lower part of the clause, but not all the way to T. There is good morphological evidence for this head movement in the Bantu languages, since verbal derivation is visible as suffixes on the verb. This verbal morphology provides clear clues as to its underlying syntax. Following Myers (1990), Julien (2002), Kinyalolo (2003), and Buell (2005), and drawing on the explanation in van der Wal (2009), I assume that the verb starts out as a root in V and incorporates the derivational and inflectional *suffixes* by head movement in the lower part of the clause. It then terminates in a position lower than T. The inflectional *prefixes* on the verb (apart from the object marker) represent functional heads spelled out in their base positions. The (derived) verb stem and prefixes form one word by phonological merger.

To illustrate this derivation, consider first the Makhuwa example in (12) and the proposed derivation in Figure 4.

(12) Makhuwa (P31, van der Wal 2009: 169)
nlópwáná o-h-oón-íh-er-íyá epuluútsa.
1.man 1SM-PERF.DJ-see-CAUS-APPL-PASS-FV 9.blouse
'The man was shown the blouse.'

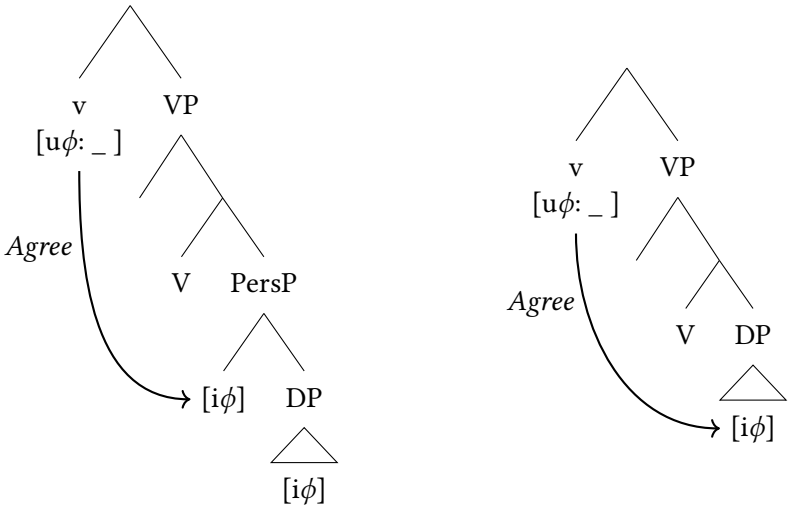

Figure 3: Left: Spell-out of ϕ on v: doubling object marker. Right: No spell-out of ϕ on v, but spell-out of DP.

The verb stem *-oon-* 'to see', head-moves to CausP and incorporates the causative morpheme to its left: *-oon-ih-*. This combined head moves on to ApplP, incorporating a further suffix to its right: *-oon-ih-er-*. The next step adds the passive morpheme to form *ooniheriy* and this complex moves once more to add the final suffix (also known as "final vowel"). Since it can carry inflectional meaning, the final suffix has been posited in an aspectual projection just above vP. Crucially, these are all suffixes, and they surface in reversed order of structural hierarchy (the Mirror Principle, Baker 1985; 1988; and see among others Alsina 1999; Hyman 2003; Good 2005; and Muriungi 2008 for discussion of the relation between semantic scope, morpheme order and syntactic structure).

There is no reason to assume that a moved head will first incorporate morphemes to its right (the extensions and final inflectional suffix) and then to its left (the agreement and TAM markers). Therefore, the fact that inflectional morphemes for subject marking, negation, and tense surface as prefixes suggests that these are not incorporated into the verb in the same way as the derivational suffixes, and thus that the verb has not head-moved further in the inflectional domain.

The prefixes do form one phonological unit with the verb stem, but are posited as individual heads that merely undergo phonological merger. Another argument for this analysis is found in the order of the prefixes, which matches the order of the corresponding syntactic heads, as shown in (13) and Figure 5. If the inflectional prefixes were also incorporated, like the suffixes, one would expect them to

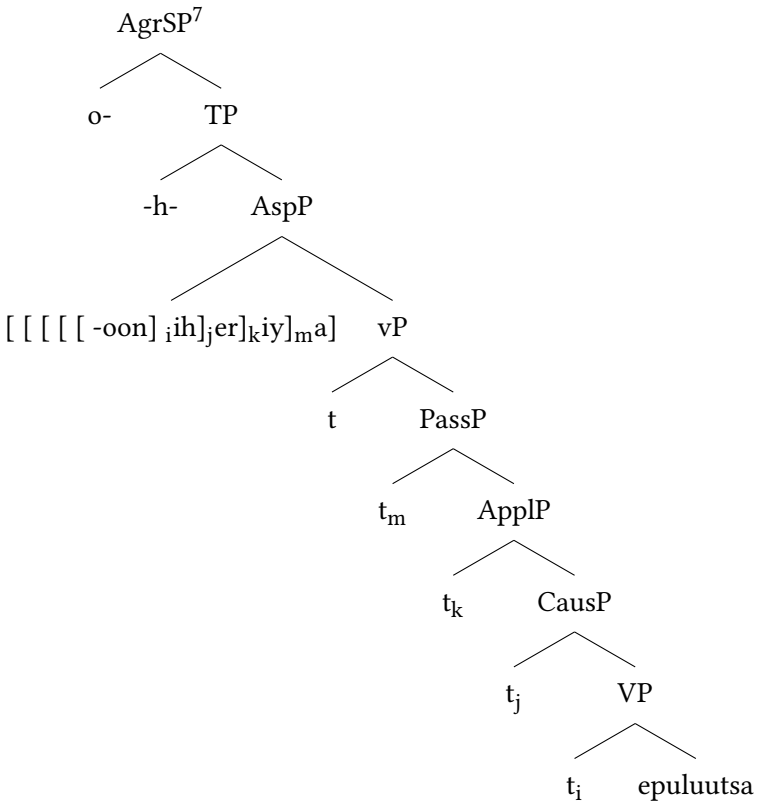

Figure 4: Proposed derivation of (12)

surface in the opposite order. And this is indeed what we find in a language like French, where there is independent evidence that the verb does move to T: the inflectional morphemes appear in the reverse order of the Makhuwa inflectional prefixes, and they appear as suffixes on the verb in (14).

(13) Makhuwa (P31, van der Wal 2009: 169)
kha-mw-aa-tsúwéla.
NEG-2PL-IMPF-know
'You didn't know.'

[7]The node AgrSP is represented here merely for expository reasons – the subject marker is treated as a reflex of ϕ features on T.

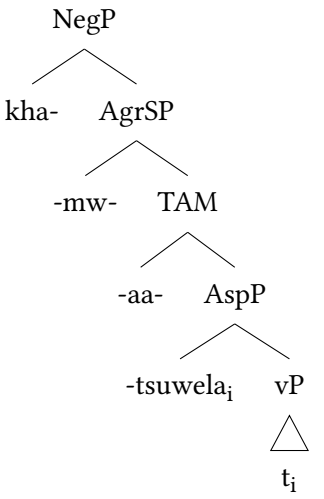

Figure 5: Bantu verbal prefixes as individual heads

(14) French
Nous aim-er-i-ons.
1PL.PRO love-IRR-PAST-1PL
'We would love.'

The verbal morphology thus provides empirical evidence for movement of the verb in the lower part of the clause to a position just outside of vP, with the prefixes spelled out in their individual positions in the inflectional domain. Theoretically I assume this head movement proceeds as proposed in Roberts (2010), involving an Agree relation between higher and lower heads in the clausal spine; see also Adger (2003) and Bjorkman (2011), among others. The higher heads have additional features with respect to the lower verbal heads, which again makes the lower heads into defective Goals, spelling out the features on the highest head (AspP). See Roberts (2010) for details.

Returning to the status of the object marker, in the verbal template it sits right between the derived verb stem and the inflectional prefixes – nothing can intervene between the object marker and the verb stem. Despite its prefixal appearance, the object marker is different from the other prefixes such as the tense marker. The object marker and the verb stem still behave as one unit, together forming what is known in Bantu studies as the "macrostem". The macrostem is the relevant unit for tone assignment and further phonological rules; see Hyman (2003); Hyman et al. (2008); Marlo (2015). The object markers are thus somehow

special within the verbal morphology. I propose that this is because they are the result of spelling out a set of ϕ features that is present on little v and therefore on the (derived) verbal head, as outlined above.

With these basics in place, we can proceed to multiple object marking and a featural account of the AWSOM correlation.

5 Multiple object markers as additional low phi probes

In the current analysis, object marking is due to v agreeing with a defective Goal. The presence of the object marker is thus dependent on having a ϕ probe on v. Taking as a starting point that the distribution of ϕ features on functional heads is parameterised, the presence of multiple object markers is – for most languages; see Section 6 – hypothesised to reflect the presence of ϕ features on multiple functional heads. The most straightforward analysis is to postulate ϕ features on the actual heads that introduce the "extra" arguments, i.e. the applicative and causative heads, as represented in Figure 6.[8]

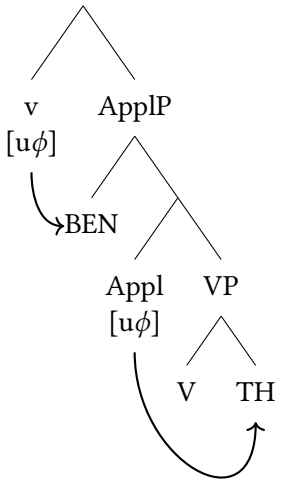

Figure 6: Multiple ϕ probes in a double object construction

[8] I assume Pylkkänen (2008)'s structure of double object constructions, involving an Applicative head. The analysis presented here should in principle be applicable to high and low Applicatives, as well as Causatives (see also van der Wal 2017a,b). In the tree structures, "BEN" (for benefactive) represents any argument introduced by Appl, which may also have a Recipient, Malefactive or other role.

If a language has ϕ features not just on v but also on Appl, under a default downward probing, the prediction is that Appl agrees with the Theme/lower argument, and that the shared features are spelled out on the Probe (Appl) if the features of the Goal are a subset of the features of the Probe. The head movement of V through the lower part of the clause picks up the ϕ features of Appl and v, resulting in multiple sets of ϕ features on the derived head, and hence the potential for multiple object markers.[9]

With this analysis of multiple object marking we can thus answer the first research question of why there is such a strong correlation between multiple object marking and symmetry (the AWSOM): it follows from the presence of lower ϕ probes that the Theme is always accessible to a ϕ probe, independent of the marking of the Recipient/Benefactive. Appl will agree with the Theme and may or may not spell out its ϕ features as an object marker, depending on the structure of the Goal, and v will agree with the higher argument, which again may or may not spell out as an object marker.

To illustrate how the analysis works, consider the patterns in Luganda. In all sentences in (15), Appl agrees in ϕ features with the Theme *ssente* 'money' and v agrees in ϕ features with the Recipient *taata* 'father'. Via head-movement of the verb these sets of ϕ features end up on the head just above v. In (15a) the objects are non-defective DPs and they will simply be spelled out as DPs (no object marker). In (15b) and (15c) only one of the objects is a defective ϕP Goal whose ϕ features will be spelled out on the Probe, resulting in the one or the other object marker being present. Finally, in (15d) both objects are defective and therefore spelled out on the Probe as object markers.[10]

(15) Luganda (JE15, Ssekiryango 2006: 67, 72)

a. Maama a-wa-dde **taata** ssente.
1.mother 1SM-give-PFV 1.father 10.money
'Mother has given father money.'

b. Maama a-**mu**-wa-dde ssente.
1.mother 1SM-1OM-give-PFV 10.money.
'Mother has given him money.'

[9] As mentioned, the lower functional heads themselves incorporate as suffixes in the course of the verb's head movement, and the sets of ϕ features are located on this complex head, spelling out as prefixes to this head if the Goal is defective.

[10] The encountered cross-Bantu variation in the precise number of object markers (one, two, three, more) allowed in any particular language (Polak 1986; Marlo 2015) can potentially be understood as variation in the presence of ϕ features on other lower heads (e.g. high/low causatives).

c. Maama a-zi-wa-dde **taata**.
1.mother 1SM-10OM-give-PFV 1.father
'Mother has given it father.'

d. Maama a-zi-**mu**-wa-dde.
1.mother 1SM-10OM-1OM-give-PFV
'Mother has given it to him.'

A further question that may be asked is what determines the order of object markers when multiple objects are defective. In Luganda, object markers are ordered strictly according to their semantic role (which may reflect the structural hierarchy): the Recipient is always closest to the stem, in mirrored order of the order of postverbal elements (cf. Baker 1985; 1988), as illustrated in (16).

(16) Luganda (JE15, Ranero 2015: 13)

a. Omusajja y-a-zi-**ba**-wa.
1.man 1SM-PST-10OM-2OM-give
'The man gave them it.'

b. *Omusajja y-a-**ba**-zi-wa.
1.man 1SM-PST-2OM-10OM-give
int. 'The man gave them it.'

Neither person (17) nor animacy (18) can change this ordering or make it ambiguous.

(17) Luganda (Judith Nakayiza & Saudah Namyalo, p.c.)
Context: My assistant is ill and Judith is happy for me to work with hers. I tell a colleague:
Judith a-mu-**nj**-aziseemu olwaleero.
1.Judith 1SM-1OM-1SG.OM-lend day.of.today
'Judith lends him/her to me for the day.'
*'Judith lends me to him/her for the day.'

(18) Luganda (Judith Nakayiza & Saudah Namyalo, p.c.)

a. N-a-gul-i-dde ennimiro abaddu.
1SG.SM-PST-buy-APPL-PFV 9.garden 2.slaves
'I bought slaves for the garden/farm.'

b. N-a-ba-**gi**-gul-i-dde.
1SG.SM-PST-2OM-9OM-buy-APPL-PFV
'I bought them for it.' (not common)
*'I bought it for them.'

c. N-a-gi-**ba**-gul-i-dde.
1SG.SM-PST-9OM-2OM-buy-APPL-PFV
'I bought it for them.'
*'I bought them for it.'

In other Bantu languages with multiple object markers, however, the ordering does not necessarily follow the thematic roles but is either determined by animacy, or free.[11] To illustrate the first, consider Kinyarwanda, where morpheme order is primarily based on person and animacy: when one prefix refers to a human, this needs to be closest to the stem (19), and 1st/2nd person pronouns take precedence over other referents for the verb-adjacent position (20).[12] As expected, this strict ordering results in ambiguity.

(19) Kinyarwanda (JD62, Zeller & Ngoboka 2015: 211, 212)

a. Umwáarimú yeeretse Muhiíre inká.
u-mu-aarimu a-a-eerek-ye Muhiire i-n-ka
AUG-1-teacher 1SM-PST-show-ASP 1.Muhire AUG-9-cow
'The teacher showed Muhire the cow.'

b. Umwáarimú yaayimwéeretse.
u-mu-aarimu a-a-a-yi-**mu**-eerek-ye
AUG-1-teacher 1SM-PST-DJ-9OM-1OM-show-ASP
'The teacher showed it to him.'

c. * Umwáarimu yaamuyiyéeretse.
u-mu-aarimu a-a-a-**mu**-yi-eerek-ye
AUG-1-teacher 1SM-PST-DJ-1OM-9OM-show-ASP
'The teacher showed it to him.'

[11] See also Bresnan & Moshi (1990) and Alsina (1996) on morpheme order in Chaga.

[12] Some form of person restriction for 1st and 2nd person objects in DOCs is commonly present in Bantu languages, but this extends beyond multiple object markers – see Riedel (2009) for discussion of the strong and weak PCC; see Yokoyama (2016) for a featural account of the PCC and ordering restrictions in Kinyarwanda. Further literature on the order of object markers in various Bantu languages includes Duranti (1979), Bresnan & Moshi (1990), Rugemalira (1993), and Alsina (1996).

(20) a. Umwáarimú yaabányeeretse.
u-mu-aarimu a-a-a-**ba**-**n**-eerek-ye
AUG-1-teacher 1SM-PST-DJ-2OM-1SG.OM-show-ASP
'The teacher showed them to me.' *or*
'The teacher showed me to them.'

b. * Umwáarimú yaambéeretse.
u-mu-aarimu a-a-a-**n**-**ba**-eerek-ye
AUG-1-teacher 1SM-PST-DJ-1SG.OM-2OM-show-ASP
int. 'The teacher showed them to me/me to them.'

In contrast, there is no strict ordering for multiple object markers referring to non-human referents, as shown in (21), where the authors report that there is no semantic or pragmatic difference between (21b) and (21c). The sets of ϕ features gathered on the verbal head can thus be spelled out in either order.

(21) Kinyarwanda (JD62, Zeller & Ngoboka 2015: 212)

a. Yahaaye ingurube ibijuumba.
a-a-ha-ye i-n-gurube i-bi-juumba
1SM-PST-give-ASP AUG-9-pig AUG-8-sweet_potatoes
'He has given the pig sweet potatoes.'

b. Yabiyíhaaye.
a-a-a-bi-**yi**-ha-ye.
1SM-PST-DJ-8OM-9OM-give-ASP
'He has given them to it.'

c. Yayibíhaye.
a-a-a-**yi**-bi-ha-ye.
1SM-PST-DJ-9OM-8OM-give-ASP
'He has given them to it.'

Some varieties of Setswana seems to be even less restricted in the order of prefixes, generally allowing either order, as in (22).[13]

(22) Setswana (Marten & Kula 2012: 247)

a. Ke-**mo**-e-ape-ets-e.
1SG.SM-1OM-9OM-cook-APPL-PFV
'I cooked it for him/her.'

[13]However, Pretorius et al. (2012) suspect that discourse preferences may be of influence here, and Creissels (2002) notes for the variety he describes that the order is determined first by animacy, and in case the arguments are equal in animacy, then semantic role dictates the order of the markers.

b. Ke-e-**mo**-ape-ets-e.
1SG.SM-9OM-1OM-cook-APPL-PFV
'I cooked it for him/her.'

It seems likely, then, that the sets of ϕ features on the verbal head are spelled out either freely, or according to a morphological template that prioritises referents higher on the scales of person and animacy, or thematic role (cf. Duranti 1979). Further research is needed to establish the details in variation, what this may tell us about the syntax involved (if anything), and the spell-out or readjustment rules for morphology.

To summarise, in the proposed analysis object marking involves an Agree relation between a ϕ probe on a low functional head (v, Appl) and a DP Goal. If the features on the Goal are a subset of the Probe (e.g. a ϕP), the ϕ features on the Probe spell out as an object marker. Postulating ϕ probes on multiple lower functional heads (v, Appl, Caus) as the underlying structure in languages that allow multiple object markers derives the AWSOM correlation successfully and straightforwardly: the lower ϕ probe can *always* agree with the Theme argument. The analysis also fits the larger typological implicational hierarchy for the distribution of ϕ features (Moravcsik 1974; Givón 1976): lower licensing heads only have ϕ features if higher heads do so too. If a language has uϕ on Appl (multiple OM), it has uϕ on v (object marking), and if a language has uϕ on v, it has uϕ on T (subject marking).[14] However, the analysis does not account for symmetry with a single object marker, nor for the Sambaa data. Symmetric single object marking is discussed in Section 7, and the exceptional parameter setting of Sambaa (research question 2, page 207) is addressed in the following section.

6 Multiple object markers as additional higher ϕ probes

Sambaa object marking came out as exceptional in allowing multiple object markers but being asymmetric. The hierarchical strictness in Sambaa multiple object marking suggests that the uϕ features responsible for object marking are located *above* the highest object, with the Minimal Link Condition determining that the highest object be agreed with first. The difference between Sambaa and asymmetric object marking in languages with only one object marker would thus be the presence of an extra set of ϕ features on v (Adams 2010). If Sambaa indeed has

[14] The implicational relation does not automatically follow from the analysis presented here, but see van der Wal (to appear) for a parameter hierarchy from which the implicational relation does fall out; reminiscent of the Final over Final Condition (Sheehan et al. 2017).

two ϕ probes on v, then the first Probe finds the closest Goal (Benefactive) and agrees with it, after which the second Probe finds the lower Goal (Theme), forming a second Agree relation for ϕ features. Little v thus has two sets of valued ϕ features that can be spelled out as object markers (see Figure 7).

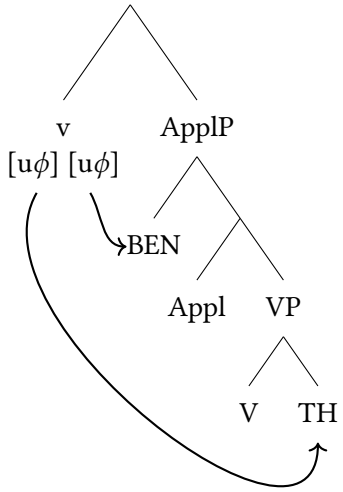

Figure 7: Two ϕ probes on v in Sambaa

However, remember that the current model assumes that spell-out of the object marker is dependent on the featural make-up of the Goal relative to the Probe (Roberts 2010; Iorio 2014; van der Wal 2015): there is always an Agree relation, but only defective Goals will spell out as an object marker. This means that the two sets of ϕ features could be spelled out independently of each other, which is the case in symmetric multiple object marking languages, but not asymmetric Sambaa. This could be repaired by specifying a phonological condition that the second Probe can only be spelled out if the first is. This, however, is an ad-hoc solution that should only be adopted as a last resort.

The question is thus why the second Probe can only reach the Theme if the first Probe agrees with a defective Goal. I propose that this follows from the nature of defective Goals: once the first Probe has agreed with a defective Recipient, the relation cannot be distinguished from a chain, and the bottom of a chain (i.e. a trace) is invisible for further agreement (Chomsky 2000; 2001). This allows the second Probe to "skip" the invisible higher Benefactive argument and agree with the Theme, as represented in Figure 8a.[15]

[15]Remember that the ϕ probes in this analysis are underspecified and therefore do not differ from each other.

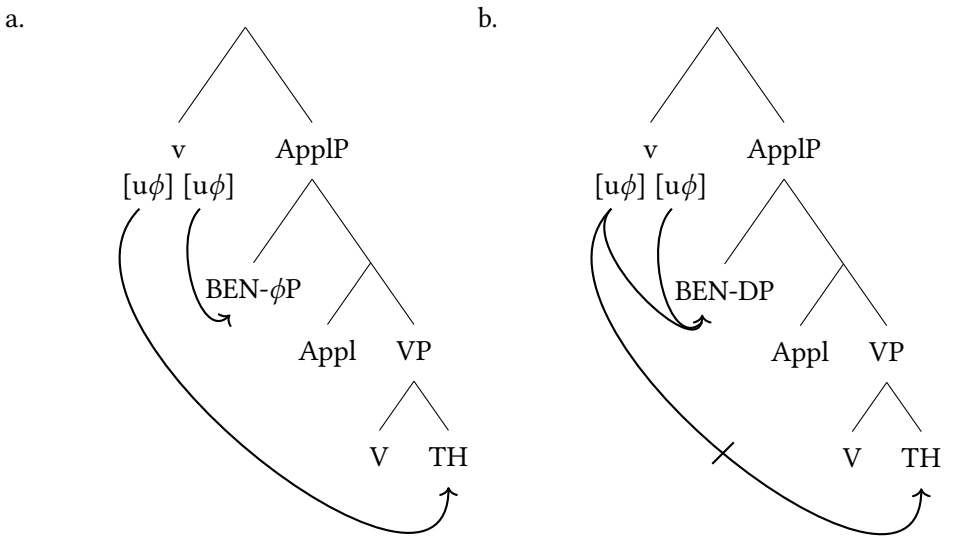

Figure 8: Agree with a defective (a) and non-defective (b) Benefactive goal

If, on the other hand, the first Probe agrees with a non-defective DP Benefactive, the DP will still be visible to the second Probe. The second Probe will thus also agree with the higher Recipient and cannot reach the lower Theme, as in Figure 8b. The (double set of the same) ϕ features on v will not be spelled out, because the Goal is not defective, resulting in no object marking.

We may now wonder how the Theme is licensed if v does not agree with it in Figure 8b, and also how the second ϕ probe cannot reach past the Benefactive if that is already licensed by the first Probe. The question behind both points is whether the extra uϕ set is also a Case licenser.[16] I argue that it is not, and that instead Appl is still a licenser. This is the same as in the case of symmetric languages, and asymmetric languages with only one object marker. That is, v and Appl are always licensers if they introduce an argument (contra Woolford 1995), and the distribution of ϕ probes is logically independent of this. We have already seen this in the derivation for languages with only one object marker, where Appl licenses an object but only v has a ϕ probe.[17] This is represented in Figure 9, where dashed lines indicate licensing and the solid line is ϕ agreement.

[16] Assuming that Bantu languages need Case licensing, which is debated; see Diercks (2012), van der Wal (2015) and Sheehan & van der Wal (2018). However, the debatable status mostly concerns nominative Case.

[17] Similarly, Bhatt (2005) proposes for Hindi that both T and v are Case assigners, but only T has a ϕ probe.

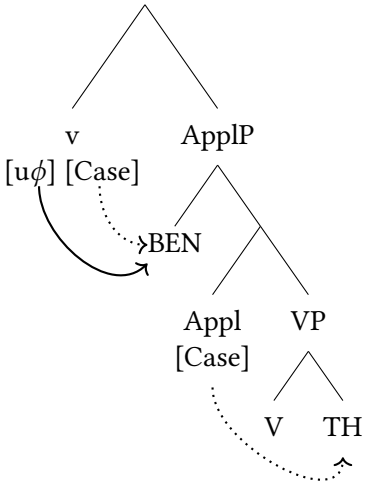

Figure 9: ϕ agreement independent of Case licensing

Recent theoretical proposals have highlighted mismatches between (morphological) case and ϕ agreement and shown them to be separate, as Bhatt (2005), Baker (2008a,b; 2012; 2015), Bobaljik (2008), Bárány (2015), Stegovec (2019) argue (contra Chomsky 2000; 2001 who views case and agreement as two sides of the same coin). Therefore, case and agreement "cannot be two realizations of the same abstract Agree relation" (Baker 2012: 272 on Amharic). Baker takes this to be an argument in favour of morphological case not being determined by an Agree relation at all (instead following from a Dependent Case algorithm, Marantz 1991; Baker 2015), but it also points towards the independence of abstract Case and ϕ features (Keine 2010; Bárány 2015). If uϕ and Case are logically separate, then we can understand the unique situation of Sambaa. In all the other combinations of object marking parameters in Table 3 (page 205), Case and uϕ operate together, and Case can be present by itself, but Sambaa (asymmetric multiple OM) presents the exceptional situation of a ϕ probe independent of a Case feature, as shown in Table 4.[18]

The derivation in Sambaa thus proceeds as follows. First, Appl licenses the Theme (as in other languages). Second, assuming that ϕ and Case licensing go together as much as possible (as discussed below with regard to acquisition), then the first ϕ probe on v licenses Case and agrees for ϕ features, whereas the second Probe only concerns uϕ features. It would thus be expected that this second Probe is not restricted to arguments that are "active" for [uCase] (see Chomsky's 2001

[18]The symmetric single object marking type is discussed in Section 7.

Table 4: Featural distribution in 4 types of languages for symmetry and number of object markers

symmetry	multiple	single
asymmetric	v: Case-ϕ $\boxed{+\ \phi}$ Appl: Case	v: Case-ϕ Appl: Case
symmetric	v: Case-ϕ Appl: Case-ϕ	v: Case-ϕ Appl: Case

"Activity Condition"), but can agree with any set of ϕ features. This is why the second ϕ probe will still find the non-defective Benefactive DP, as in Figure 8b, even if the Goal is already licensed by the first [Case+ϕ] Agree relation and no longer active for [uCase]. The only exception, as explained earlier, is when the Benefactive is a defective Goal (a ϕP). In this case, the Benefactive is not visible for the second ϕ probe, which can thus agree with the Theme as in Figure 8a. The result is two differently valued sets of ϕ features on v, which spell out as multiple object marking if the Theme is defective too.

With this analysis of a second ϕ probe on v, the second and third research questions can now be answered: Sambaa has multiple object marking because it has multiple sets of uϕ features, and it is asymmetric because the second set of uϕ features is located not on Appl but on v. Case licensing is still taken care of by both v and Appl, as in all other languages. This split between Case licensing and uϕ features is rare, making Sambaa appear as an exception to the AWSOM correlation.

The rarity of the split between Case and ϕ can potentially be understood from the point of view of acquisition. In order to set parameters and to discover the uninterpretable features in their language, acquirers need a certain amount of clear form-meaning correlations (see a.o. Biberauer 2017a,b; Biberauer & Roberts 2017; Fasanella & Fortuny 2016). In Bantu languages, morphology forms a strong clue to deduce the underlying structure and features. The mismatch between observed ϕ agreement and Case licensing would thus appear to be suboptimal for easy acquisition, explaining the tendency for Case and ϕ agreement to go together. This line of reasoning makes testable predictions for acquisition (on which we have no data whatsoever), as well as relative diachronic instability (where a comparison between earlier sources such as Roehl 1911 and Riedel 2009 could have given a small amount of time-depth, but Roehl does not provide conclusive data). I leave this for further research.

7 Two ways of being symmetric?

A final question that arises if we look again at Table 3 from page 205 concerns the category of languages that are symmetric despite only allowing one object marker. Symmetry in these languages can theoretically be modeled in at least two ways. The first assumes that these languages work exactly like languages that have multiple object markers, but there is a PF condition preventing all but one set of ϕ features from being spelled out (cf. Adams 2010 for Zulu). The second proposes a flexible licensing by lower functional heads, allowing the one set of ϕ features on v to probe past the higher argument (Haddican & Holmberg 2012; 2015; van der Wal 2017a; Holmberg et al. 2019).

The first model is problematic for passives because an asymmetry appears, even in otherwise symmetric languages, when passivisation and object marking are combined (see Holmberg et al. 2019 and references therein). The sensitivity to animacy and topicality is another aspect that does not follow from a PF condition on multiple object markers (cf. Zeller 2012). The second model looks promising, also in deriving other typological properties of double object constructions.[19] A full discussion of the analysis goes beyond the scope and space-limit of the current paper (see the mentioned references for details), but the essence is that heads such as Appl (which has no uϕ) can license downwards (Theme, Figure 10a) or upwards (Benefactive, Figure 10b), depending on the relative animacy and topicality of the two objects (see also D'Alessandro 2020 [this volume] and Mursell 2020 [this volume]). This leaves the other argument, be that the Benefactive or the Theme, for licensing by and ϕ agreeing with v (in an active clause) or T (in a passive clause). The single set of uϕ features on v can thus agree with either argument, depending on which argument is first licensed by Appl.[20] This accounts for the symmetry found in single object marking languages (van der Wal 2017a).

This implies that languages can have two ways to show symmetric object marking: either an extra set of ϕ features on Appl (multiple object marking), or flexible licensing by Appl (single object marking). Note that the presence of an extra ϕ probe in the former type does not exclude the presence of flexible licensing, though: Appl may have a ϕ probe and also flexible licensing. In fact, this is essential in the derivation of symmetric passivisation, since the presence of extra ϕ probes explains how the Theme may be object-marked but not how it can become the subject of a passive. This too I have to leave for future research.

[19] Specifically, flexibility of licensing can account for an asymmetry in the passive of otherwise symmetrical languages (Holmberg et al. 2019), and in explaining the RANDOM correlation (the Relation between Asymmetry and Non-Doubling Object Marking, van der Wal 2017b).

[20] Note that uϕ on v in symmetrical single-OM languages combines with Case, which is why the argument licensed by Appl is not a Goal for v.

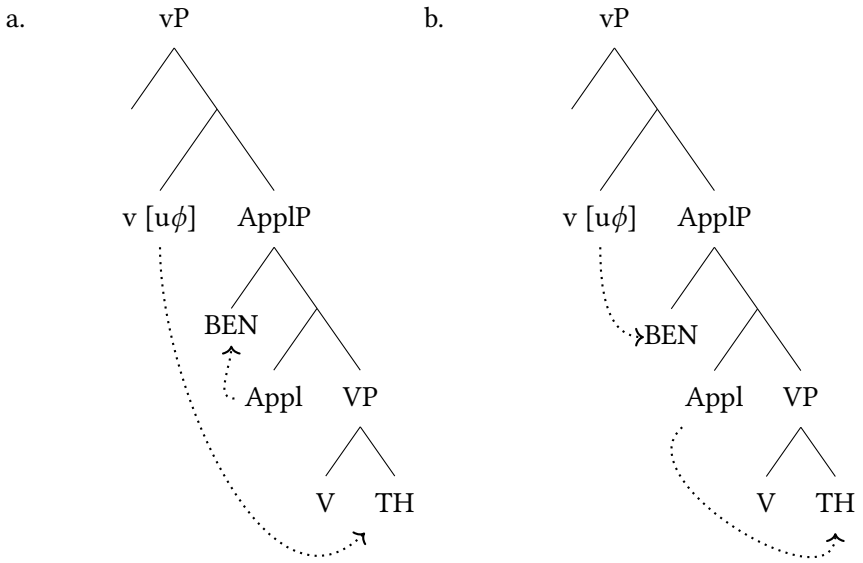

Figure 10: (a): v agrees with TH (and can object-mark it). (b): v agrees with BEN (and can object-mark it)

8 Conclusions and further research

Although there is a wealth of microvariation in Bantu object marking, this variation is not random and unconstrained. On the basis of data from more than 50 Bantu languages, the current paper shows that there is an almost-gap in the distribution of languages according to the number of object markers and double object symmetry: of the four logical combinations of parameter settings, three are common and one comes out as exceptional. This can be described as the AWSOM correlation, according to which asymmetry wants a single object marker. Both the AWSOM correlation and the exception of Sambaa can be understood in a model of syntax where the distribution of ϕ features over clausal heads is parameterised. Multiple object markers are indicative of additional sets of uϕ features. In symmetric languages, these extra ϕ probes are located on lower functional heads such as Appl, whereas in asymmetric Sambaa the additional ϕ probe is present on v.

This approach is in line with the Borer-Chomsky conjecture (BCC, Borer 1984; Chomsky 1995; Baker 2008a,b), which states that all parameters of variation are attributable to differences in the features of heads in the lexicon. This is an attractive Minimalist point of departure, as it allows us to keep basic syntactic operations the same across languages. Specifically for the current proposal: all

object marking involves an Agree relation, and Agree is kept constant, whether a language shows symmetry or asymmetry, single or multiple object markers (and doubling or non-doubling object marking).

Under the BCC, further variation in the subparts of ϕ features, specifically Person features, is expected to play an important role in restrictions on combinations of $1^{st}/2^{nd}$ person objects in double object constructions (see footnote 12), but also in the "1+" type of language. It is striking that these languages allow a second object marker when the first is a reflexive or 1^{st} person – that is, precisely in case the higher object can value all of the subfeatures [person [participant [speaker]]] (Béjar & Řezáč 2009). Further research will have to confirm whether 1+ object marking can be accounted for in a relativised probing account like Béjar & Řezáč (2009), where the Probe renews if it is successful for all subfeatures in the first search (a "phoenix probe").

Since there are about 500 Bantu languages and this paper covers only 10% of them, the research should of course be extended to further Bantu languages and languages beyond the Bantu family to see how the AWSOM correlation and the proposed model fare for a broader set of languages.

Abbreviations and symbols

Numbers refer to noun classes, or to persons when followed by SG or PL. High tones are marked by an acute accent, low tones are unmarked or marked by a grave accent.

APPL	applicative	PASS	passive
ASP	aspect	PFV	perfective
AUG	augment	POSS	possessive
BEN	Benefactive	PRES	present
CJ	conjoint verb form	PROG	progressive
CONN	connective	PST	past tense
DEM	demonstrative	R	Recipient
DJ	disjoint verb form	SM	subject marker
FS/FV	final suffix/final vowel	T	tense
OM	object marker	TH	Theme
OPT	optative		

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