

Chapter 2

Differential object marking in Chichewa

Laura J. Downing

Göteborgs universitet

In most Bantu languages, an object prefix can occur on the verb. In some Bantu languages, this object prefix has a purely anaphoric function, while in others it has an additional agreement function. Since Bresnan & Mchombo, Chichewa (Bantu N.31 Malawi) has been considered a textbook example of a language where the object marker is “always an incorporated pronoun and never a non-referential marker of grammatical agreement” (Bresnan & Mchombo 1987: 755). That is, in order for an overt nominal phrase (DP) to co-occur in the same sentence with an object prefix, the DP must be a dislocated Topic. Conversely, a dislocated object DP (a Topic) must be anaphorically bound to an object prefix. In this paper I present new Chichewa data showing that in modern colloquial Chichewa there is a human/non-human asymmetry in object marking. Human object DPs commonly co-occur with an object prefix, whether the object is a dislocated Topic or not, whereas non-human ones commonly do not co-occur with an object prefix, even when they are dislocated Topics. I conclude that Chichewa shows differential object marking (or object indexation), as humanness is a more important condition on the occurrence of object prefixes than word order. The implications of the Chichewa (and other Bantu) data for recent proposals like Creissels (2006), Dalrymple & Nikolaeva (2011) and Iemmolo (2013; 2014) about the diachronic development of DOM agreement systems from anaphoric Topic marking systems are discussed, and an alternative constraints-based account is proposed.

1 Introduction

Object markers, commonly found in Bantu languages, are part of a complex string of pre-stem verbal inflectional prefixes, which include an obligatory subject prefix and tense-aspect-mood (TAM) prefixes. Object markers, when they occur, are positioned immediately before the verb stem, as illustrated in the Swahili example below.¹ (The object marker is bolded):

¹There are 500+ Bantu languages spoken over a huge geographic area, so, not surprisingly, this generalization about the position of object markers does not hold for all Bantu languages. Rather, it holds for the languages spoken in the eastern and southern parts of the Bantu region. This paper concentrates on languages from this area. See Marten & Kula (2012) and Beaudoin-Lietz et al. (2004) for more discussion of the variation in the position of object markers.



- (1) a. *Structure of the Bantu verb* (Meeussen 1967; Nurse 2003)
Subject - TenseAspectMood - **(Object)** - [_{Stem}Root (-Extensions)-Final Vowel]
- b. Swahili (Bantu; Riedel 2009: 4)
A-li-wa-_{Stem}on-a.
CL1SBJ-PST-CL2OBJ-see-FV
'S/he (class 1) saw them (class 2).'

The form of both subject and object markers is determined by the concord class of the noun they refer to. Each noun concord class is traditionally assigned a number. In the interlinear glosses in (1b), for example, CL1SBJ labels a subject marker from class 1; CL2OBJ labels an object marker from class 2.

As we can see in (1b), object markers can function like incorporated pronouns, performing the function of independent pronominal words in languages like English. Work like Givón (1976), Bresnan & Mchombo (1987), and Creissels (2006) indeed agrees that Bantu object markers have most plausibly developed historically from the grammaticalization of independent pronouns. Creissels (2006: 44–45) proposes that there are three stages in the further evolution of the function of object markers cross-linguistically:

- (2) **Stage II:** the object marker has a *purely anaphoric* function, as it cannot occur within the limits of the clause [TP/IP] containing an overt co-referential object DP.
- Stage II:** the object marker acquires an additional *agreement* function, as it obligatorily occurs, even if the clause contains a co-referential object DP. It retains an anaphoric function as it can also represent, on its own, a co-referential DP that is not contained within the limits of the clause.
- Stage III:** at this stage, the pronominal marker has a *purely agreement* function, as it cannot represent on its own a co-referential DP not contained within the limits of the clause.

Since Bresnan & Mchombo (1987), Chichewa (Bantu N31 Malawi) has been considered a textbook example of a Stage I language. The object marker is “always an incorporated pronoun [anaphor] and never a non-referential marker of grammatical agreement” (Bresnan & Mchombo 1987: 755). In order for an overt DP to co-occur in the same sentence with an object marker, the DP must be a dislocated Topic in their analysis. Conversely, a dislocated object DP (a Topic) must be anaphorically bound to an object marker (Bresnan & Mchombo 1987: 749).

In this paper I present new Chichewa data showing that, in fact, modern colloquial Chichewa is a Stage II language, with a human/non-human asymmetry in object marking: human object DPs commonly co-occur with object marking, whereas non-human ones commonly do not. I conclude that Chichewa shows differential object marking (or object indexation), as humanness is a more important condition on the occurrence of object markers than word order.

The paper is organized as follows. First, in §2, I review Bresnan & Mchombo's (1987) diagnostics for purely anaphoric status of object markers. In §3, I show that Chichewa fails all of these diagnostics. Finally, in §4, I discuss the implications of the Chichewa (and other Bantu) data for recent proposals like Creissels (2006), Dalrymple & Nikolaeva (2011) and Iemmolo (2013; 2014) about the diachronic development of DOM agreement systems and develop a constraints-based account.

2 Diagnostics for the anaphoric vs. grammatical agreement function of object markers

2.1 Object marker is purely anaphoric

Bresnan & Mchombo (1987) propose the following diagnostics that determine whether object markers are purely anaphors, referring to Topics and other DPs (nominal phrases) outside the clause in a particular language. (This corresponds to Creissels's 2006 Stage I):

- (3) Diagnostics for anaphoric use of object markers:
 - a. Word order: the occurrence of the object marker correlates with non-canonical word order; more precisely, only dislocated DPs are resumed with object markers and dislocated DPs must be resumed with object markers.
 - b. Focused elements: cannot be referred to with an object marker.
 - c. Prosody: an object DP resumed by an object marker is considered anaphoric if the object is phrased separately from a preceding object-marked verb.

If the object marker meets these tests, then the object marker is anaphoric. Any overt object DP which co-occurs with an object marker must be dislocated. Any dislocated object DP must be licensed with (anaphorically bound to) an object marker. Object markers have been argued to have a primarily anaphoric function, using these sorts of criteria, in Bantu languages like: Haya (Duranti & Byarushengo 1977), Northern Sotho (Zerbian 2006), Tswana (Creissels 2006), Zulu (Buell 2005; Cheng & Downing 2009; Schadeberg 1995; van der Spuy 1993; Zeller 2012) and Swati (Marten & Kula 2012). Indeed, Creissels's (2006) claims that Stage I object markers are very common in African languages generally.²

The diagnostics for purely anaphoric use of the object marker are illustrated with data from Zulu (Cheng & Downing 2009). Canonical word order in Zulu is: S V IO DO Oblique. As shown by the Zulu data in (4) and (5), both left and right dislocations of object DPs are easily elicited by asking content questions on a verb complement. Both the content question word or particle and the answer to the content question (which have inherent focus) must occur immediately after the verb. A non-focused verb complement must be displaced from its canonical postverbal position either to preverbal position or to a position following the element in immediately after the verb position. Note that we

²See also Riedel's (2009), Marten & Kula's (2012) and van der Wal's (2015) recent cross-Bantu surveys.

find an obligatory object marker referring to an object or direct object which has been displaced from its canonical position.³

- (4) Zulu left dislocations (Bantu; author's elicitation notes)

Wh-questions

Q (Ámá-bhayisékíl' *u-wá-níkée* *ó-baani*)?
 CL6-bicycle 2SGSBJ-CL6OBJ-give.PRF CL2-who

'Whom did you give bicycles to?'

A (Ámá-bhayisékiili) (*si-wá-níkée* *ábá-ntwaana*).
 CL6-bicycle 1PLSBJ-CL6OBJ-give.PRF CL2-child

'We gave bicycles to the children.'

- (5) Zulu right dislocations (Bantu; author's elicitation notes)

Wh-questions

Q ((Ízi-vakáashi) (*zi-yí-thengelé-ni*) *ími-ndeni* *yáazo*) ?
 CL8-visitors CL8SBJ-CL4OBJ-buy.for.PRF-what CL4-families CL4.their

'What did the visitors buy for their families?'

A ((Ízi-vakáshí *zi-yí-thengelé* *ízi-nguubo*) *ími-ndeni*
 CL8-visitors CL8SBJ-CL4OBJ-buy.for.PRF CL10-clothes CL4-families
yáazo).

CL4.their

'The visitors bought clothing for their families.'

Evidence that the objects resumed with an object marker (underlined) in (5) are dislocated is that, first, they are set off prosodically from the rest of the sentence. As Cheng & Downing (2009) show, the main evidence for the prosodic phrasing (indicated by parentheses) is lengthening of the phrase penult vowel. (Vowel length is not contrastive in Zulu.) Furthermore, IO DO word order is strictly respected in broad focus sentences. The DO IO order in (5) is only felicitous if the DO is in focus and IO is out of focus. As Cheng & Downing (2009) and Cheng & Downing (2012) argue, non-focused material cannot occur within the vP in Durban Zulu. While dislocated objects must be resumed with an object marker, objects in focus (and therefore in IAV position) cannot be resumed with an object marker. This is shown by the infelicitous sentence in (6a), where the object marker *zi-* refers to 'visitors', the word in focus, rather than to 'chicken', old information repeated from the question (and dislocated out of the vP):

³The accent marks on vowels in the data indicate high tone; long vowels are indicated by doubling the vowel. In the morpheme glosses, numbers indicate noun concord class, following the standard Bantu system adopted in work like Mchombo (2004). Dislocated elements are underlined, and object markers are bolded.

(6) Zulu (Bantu; author's elicitation notes)

- a. Q ((*Ũ-siipho*) (*ú-yí-phékéla* *BAANI*) (*ín-kuukhu*) ?
 CL1-Sipho CL1SBJ-CL9OBJ-cook.for CL1.who CL9-chicken
 'Who is Sipho cooking the chicken for?')
- b. A ((*Ũ-siph'* (*ú-yí-phékél'* *ÍZÍ-VAKÁASH'*) (*ín-kuukhu*) .
 CL1-Sipho CL1SBJ-CL9OBJ-cook.for CL8-visitor CL9-chicken
 'Sipho is cooking the chicken for the visitors.'
- a. #*Ũ-siph'* (*ú-zí-phékél'* *ÍZÍ-VAKÁASH'* (*ín-kuukhu*).
 CL1-Sipho CL1SBJ-CL8OBJ-cook.for CL8-visitor CL9-chicken

(Object marking would only be acceptable with the word order in (6a) as the answer to a question like, "What did Sipho do with the chicken for the visitors?" where 'visitors' is topical, given information.) The data set in (6) demonstrates especially clearly that in Zulu we find the correlation between object marker and topical (or dislocated, out of focus) status of the co-referential object that Bresnan & Mchombo (1987) and Creissels (2006) have proposed characterize the object marker in languages where it has a purely anaphoric function. (This corresponds to Creissels 2006's Stage I.)⁴

2.2 Object marker is also a grammatical agreement marker

As far as I know, in all Bantu languages, the object marker can have an anaphoric (pronominal) function, resuming objects that occur earlier in the discourse as well as (at least some) topical, dislocated objects. The object marker also has a grammatical agreement-like function in some Bantu languages: it can co-occur with a co-referential object within the same TP/IP (i.e., roughly, a clause).⁵ Languages where this has been demonstrated include Bemba (Marten & Kula 2012), Swahili, Sambia, Chaga (Riedel 2009: 59), Chimwiini (Kisseberth & Abasheikh 1977) and Manyika Shona (Bax & Diercks 2012). For example, in Swahili, as we saw in (1b) object markers can serve an anaphoric function, resuming objects mentioned earlier in the discourse. They also serve a grammatical agreement function: object marking is obligatory with overt human objects – (7a) – and common with definite non-human objects – (7c):⁶

⁴Though Zeller (2012) provides some problematic examples, showing humanness plays a role in object marking in Zulu for some speakers in some grammatical contexts, the consensus in the Zulu literature is that object marking correlates with dislocation of the object DP. See van der Spuy (1993); Cheng & Downing (2009); Schadeberg (1995), and Buell (2005) for discussion.

⁵See Morimoto's (2002), Riedel's (2009), Marten & Kula's (2012) and van der Wal's (2015) recent surveys of the variation in the function and distribution of pre-verb stem object markers, illustrating a range of possibilities from Creissels (2006) Stage I to Stage II. (As Creissels 2006 notes, Stage III is not common in the languages of the world.)

⁶Object marking might not be as obligatory in colloquial Swahili as traditionally described, see Seidl & Dimitriadis (1997) for discussion.

- (7) Swahili (Bantu; Riedel 2009: 42, 46)
- a. *Ni-li-mw-ona* *mwanawe*.
1SGSBY-PST-CL1OBJ-see CL1.child.POSS.3SG
'I saw his child.'
- b. **Ni-li-ona mwanawe*
- c. *Ni-li-zi-ona* *picha* *hizo*.
1SGSBY-PST-CL1OBJ-see CL10.picture CL10.those
'I saw those pictures.'

Riedel (2009) affirms that the object marker in these examples occurs even though the overt object is in its base position, and no prosodic break separates the object-marked verb from the overt object. Bantu languages with grammatical agreement-like object marking show a great deal of variation as to whether the markers are obligatory or optional. The unifying generalization is that agreement-like object markers co-occur with human or animate objects or with definite objects. (See, e.g. Duranti 1979; Bentley 1994; Morimoto 2002; Riedel 2009; Marten & Kula 2012; van der Wal 2015). That is, agreement-like marking of objects in Bantu languages is conditioned by the topicality hierarchies in (8):⁷

- (8) Topicality hierarchies (Hyman & Duranti 1982: 224)
- a. Benefactive > Recipient > Patient > Instrument
- b. 1st > 2nd > 3rd human > 3rd animal > 3rd inanimate
- c. definite > indefinite

These hierarchies have also been shown to play a central role in defining other object properties in Bantu languages (Duranti 1979; Hyman & Hawkinson 1974; Hyman & Duranti 1982), and in conditioning differential object marking in a number of typologically diverse languages. (See e.g. Comrie 1981; 1989; Aissen 2003; Iemmolo 2013; 2014). Creisels (2006: 48–49) qualifies Bantu languages like Swahili as in transition from Stage I to Stage II because agreement object markers are not entirely obligatory. This is because only some types of objects – human and definite – show agreement-like object marking in Swahili. He notes that pure Stage II object marking systems are not common in African languages, but provides no explanation for why this might be so. I take up the discussion of how languages might change from anaphoric object marking to a system of differential grammatical agreement object marking in §4. First, I review the distribution of object marking in modern colloquial Chichewa.

⁷See Witzlack-Makarevich & Seržant (2018 [this volume]) for a detailed overview of the role of different versions of the hierarchies in (8) in accounting for DOM. While the term *topicality hierarchy* is well-established in the literature, a number of other terms are also in current use, as Witzlack-Makarevich & Seržant (2018 [this volume]) make clear.

3 The function of object markers in Chichewa: anaphoric or grammatical agreement?

As noted above, since Bresnan & Mchombo (1987), Chichewa is considered to be a prototypical Stage I language: the object marker is always an anaphor and signals that the cooccurring object does not occur within the same VP as the object marker. Furthermore, dislocated objects must be resumed by an object marker. Recall that these claims about the pronominal status of the object marker are based on the diagnostics in (3). In this section, I present new Chichewa data, recently elicited in Malawi.⁸ As we will see, object marking in modern colloquial Chichewa fails all three of Bresnan & Mchombo's (1987) diagnostics for anaphoric status. Instead, it shows differential object marking properties. I take up Bresnan & Mchombo's (1987) diagnostics one by one below.

3.1 Changes in word order and object marking

In Chichewa, as in most Bantu languages, the basic word order is: (Subject) Verb (Object1) (Object2) (Oblique). (See, e.g. Heine 1976; Bearth 2003; Downing & Hyman 2016). Chichewa allows multiple objects, with a non-theme (e.g. benefactive) object generally preceding the theme object. Adverbials and other oblique arguments are found at the periphery of the main clause. According to Mchombo (2004), nothing can separate an object nominal from the preceding verb, unless the verb is object-marked.

In my corpus one frequently finds examples where a co-referential object marker on the verb resumes a dislocated object DP. (Parentheses continue to indicate prosodic phrasing.)⁹ This data is consistent with Bresnan & Mchombo's (1987) diagnostics for the purely anaphoric status of object marking given in (3):

(9) Left dislocations

Chichewa (Bantu; author's elicitation notes)

- a. ((*Chi-máangá*) (*á-chí-lima*) *nyengo*
 CL7-maize CL1SBJ.PST-CL7OBJ-cultivate CL9.season
í-kú-bwélaa-yi ((*ndipó fóodya*)
 CL9-PROG-COME-CL9.REL and CL3.tobacco
(a-dzá-mú-lima) *nyengo* *ínáayo*).
 CL1SBJ-FUT-CL3OBJ-cultivate CL9.season CL9.next

'Maize she cultivated this season, and tobacco she will cultivate next season.'

⁸The data was collected using an elicitation questionnaire for an investigation that had as its original aim to describe the prosody of dislocated nominals. However, once I noticed that the use of object markers did not match Bresnan & Mchombo's (1987) description, I re-elicited data from Bresnan & Mchombo (1987) to test their diagnostics for the distribution of object markers on this set of speakers. The elicitation interviews were conducted in Malawi in 2011 and 2013, primarily with four native speakers of Chichewa aged between 22 and 40 years old. The resulting corpus investigating the distribution of object markers consists of some 50–75 sentences per speaker. Pascal Kishindo, Professor of Chichewa syntax at Chancellor College and a native speaker of Chichewa, kindly checked the corpus and has confirmed that all the examples cited in this section are grammatical.

⁹See Cheng & Downing (2016) for justification of the prosodic phrasing indicated in these examples.

- b. (*Mwaná wódwálaa-yo*) (*á-kú-mu-téngéla ku chipataalá*)
 CL1.girl CL1.sick-CL1DEM CL1SBJ-PROG-CL1OBJ-take.to LOC CL7.hospital
 (*ndi ndaáni*).
 COP who

‘That sick child, (the one) taking her to the hospital is who?’

(10) Right dislocations

Chichewa (Bantu; author’s elicitation notes)

- a. (((*Pa tébuuló*) (*wa-zí-ika*) *mtsíkaana*) *mbaale*).
 LOC CL5.table CL1SBJ.PST-CL1OBJ-put CL1.girl CL10.plate

‘On the table, [she] put them, the girl, plates.’

- b. Chichewa (Bantu; author’s elicitation notes)

((((*Udzuúdzú*) (*u-na-wá-lúmá kwámbúili*) *pa nyaánjá*)
 CL14.mosquito CL14SBJ-PST-CL2OBJ-bite much LOC CL9.lake
dzuuló) *a-soodzi*).

yesterday CL2-fisherman

‘The mosquitoes bit them a lot on the lake yesterday, fishermen.’

We find many examples, though, where the occurrence of the object marker does not correlate with dislocation of the co-referential DP. Human objects are often resumed by an object marker, even when they are in their base position, immediately following the verb. In (11), the same sentence is given with four different word orders. Note that no prosodic break separates the overt object from the verb in these examples, and there is no other evidence that the overt object is dislocated in any of the sentences:¹⁰

(11) Chichewa (Bantu; data re-elicited from Bresnan & Mchombo 1987)

- a. (*Njúuchi*) (*zi-na-lúmá a-leenje*).
 CL10.bee CL10SBJ-PST-bite CL2-hunter
- b. (*Njúuchi*) (*zi-na-wá-lúma a-leenje*).
 CL10.bee CL10SBJ-PST-CL2OBJ-bite CL2-hunter
- c. ((*Zi-na-lúmá a-leenje*) *njúuchi*).
 CL10SBJ-PST-bite CL2-hunter CL10.bee
- d. ((*Zi-na-wá-lúma a-leenje*) *njúuchi*).
 CL10SBJ-PST-CL2OBJ-bite CL2-hunter CL10.bee

‘The bees bit the hunters.’

¹⁰I am not the first to observe that object markers can co-occur with in situ (human) objects in Chichewa. Indeed, Bresnan & Mchombo (1987) mention this possibility in a footnote. Bentley (1994) and Henderson (2006) also provide a few examples. As far I know, this paper is, though, the first attempt to systematically document the role of humanness in conditioning object marking in Chichewa.

The point they illustrate is that it is acceptable for the object marker *wa-* to co-occur with the object it refers to, ‘hunters’. Both the sentences containing *wa-* – (11b) and (11d) – and the ones omitting it – (11a) and (11c) – are judged grammatical by all the speakers I have asked, even though, according to Bresnan & Mchombo (1987), the versions with the object marker should not be acceptable. More examples of the use of object markers with in situ objects are given below. (Note that in Chichewa, unlike in Zulu, objects in focus are not required to occur in immediately after the verb position):

- (12) Chichewa (Bantu; author’s elicitation notes)

(*M-zákee-yó*) (*a-na-mú-pátsá* *Máliya* *chóováala*).
 CL1-friend-CL1DEM CL1SBJ-PST-CL1OBJ-give CL1.Mary CL7.dress
 ‘Her friend gave Mary a dress.’

- (13) Chichewa (Bantu; Downing & Mtenje 2011: 84, 91)

a. (*Ndi zóováala*) (*zi-méné a-lendó á-ná-mu-gulíla*
 COP CL8.clothes CL8-REL CL2-visitor CL2SBJ-PST-CL1OBJ-buy.for
m-phunzitsii-zo).
 CL1-teacher-CL8.REL

‘It is clothes that the visitors bought for the teacher.’

b. ((*Ti-na-kúmána nd’ áá-méné á-ná-mu-óná Báanda*)
 we-PST1-meet with CL2-REL CL2SBJ-PST-CL1OBJ-see CL1.Banda
dzuulo).
 yesterday

‘We met the ones who saw Banda yesterday.’

Human objects are commonly resumed with an object marker whether they precede or follow a content question word like *chiyáani* ‘what’; word order has no effect on the occurrence of object marking:

- (14) Chichewa (Bantu; author’s elicitation notes)

a. ((*Mu-ku-wá-phikila chiyáani*) *aáná*)?
 you-PROG-CL2OBJ-cook.for what CL2.children

b. ((*Mu-ku-wá-phikila aáná*) *chiyáani*)?
 you-PROG-CL2OBJ-cook.for CL2.children what

‘What are you cooking for the children?’

Another problem for the anaphoric status of object markers posed by this data is that non-human objects are not systematically resumed with an object marker. This is true even in contexts where they meet diagnostics for dislocation, such as preverbal position:

(15) *Preverbal objects*

Chichewa (Bantu; author's elicitation notes)

- a. ((*U-nga-kumbukila kúti búkuu-li a-ná-gulá-di ku*
 you-can-remember that CL5.book-CL5.this CL1SBJ-PST-buy-EMPH LOC
Blántaayá)?

Blantyre

'Can you remember whether she bought this book in Blantyre?'

- b. (*Chi-mánga á-líma ch-aka ch-iinó*) (*ndipó*
 CL7-maize CL1SBJ.PST-cultivate CL7-season CL7.this and
fódyá a-dzá-líma ch-aka chá máawa).
 CL5.tobacco CL1SBJ-FUT-cultivate CL7-season CL7.of next

'Maize, she will cultivate this season, and tobacco she will cultivate next season.' (cf. (9a))

- c. (*Kodí makáala*) (*u-náa-gula kuuti*)?
 Q CL6.charcoal you-PST-buy where

'Where did you buy charcoal?'

Non-human objects are also not necessarily resumed with an object marker when they follow a postverbal temporal adjunct. This is another position where they are clearly dislocated, since objects otherwise cannot be separated from the verb by an adjunct in Chichewa (Mchombo 2004):¹¹

(16) *Postverbal, post adjunct object*

Chichewa (Bantu; author's elicitation notes)

- a. *Context: 'When will s/he write a to the school?'*

((*A-dzá-lémba máawá káláta yópítá ku sukúulu*).
 CL1SBJ-FUT-write tomorrow CL9.letter CL9.of.INF.go LOC CL5.school

'S/he will write a letter to the school tomorrow.'

- b. *Context: Can you also play the drums?'*

(*Íinde*) (*ndí-ma-yimba BWINO ng'ooma*).
 yes I-HAB-play well CL10.drum

'Yes, indeed, I play the drums well.'

In some cases, a consultant would even pronounce the verb with and without the object marker in successive repetitions of the same sentence:

(17) Chichewa (Bantu; author's elicitation notes)

- a. *Context: Where did you buy the charcoal?'*

((*Ta-gula KU MSIIKÁ makáala*).
 we.PST-buy LOC CL3.market CL6.charcoal

¹¹The attentive reader will have noticed that there are a number of different past tenses, all labeled PST. I have not labeled them more specifically, as choice of tense does not condition object marking.

- b. ((*Ta-wá-gula* *KU* *MSIIKÁ*) *makáala*).
 we.PST-CL6OBJ-buy LOC CL3.market CL6.charcoal
 ‘We bought the charcoal at the market.’

Following a content question word (or other word) in immediately after the verb position (indicated with capital letters), an object marker is again not obligatory for a non-human object:

- (18) Chichewa (Bantu; author’s elicitation notes)
- a. (((*Kodí azi-bambo a-na-nyámúla* *BWÁANJI*) *makáala*) *ku*
 Q CL2-man CL2.SBJ.PST-carry how CL6.charcoal LOC
msiika)?
 CL3.market
 ‘How did the men carry the charcoal to market?’
- b. (((*Kodí m-tsikana a-naká-chápá* *KUUTI*) *zóovála zá*
 Q CL1-girl CL1SBJ-PST-wash where CL8.clothes CL8.of
á-máy’ aáké)?
 CL2-mother CL2.her
 ‘Where did the girl wash her mother’s clothes on Sunday?’

According to my language consultants, there is no difference in interpretation, whether the object marker is present or not. This overabundance of human object marking compared to non-human is also found in relative clauses. As studies of Chichewa relative clauses like Downing & Mtenje (2011), Henderson (2006), and Mchombo (2004) show, human indirect object heads are obligatorily resumed with object marking on the relative verb (19a); human direct object heads are commonly resumed (19b); while non-human direct object heads are not resumed (19c). (The facts regarding non-human indirect object heads need further study.)

- (19) Chichewa (Bantu; Downing 2010, Downing & Mtenje 2011: 76, 78. The RC is underlined.)

Human head of RC – object marking

- a. ((*A-lendó a-méné á-ná-wa-bweretsérá* *m-pháatso*)
 CL2-visitor CL2-REL CL2SBJ-PST-CL2OBJ-bring.for CL10-gift
a-koondwa).
 CL2SBJ-be.happy
 ‘The visitors who they brought the gifts for are happy.’
- b. ((*A-lendó a-méné Bándá á-ná-wá-óná* *ku sukúulu*)
 CL2-visitor CL2-REL CL1.Banda CL1SBJ-PST-CL2OBJ-see LOC CL5.school
a-pítá).
 CL2SBJ-go
 ‘The visitors who Banda saw at the school have gone.’
Non-human head of RC – no object marking

- c. ((*M-waná wá súkúlú a-ná-lémba káláta i-méné*
 CL1-child CL1.of school CL1SBJ-PST-write CL9.letter CL9-REL
m-phunzitsi á-ná-welénga) *kwá a-nyúuzi*).
 CL1-teacher CL1SBJ-PST-read for CL2-newspaper
 ‘A student wrote the letter which the teacher read for the newspaper.’

3.2 Object markers and focus

As Bresnan & Mchombo (1987) argue, if the object marker in Chichewa were a Stage I, purely anaphoric agreement marker, it should never be co-referential with an element in focus. However, we find object marking for human words in focus: e.g. content question words and the answers to content questions, as shown by the data below:

- (20) Chichewa (Bantu; author’s elicitation notes)
- a. (*Kodí*) ((*u-na-mú-óná NDAÁNI*) *ku tchálitchi m’máawá*)?
 Q 2SGSBJ-PST-CL1OBJ-see CL1.who LOC CL5.church LOC.morning
 ‘Who did you see at church in the morning?’
- b. Q (*Kodí á máyi a-ná-m-pátsá NDANÍ ma-lalaanje*)?
 Q CL2.mother CL2SBJ.PST-CL1OBJ-give CL1.who CL6-orange?
 ‘Who did mother give the oranges to?’
- c. A ((*Amáayi*) (*a-ná-m-pátsá NZÁAWO*) *ma-lalaanje*).
 CL2.mother CL2SBJ.PST-CL1OBJ-give CL1.POSS.friend CL6-orange
 ‘Mother gave her friend the oranges.’

Note in the following example that the dislocated non-human object *kalata-yo* is not resumed with an object marker, while the in situ, focused human object *Prisca* is:

- (21) Chichewa (Bantu; author’s elicitation notes)
Context: ‘Who did the teacher write the letter to?’
 (*Kálátaa-yó*) (*a-ná-mú-lémbera PRÍSCA*).
 CL9.letter-DEM CL1SBJ-PST-CL1OBJ-write.to CL1.Prisca
 ‘That letter, the teacher wrote to Prisca.’

The by now familiar human vs. non-human asymmetry in object marking also holds in this focus context. It is considered ungrammatical to use an object marker with a non-human content question word:

- (22) Chichewa (Bantu; author’s elicitation notes)
- a. (*Kodí mu-ku-fúná chiyáni*)?
 Q 2SGSBJ-PROG-want CL7.what
 ‘What do you want?’
- b. **Kodí mu-ku-chi-funa chiyani*?
 Q 2SGSBJ-PROG-CL7OBJ-want CL7.what

As we see, it is humanness, not a topic-focus distinction, which conditions the occurrence of the object marker.

3.3 Prosodic phrasing and the occurrence of the object marker

In Bresnan & Mchombo's (1987) analysis, prosody provides additional evidence that an object nominal that co-occurs with a co-referential object marker is dislocated. A prosodic break signals the syntactic constituent edge preceding a right-dislocated DP, which, in their account, is always resumed by an object marker. Work like Bresnan & Mchombo (1987) and Kanerva (1990) demonstrate that there are two kinds of systematic evidence for prosodic phrase breaks in Chichewa: significant lengthening of the phrase penult vowel and tonal alternations, such as final high tone retraction, high tone spread blocked, related to penult lengthening. Recall that the Zulu data in (4)–(6) illustrate the expected prosodic break preceding a (right-)dislocated object DP (underlined), which is obligatorily resumed by object marking on the verb. An example is repeated here for convenience; notice the phrase penult lengthening on the word preceding the right-dislocated object:

(23) Prosody and right dislocation in Zulu (Bantu; author's elicitation notes)

Q ((*Ízi-vakáashi*) (*zí-yí-thengelée-ni*) *ími-ndeni* *yáazo*)?
 CL8-visitors CL8SBJ-CL4OBJ-buy.for.PRF-what CL4-families CL4.their

'What did the visitors buy for their families?'

A ((*Ízi-vakáshí* *zí-yí-thengelé* *ízi-nguubo*) *ími-ndeni*
 CL8-visitors CL8SBJ-CL4OBJ-buy.for.PRF CL10-clothes CL4-families
yáazo
 CL4.their

'The visitors bought clothing for their families.'

However, the attentive reader will have noticed in the Chichewa data presented in the preceding sections that we do not always find a prosodic break before an object resumed by an object marker. We also do not always find an object marker resuming objects that are set off by a prosodic break. In (24a), for example, there is a break, but no object marker. Note the penult vowel lengthening and the continuation high tone on *ku msiiká*, the word before the dislocated object, confirming the prosodic phrase break in both (24a) and (24b):

(24) Prosody and right dislocation in Chichewa (Bantu; author's elicitation notes)

a. [Context: Where did you buy the charcoal?]

((*Ta-gula* *KU* *MSIIKÁ*) *ma-káala*).
 we.PST-buy LOC CL3.market CL6-charcoal

b. ((*Ta-wá-gula* *KU* *MSIIKÁ*) *ma-káala*).
 we.PST-CL6OBJ-buy LOC CL3.market CL6-charcoal

'We bought the charcoal at the market.'

To support these claims about the lack of correlation between prosody and object marking, three representative pitch tracks are given below. Figures 1 and 2 illustrate the prosody for the two sentences in (25). Note that there is no obvious prosodic break following the verb and human object DP, in its base position, whether the verb is object-marked (as in (25b) or not (as in (25a)). Compare the length of the penult vowel in *njúuchi*, which does precede a break with the penult vowel in the verb in the two examples:

- (25) a. without object marker
(Njúuchi) (zi-na-lúmá a-leenje).
 CL10.bee CL10SBJ-PST-bite CL2-hunter
- b. with object marker
(Njúuchi) (zi-na-wá-lúma a-leenje).
 CL10.bee CL10SBJ-PST-CL2OBJ-bite CL2-hunter
 ‘The bees bit the hunters.’

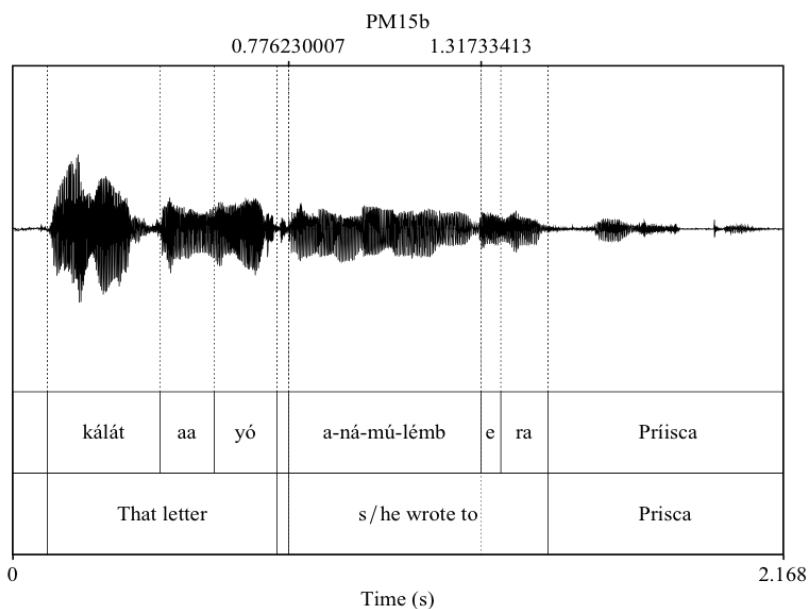


Figure 1: Example (25a), without object marker

And as shown by the pitch track in Figure 3, in the sentence in (26), there is a break setting off the overt object in preverbal position – it is clearly in a non-canonical position – yet we find no co-referential object marker on the verb. Instead, the in situ, focused object is resumed with an object marker. However, as we can see, the penult vowel of the verb is quite short, and there is no other evidence for a prosodic break following the verb. The postverbal object must be in its canonical, verb phrase-internal position. This

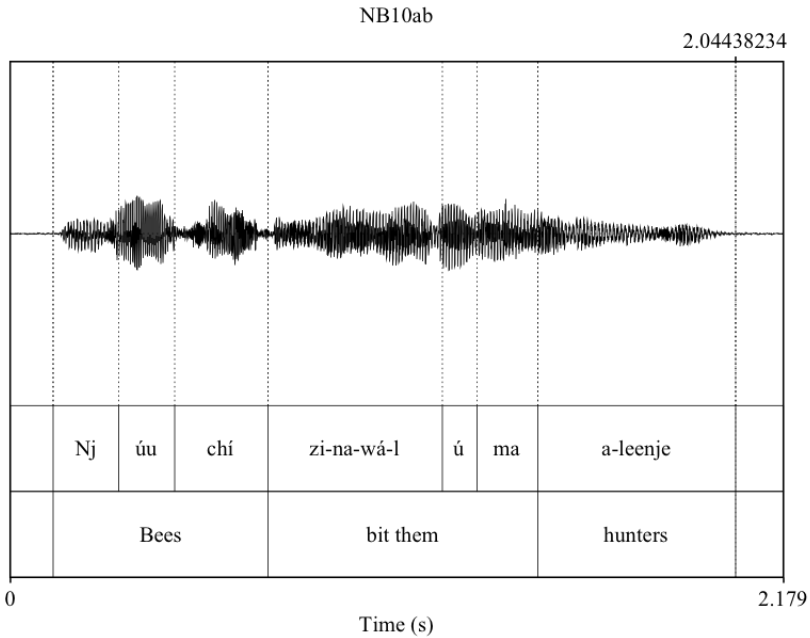


Figure 2: Example (25b), with object marker

is an especially striking piece of data confirming that humanness trumps other factors in conditioning object marking.

- (26) [Context: ‘Who did the teacher write the letter to?’]
(Kálátaa-yó) (a-ná-mú-lémbera PRÍISCA).
 CL9.letter-DEM CL1SBJ-PST-CL1OBJ-write.to CL1.Prisca
 ‘That letter, s/he wrote to Prisca.’

To sum up this section, object marking in modern colloquial Chichewa fails all three of Bresnan & Mchombo’s (1987) tests for purely anaphoric status. There is a striking tendency for object markers to co-occur with human objects, whatever their position. Object markers do not obligatorily occur, however, with non-human objects, whatever their position. Prosodic breaks do not systematically set off objects that are co-referential with object markers. Chichewa object marking is therefore not purely anaphoric. Rather, it is at Stage II in Creissels (2006)’ terms (see (2)), and, moreover, shows differential object marking properties.

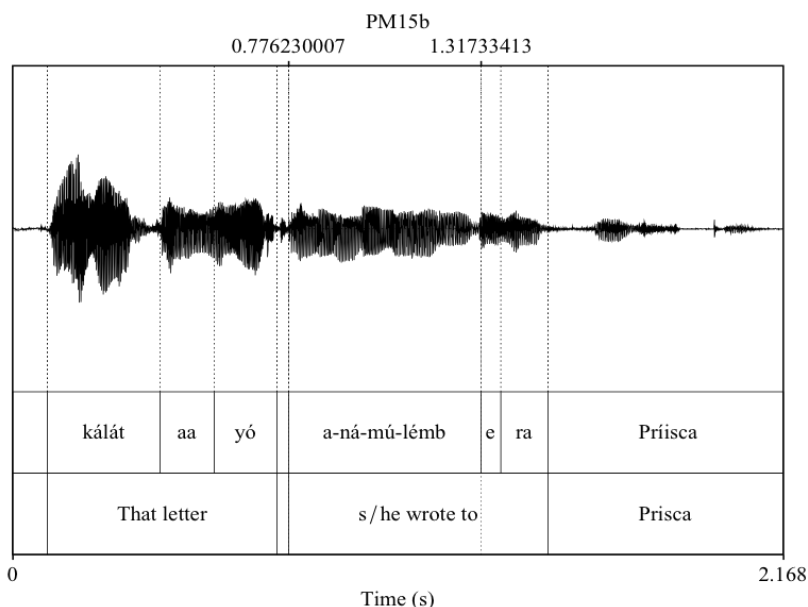


Figure 3: Example (26)

4 Implications for diachronic development

Although object marking in Chichewa no longer has a purely anaphoric function, the literature on the diachronic development of DOM systems from Givón (1976) onwards agrees that the agreement-like object marking shown in the modern colloquial Chichewa data most likely develops from the grammaticalization of anaphoric marking of topical objects. This section takes up two recent approaches to grammaticalization of object marking, Creissels (2006) and Dalrymple & Nikolaeva (2011). I show that neither straightforwardly accounts for the Chichewa data, and I propose an alternative, constraints-based approach.

4.1 Creissels (2006)

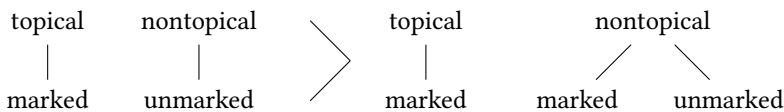
Creissels's (2006)' typology of the diachronic development of object marking given in (2) recognizes two end points – anaphor and agreement – in the diachronic development of object marking systems. These are his Stage I and Stage III, respectively. In Stage II, the intermediary stage, object marking retains anaphoric properties and also extends its functions to mark grammatical agreement. As the data shows, Chichewa does not fit into any of Creissels's (2006) three stages. The reason Chichewa poses a problem for this approach is the same one mentioned in discussing Swahili in §2.1, above. Pure Stage II Bantu languages are not found because this stage does not take into account the role of the topicality hierarchies (8) in conditioning the occurrence of the object marking with

a co-referential overt object. The stages are defined purely in terms of the morphosyntactic distribution of the object markers. This oversight in Creissels's (2006) typology is surprising. Work on Bantu and other languages – like Duranti (1979); Bentley (1994); Morimoto (2002); Aissen (2003), Riedel (2009), Marten & Kula (2012) and van der Wal (2015) – clearly establishes the role of the hierarchies in (8) in conditioning object marking. Indeed, much of the original work on the hierarchies in (8) from the early 80's investigated object properties in Bantu languages (e.g. Hyman & Hawkinson 1974; Duranti 1979; Hyman & Duranti 1982). And recent surveys of Bantu object marking (Morimoto 2002; Riedel 2009; Marten & Kula 2012; van der Wal 2015) confirm that one can classify object marking in different Bantu languages according to different cut off points along the topicality hierarchies. None of these authors report a Bantu language where object marking obligatorily indexes all indefinite non-animate entities (along with objects with features high in the hierarchies in (8)).¹² What is missing in Creissels's (2006) grammaticalization stages is an explicit formalization of the role of topicality features in triggering a transition from Stage I languages, where objects marking indexes topicalized objects, to Stage II languages, where objects with features high in the hierarchies in (8) (as well as topicalized objects) are marked.

4.2 Dalrymple & Nikolaeva (2011)

Chichewa is equally problematic for Dalrymple & Nikolaeva's (2011: 214–216) proposed grammaticalization paths for DOM.¹³ In their approach, as in Creissels's (2006), the original situation is for only topical (i.e., clause-external) objects to be resumed with an object marker, while non-topical (clause-internal) ones are unmarked. (This is roughly equivalent to Creissels's (2006) Stage I.) DOM arises via two paths. Object marking can *spread* to nontopical objects with features that place them high on the hierarchies in (8): i.e., topic-worthy objects. This path, shown in (27), resembles Creissels's (2006) transition from Stage I to Stage II.

(27) Spreading of DOM Dalrymple & Nikolaeva (2011: 215)

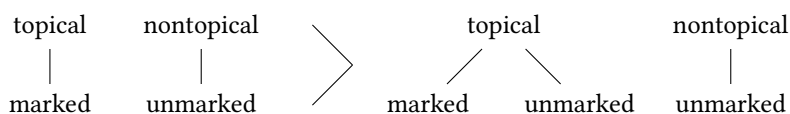


¹²As Marten & Kula (2012), following Stucky (1981) and van der Wal (2009) observe, Makhua represents an interesting case where further grammaticalization has occurred. Objects in class 1 and 2 (which is mainly occupied by human nouns) are marked whether they are human/animate or not. That is, the agreement class trumps semantic features like humanness in conditioning object marking.

¹³Most of Dalrymple & Nikolaeva (2011) thoughtful work demonstrates the role of information structure in conditioning object marking: objects are marked in many languages if they are secondary topics. I know of only one Bantu language where information structure has been claimed to directly condition marking of non-dislocated objects. As Bax & Diercks (2012) demonstrate, in situ objects in Manyika Shona are marked if they are [-Focus]. Since Chichewa and most other Bantu languages mark objects with particular semantic features, I discuss here only Dalrymple & Nikolaeva's (2011) approach to grammaticalization, not their general approach to object marking. See Iemmolo (2013; 2014) for a thoughtful critique of Dalrymple & Nikolaeva's (2011).

Dalrymple & Nikolaeva (2011: 215) suggest that spreading accounts for Bresnan & Mchombo's (1987) distinction between anaphoric and agreement function of object markers in Bantu languages: spreading leads to the development of agreement-like properties. However, their approach improves on both Bresnan & Mchombo (1987) and on Creissels (2006) by making explicit the role of the hierarchies in (8) in motivating the marking of only certain nontopicalized objects, leading to a DOM system. The other scenario, schematized in (28), is for object marking to narrow. In this scenario, only a subset of topical objects (those with features high on the topicality hierarchies in (8) come to be marked, while other objects – whether topical or nontopical – are unmarked:

(28) Narrowing of DOM Dalrymple & Nikolaeva (2011: 218)



Chichewa does not straightforwardly fit either of these scenarios, as object marking both spreads and narrows in Chichewa. Object marking spreads to nontopical objects, if they are human and therefore high on the topicality hierarchies in (8). Object marking also retracts from less topic-worthy objects, even if they are topical (i.e., in a position outside of the clause). A more general problem is that the second path – simple narrowing – is not consistent with the proposal that object marking in Bantu languages arises in stages along an anaphor-agreement continuum (Bresnan & Mchombo 1987; Creissels 2006; Givón 1976). Creissels's (2006) Stages II and III preclude the possibility of narrowing the object marking of anaphoric nominals without also spreading object marking to indicate grammatical agreement. And, indeed, I have not found any examples of simple narrowing in the literature on Bantu object marking. The assumption is that object marking by default tracks topicalized (dislocated) objects, while agreement-like marking is the more restricted innovation. (See e.g. Riedel 2009; Bax & Diercks 2012; Marten & Kula 2012.) However, narrowing of object marking subsequent to spread can be seen as a logical progression in the development of a grammatical agreement system from an anaphoric one. What is missing from Dalrymple & Nikolaeva's (2011) approach, then, is a way of placing their grammaticalization paths on an anaphor-agreement continuum.

4.3 An alternative

In this section, I propose an alternative account of the grammaticalization of object marking in Chichewa which combines aspects of both Creissels's (2006) and Dalrymple & Nikolaeva's (2011) approaches. Following Iemmolo (2013; 2014), I propose that in Chichewa (and other Bantu languages where object marking is conditioned by the topicality hierarchies) the object marker is reinterpreted as marking topic-worthiness rather than topic-hood. (Topic-worthy objects are ones with semantic features that are high in the topicality hierarchies.) Topic-worthy objects come to be marked, whether they

are topical or nontopical in information structure or syntactic terms. Less topic-worthy objects are not obligatorily marked, even if they are topical. That is, topic-worthiness trumps both information structure and syntax in triggering the development of Bantu agreement-like object marking systems from purely anaphoric agreement systems.¹⁴

I formalize these observations in terms of the syntactic and semantic constraints in (29). The syntactic ones are adapted from observations in work like Bresnan & Mchombo (1987), Morimoto (2002), Creissels (2006) concerning the distribution of object markers. The semantic ones are inspired by work like Aissen (2003), Dalrymple & Nikolaeva (2011), Iemmolo (2013; 2014) and Morimoto (2002) on the role of topic-worthiness in defining DOM.¹⁵

(29) Constraints defining the development of DOM from a topic-marking system
*syntactic*¹⁶

a. * $[\text{Index}_i, \text{NP}_i]_{\text{VP}}$:

Grammatical agreement with an overt in situ object nominal violates this constraint, as object marking with an overt in situ object (if identical in form to anaphoric use of object marker) violates the condition that there should be only one expression of the object in the VP.

b. MAX ARGUMENT/VP:

Argument roles in the input VP must be realized overtly in the output VP (Morimoto 2002). This constraint is violated if a topicalized object is not resumed with an object marker.

semantic

c. * $\emptyset\text{Index}[\text{+TW}]$:

Topic-worthy [+TW] objects should be indexed by object marking. Aissen (2003)

(Topic-worthiness is defined by the topicality hierarchies in (8).)

d. * $\text{Index}[\text{-TW}]$:

Non-topic worthy [-TW] objects should not be indexed by object marking.

Ranking the constraints in Optimality Theoretic style tableaux allows one to use a factorial typology to formalize the steps in the development of Bantu DOM systems and to formalize the relative importance of each constraint in defining stages along a grammaticalization path.

¹⁴As work since Comrie (1981; 1989) proposes, marking highly topic-worthy objects plausibly has a disambiguating function, since nominals high in the topicality hierarchy are canonically subjects, rather than objects. See Witzlack-Makarevich & Seržant (2018 [this volume]) for further discussion.

¹⁵See Morimoto (2002) and van der Wal (2015) for recent proposals formalizing the agreement-anaphor continuum for Bantu object marking in theoretical syntax frameworks. It is beyond the scope of this paper to critique these formal alternatives.

¹⁶As a reviewer points out, the combined syntactic constraints in (29a), (29b) bear a resemblance to the Theta Criterion in generative grammar Chomsky (1981): “Each argument bears one and only one theta-role, and each theta-role is assigned to one and only one argument.”

4.3.1 Stage I: purely anaphoric use of OM

At Creissels's (2006) and Dalrymple & Nikolaeva's (2011) initial stage, object markers have a purely anaphoric function: object markers resume co-referential clause-external objects. This is optimal if the syntactic constraints in (29) conditioning the distribution of object marking outrank the semantic constraints, as shown in Tableau (30b), using schematized syntactic structures.

(30) a. $*[Index_i, NP_i]_{VP} \gg \text{MAX ARG(UMENT)/VP} \gg *ø\text{Index}[+TW] \gg *Index[-TW]$

b.

	$*[Index_i, NP_i]_{VP}$	MAX ARG/VP	$*ø\text{Index}[+TW]$	$*Index[-TW]$
1. $NP_i [S [V- OM_i]]$				*
2. $NP_i [S [V- øi]]$		*!	*	
3. $[S [V- OM_i NP_i]]$	*!			*
4. $[S [V NP_i]]$			*	

Object marking is optimal when an object NP is dislocated: this is shown by candidate (30b)-1. Omitting object marking to resume the dislocated object, as in candidate (30b)-2, violates MAX ARG(UMENT)/VP, the constraint requiring an overt realization of the object within the VP. This ranking of the constraints defines agreement as non-optimal, however. As we can see, candidate (30b)-3, with a coreferential object marker resuming an object within the VP, violates $*[Index_i, NP_i]_{VP}$.

4.3.2 Step 1 in the development of DOM

The first step in the development of a DOM system involves *spreading* of object marking to non-topicalized objects which are semantically topic-worthy [+TW]. This becomes optimal when the semantic constraint requiring marking of [+TW] objects (29) comes to outrank the two syntactic constraints (29a)–(29b); re-ranked constraints are bolded:

(31) DOM of in situ objects is optimal with ranking,
 $*ø\text{Index}[+TW] \gg \text{MAX ARG(UMENT)/VP} \gg *Index[-TW]$

Swahili exemplifies this kind of Bantu object marking system. Recall from §2.2 that in Swahili, we find object marking with all topicalized objects and grammatical agreement only with [+TW] objects. Tableaux (32) exemplify this next step in the DOM grammaticalization path.

(32) a. Object NP is [+TW]

	$*ø\text{Index}[+TW]$	$*[Index_i, NP_i]_{VP}$	MAX ARG/VP	$*Index[-TW]$
1. $NP_i [S [V-OM_i]]$				
2. $NP_i [S [V- øi]]$		*!	*	
3. $[S [V- OM_i NP_i]]$		*		
4. $[S [V NP_i]]$	*!			

b. Object NP is [-TW]

	* \emptyset Index[+TW]	*[Index _i , NP _i] _{VP}	MAX ARG/VP	*Index[-TW]
1. NP _i [S [V-OM _i]]				*
2. NP _i [S [V- \emptyset i]]			*!	
3. [S [V- OM _i NP _i]]		*!		*
4. [S [V NP _i]]				

Tableaux (32a) and (32b) demonstrate that the anaphoric use of object marking remains optimal both when a [+TW] object is topicalized and when a [-TW] object is topicalized. This context is illustrated by candidates (32a)-1 and (32b)-1. Candidate (32a)-3 shows that when the semantic constraint * \emptyset Index[+TW] is high ranked, object marking in the agreement context is optimal for a [+TW] object. However, object marking remains non-optimal in the agreement context for a [-TW] object, as shown by candidate (32b)-3.

4.3.3 Step 2: modern colloquial Chichewa

As noted above, it is problematic to account for DOM in modern colloquial Chichewa using Dalrymple & Nikolaeva’s (2011) grammaticalization paths, as we find both *spreading* of marking (to non-topical topic-worthy objects) and *narrowing* of marking from non-topic worthy topicalized objects. The constraint-based approach developed here can straightforwardly formalize this second step by ranking the second semantic constraint (29) higher than the second syntactic constraint (29b):

(33) * \emptyset Index[+TW] » *[Index_i, NP_i]_{VP} » *Index[-TW] » MAX ARG(UMENT)/VP

This is exemplified in Tableaux (34):

(34) a. Object NP is [+ TW]

	* \emptyset Index[+TW]	*[Index _i , NP _i] _{VP}	*Index[-TW]	MAX ARG/VP
1. NP _i [S [V-OM _i]]				
2. NP _i [S [V- \emptyset i]]	*!			*
3. [S [V- OM _i NP _i]]		*		
4. [S [V NP _i]]	*!			

b. Object NP is [-TW]

	* \emptyset Index[+TW]	*[Index _i , NP _i] _{VP}	*Index[-TW]	MAX ARG/VP
1. NP _i [S [V-OM _i]]			*!	
2. NP _i [S [V- \emptyset i]]				*
3. [S [V- OM _i NP _i]]		*!	*	
4. [S [V NP _i]]				

Tableaux in (34a) and (34b) show that with this constraint ranking, anaphoric use of object marking is only optimal when a [+TW] object NP is dislocated: candidate (34a)-1. Candidate (34b)-1, with object marking on a dislocated [-TW] object violates the semantic constraint, *Index[-TW]. Similarly, object marking is also optimal in the agreement

context only with a [+TW] object: candidate (34a)-3. Object marking on a [-TW] object in the agreement context, candidate (34b)-3, violates the syntactic constraint, $*[\text{Index}_i, \text{NP}_i]_{\text{VP}}$.¹⁷

4.3.4 Accounting for gaps

A further advantage of this constraints-based approach is that it can account for gaps in the cross-Bantu object marking data. As noted above, we do not find the simple narrowing of marking of topicalized object which Dalrymple & Nikolaeva (2011) propose as an alternative grammaticalization path, as schematized in (28). Indeed, we noted that if DOM in Bantu languages results from change along an anaphor-agreement continuum, we do not expect simple narrowing, and we would want to account for this. What I propose is that this direction of change falls out if the two syntactic constraints (35a) and the two topicality-sensitive constraints (35b) have the harmonic alignment rankings shown in (35):

(35) Harmonic alignment

- a. $*[\text{Index}_i, \text{NP}_i]_{\text{VP}} \gg \text{MAX ARG}(\text{UMENT})/\text{VP}$
- b. $*\emptyset\text{Index}[\text{+TW}] \gg *\text{Index}[\text{-TW}]$

A harmonic alignment ranking cannot be reordered to define a typology (Aissen 2003; Morimoto 2002). As we can see in Tableaux in (37), narrowing without spreading (cf. (27) and (28), above) is only optimal given the ranking in (36), which violates the harmonic ranking of the semantic constraints defined in (35b).

(36) $*[\text{Index}_i, \text{NP}_i]_{\text{VP}}, *\text{Index}[\text{-TW}] \gg \text{MAX ARG}(\text{UMENT})/\text{VP} \gg *\emptyset\text{Index}[\text{+TW}]$

(37) a. Object NP is [+TW]

	$*[\text{Index}_i, \text{NP}_i]_{\text{VP}}$	$*\text{Index}[\text{-TW}]$	MAX ARG/VP	$*\emptyset\text{Index}[\text{+TW}]$
ES ^o	1. NP _i [S [V-OM _i]]			
	2. NP _i [S [V- \emptyset i]]		*!	*
	3. [S [V- OM _i NP _i]]	*!		
ES ^o	4. [S [V NP _i]]			*

b. Object NP is [-TW]

	$*[\text{Index}_i, \text{NP}_i]_{\text{VP}}$	$*\text{Index}[\text{-TW}]$	MAX ARG/VP	$*\emptyset\text{Index}[\text{+TW}]$
ES ^o	1. NP _i [S [V-OM _i]]	*!		
	2. NP _i [S [V- \emptyset i]]		*	
	3. [S [V- OM _i NP _i]]	*		
ES ^o	4. [S [V NP _i]]			

Comparing the first candidates in Tableaux (37a) and (37b) allows one to see that this constraint ranking optimizes narrowing. Anaphoric use of object marking is optimal

¹⁷As a reviewer points out, the analysis developed here does not account for the variation we find in Chichewa. Object marking is possible with all dislocated objects, even non-topic-worthy ones. The DOM restriction is therefore a tendency, not an absolute. How best to formalize this variation is a topic for future research.

only when a [+TW] object is dislocated, as in candidate (37a)-1, but not when a [-TW] object is dislocated, as in candidate (37b)-1. Note that candidate (37b)-1 violates the semantic constraint, *Index[-TW]. Object marking in the agreement context is not optimal, whether the object is topic-worthy or not, as this violates the syntactic constraint, *[Index_i, NP_i]_{VP}. Candidates (37a)-3 and (37b)-3 illustrate this. While this ranking clearly can define narrowing, it violates the harmonic ranking of the semantic constraints. Finally, the constraints-based approach can explain why Creissels (2006) says he finds no examples of his Stage III: a purely grammatical agreement system for object marking which ignores the topicworthiness of the object. To make this kind of agreement system optimal, we must introduce a new semantic constraint, *øIndex[TW], which clearly contradicts the better motivated constraint: *Index[-TW]. This new constraint, highly ranked, optimizes object marking on both topicworthy and non-topicworthy objects in the agreement context:

- (38) *øIndex[+TW] » *øIndex[-TW] » *[Index_i, NP_i]_{VP} » MAX ARG(UMENT)/VP
 » *Index[-TW]

However, as Tableau (39) exemplifies, this same ranking cannot define Creissels’s (2006) Stage III, because it incorrectly optimizes object marking to resume topicalized objects:

- (39) Object NP is either [+TW] or [-TW]

	*øIndex[+TW]	*øIndex[-TW]	*[Index _i , NP _i] _{VP}	MAX ARG/VP	*Index[-TW]
Ⓔ ³⁸ a. NP _i [S [V-OM _i]]				*	
b. NP _i [S [V- øi]]	*!	*		*	*
Ⓔ ³⁸ c. [S [V- OM _i NP _i]]					*
d. [S [V NP _i]]	*!	*			

Tableau (39) shows that these constraints and this ranking optimize agreement with any co-referential object, whether topicalized (candidates (39)-a and (39)-b) or in a grammatical agreement context (candidates (39)-c and (39))-d. Stage III, therefore, is not found because it is not optimal under any ranking of the proposed constraints that define a grammaticalization path leading to a DOM system.

5 Conclusion

As we have seen, object markers are not “purely anaphoric” in modern colloquial Chichewa. They are also not pure agreement markers, as they occur only variably (not obligatorily), and they only co-occur with clause-internal human objects. Rather, their distribution conforms to Bentley’s (1994), Morimoto’s (2002), Riedel’s (2009), Marten & Kula’s (2012)’s and van der Wal’s (2015) observation that the occurrence of grammatical agreement-like object markers in Bantu languages is conditioned by the hierarchies in (8). As a result, in Chichewa, as in many Bantu languages, we find a DOM system. Following Iemmolo (2013; 2014) I have proposed that the grammaticalization path towards DOM is for object markers to come to index not just topic-hood (an information

structural and/or syntactic property) but also topic-worthiness (a semantic property). In Chichewa, as I have shown, topic-worthiness is quite systematically indexed. This observation forms the basis for a constraints-based account of the development of DOM in Bantu languages, which improves on Creissels (2006) by incorporating the notion of topic-worthiness as a trigger for the movement from anaphoric agreement to grammatical agreement. It improves on Dalrymple & Nikolaeva (2011) by providing a way of formalizing the anaphor-agreement continuum that is central to the discussion of the development of DOM in Bantu languages. It is hoped this proposal provides a useful basis for a more comprehensive study of the DOM properties of object marking in Bantu languages.

Acknowledgements

I would first like to thank my Chichewa language consultants for their patience in helping me learn about their language, and in addition, Al Mtenje and Pascal Kishindo for helpful discussion. I am grateful to the Centre for Language Studies, University of Malawi, for their hospitality during my 2011, 2013 and 2015 visits to Malawi. Earlier versions of this talk were presented at the Paris BANTUPSYN workshop in June 2012, a GU GRAM:SEM colloquium in 2013, CALL 2013, the DAM Workshop, and ACAL45. I thank those audiences for useful feedback, in particular Lisa Cheng, Elisabet Engdahl, Giorgio Iemmolo, Liz Coppock, Klaus van Heusinger, Kristina Riedel and Thilo Schadeberg. Responding to thoughtful comments by the editors of the volume and an anonymous reviewer has improved both the content and presentation of the analysis. This research has been supported by the ANR-DFG French-German cooperative grant BANTUPSYN and by Göteborgs universitet travel grants.

Abbreviations

1	first person	LOC	locative
2	second person	OBJ	object
3	third person	PL	plural
CL	noun class concord affixes (e.g. cl1, cl2, etc.)	POSS	possessive
COP	copula	PRF	perfect
DEM	demonstrative	PROG	progressive
EMPH	emphasis	PST	past
FUT	future	Q	question marker
FV	final vowel	REL	relative
HAB	habitual	SBJ	subject
INF	infinitive	SG	singular

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