Flexibility in symmetry:
an implicational relation in Bantu double object constructions

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1. (A)symmetrical objects

Baker et al. (2012:54) note that "For more than thirty years, symmetrical and asymmetrical object constructions have been a classic topic in the syntax of Bantu languages and beyond". Languages are taken to be symmetrical if both objects in a ditransitive verb behave alike in tests like passivisation and pronominalisation.

In Zulu, for example, either object can be object-marked on the verb (1), and either object can be the subject of a passive verb (2).

Zulu (Adams 2010: 11, and added)

(1) 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.'

     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).'

(2) a.   In-cwadi   y-a-fund-el-w-a   aba-ntwana.
          9-book   9SM-REM.PST-read-APPL-PASS-FS   2-children
          'The book was read (for) the children.'

     b.   Aba-ntwana   b-a-fund-el-w-a   in-cwadi.
          2-children   2SM-REM.PST-read-APPL-PASS-FS   9-book
          'The children were read a book.'

However, it has become clear that the situation is not that black-and-white, with 'symmetrical languages' showing asymmetry in some part of the language (Schadeberg 1995, cf. Rugemalira 1991, Thwala 2006). It is already known that this asymmetry can be found in a number of ways:

1. Languages can be symmetrical only for a subpart of the tests (e.g. for object marking but not word order; Ngonyani 1996, Moshi 1998, Riedel 2009).
2. Languages can vary in symmetry for different combinations of thematic roles (e.g. instruments versus benefactives; Baker 1988, Marantz 1993, Alsina & Mchombo 1993, Simango 1995, Ngonyani 1996, 1998, Zeller & Ngoboka 2006, Jerro 2015 and many others).
3. We are starting to see that combinations of syntactic operations (e.g. relativisation, passivisation, object marking) may also show asymmetry in otherwise symmetrical languages (Adams 2010; Zeller 2014; Holmberg, Sheehan and Van der Wal 2015).

This paper presents new data from Bantu languages, exhibiting a fourth way in which symmetrical languages can show asymmetry. From this, a hitherto unnoticed typological pattern emerges: A) language-internally, causative, applicative and lexical ('give') ditransitives can differ with respect to symmetry; B) crosslinguistically, they are in an implicational relationship: if a language is symmetrical for one type of predicate, it is symmetrical for the predicate types to its right in (3) as well.

(3)   causative >   applicative > lexical ditransitive >(more restricted)
      type 1   type 2   type 3   type 4

I first show the pattern that I discovered, then illustrate the four types with respect to object marking in different languages, and then propose a theoretical analysis for asymmetry and the implicational relation of symmetry.

2.   Not all ditransitives are equal
Apart from lexical ditransitive predicates such as 'give' or 'teach', Bantu languages can productively increase the valency of verbs by applicative and causative derivations, as shown in (4) and (5), respectively.

Makhuwa (Van der Wal 2009: 71)
(4)   a.   Amíná   o-n-rúwá   eshimá.
           1.Amina 1SM-PRES.CJ-stir   9.shima
           'Amina prepares shima.'

      b.   Amíná   o-n-aá-rúw-**él'**   éshimá anámwáne.
           1.Amina 1SM-PRES.CJ-2OM-stir-APPL-FV   9.shima 2.children
           'Amina cooks shima for the children.'

(5)   a.   Ál'   átthw'   áálá   aa-wárá   eshaphéyu.
           2.DEM   2.people 2.DEM   2SM.PERF.DJ-wear 10.hats
           'These people wear hats.'

      b.   O-ḿ-wár-**íh**-á   mwalápw' ááwé   ekúwó...
           1SM.PERF.DJ-1OM-wear-CAUS-FV   1.dog   1.POSS.1 9.cloth
           'She dressed her dog in a cloth...'

Although the Benefactive (children) and the Causee (dog) fully belong to the argument structure of the verb, just like the Recipient and Theme in a lexical ditransitive such as 'give', not all languages treat the two objects in these three types of ditransitives in the same symmetrical or asymmetrical way. I discuss four types.

2.1. Type 1: fully symmetric
On one end of the continuum are languages that behave symmetrical for all three types of ditransitive constructions. For example, in Zulu, both objects behave symmetrically, whether part of a lexical ditransitive verb or a derived applicative or causative. This is illustrated for object marking in (6)-(8) and yields the same results for passivisation. Zulu is thus a language of type 1.

Zulu (Zeller 2011, see also Zeller 2012)

(6) *lexical ditransitive*

    a.   UJohn u-nik-a   abantwana imali.
         1a.John 1SM-give-FS 2.children 9.money
         'John is giving the children money.'

    b.   UJohn u-**ba**-nik-a   imali   (abantwana).
         1a.John 1SM-2OM-give-FS 9.money 2.children
         'John is giving them money (the children).'

    c.   UJohn u-**yi**-nik-a   abantwana (imali).
         1a.John 1SM-9OM-give-FS 2.children 9.money
         'John is giving it to the children (the money).'

(7) *applicative*

    a.   ULanga u-phek-el-a   umama   inyama.
         1a.Langa 1SM-cook-APPL-FS 1a.mother 9.meat
         'Langa is cooking meat for mother.'

    b.   ULanga u-**m**-phek-el-a   inyama (umama).
         1a.Langa 1SM-1OM-cook-APPL-FS   9.meat   1a.mother
         'Langa is cooking meat for her (mother).'

    c.   ULanga u-**yi**-phek-el-a   umama   (inyama).
         1a.Langa 1SM-9OM-cook-APPL-FS   1.mother 9.meat
         'Langa is cooking it for mother (the meat).'

(8) *causative*

    a.   ULanga u-phek-is-a   umama   ukudla.
         1a.Langa 1SM-cook-CAUS-FS 1a.mother 15.food
         'Langa helps/makes mother cook food.'

    b.   ULanga u-**m**-phek-is-a   ukudla (umama).
         1a.Langa 1SM-1OM-cook-CAUS-FS 15.food 1a.mother
         'Langa helps/makes her cook food (mother).'

    c.   ULanga u-**ku**-phek-is-a   umama   (ukudla).
         1a.Langa 1SM-15OM-cook-CAUS-FS 1a.mother 15.food
         'Langa makes mother cook it (the food).'

The same full symmetry has been checked for Kimeru (Hodges 1977), Shona (Mugari 2013, Mathangwane & Osam 2006), Lubukusu (Baker et al. 2012), Kinyarwanda (Zeller & Ngoboka 2014, Ngoboka 2005), Kîîtharaka (Muriungi 2008), and Kikuyu (Peter Githinji, personal communication).

2.2. Type 2: only lexical and applicative symmetric

One step further down the cline are languages of type 2, where objects of applicatives and lexical ditransitives behave symmetrically, but objects of causatives do not. In Southern Sotho, either object of lexical ditransitives and applicatives can be object-marked, as in (9) and (10),[1] whereas for the causative only the causee can be marked, not the theme (11).

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[1] But see the influence of animacy as pointed out for Sesotho by Morolong and Hyman (1977) and comparatively discussed in Hyman and Duranti (1982).

Southern Sotho (Thabo Ditsele, personal communication)
(9) *lexical ditransitive*

    a.   Ntate   o   fa   bana   lijo.
        1.father 1SM give 2.children 5.food
        'Father gives the children food.'

    b.   Ntate   o   **ba**   fa   lijo.
        1.father 1SM 2OM give 5.food
        'Father gives them food.'

    c.   Ntate   o   **li**   fa   bana.
        1.father 1SM 5OM give 2.children
        'Father gives it to the children.'

(Machobane 1989: 24)
(10) *applicative*

    a.   Banana ba-pheh-el-a   ´me   nama.
        2.girls 2SM-cook-APPL-FV 1.mother 9.meat
        'The girls are cooking meat for my mother.'

    b.   Banana ba-**mo**-pheh-el-a nama.
        2.girls 2SM-cook-APPL-FV 9.meat
        'The girls are cooking meat for her.'

    c.   Banana ba-**e**-pheh-el-a   ´me.
        2.girls 2SM-9OM-cook-APPL-FV 1.mother
        'The girls are cooking it for my mother.'

(Machobane 1989: 31)
(11) *causative*

    a.   Ntate   o-bal-is-a   bana   buka.
        1.father 1SM-read-CAUS-FV 2.children 9.book
        'My father makes the children read the book.'

    b.   Ntate   o-**ba**-bal-is-a   buka.
        1.father 1SM-2OM-read-CAUS-FV 9.book
        'My father makes them read the book.'

    c.   *Ntate   o-**e**-bal-is-a   bana.
        1.father 1SM-9OM-read-CAUS-FV 2.children
        int. 'My father makes the children read it.'

The same pattern is found in Otjiherero:

Otjiherero (Jekura Kavari, personal communication)
(12) *lexical ditransitive*

    a.   Omukazendu ma pe   ovazandu ovikurya.
        1.woman   PRES 1SM.give 2.boys   8.food
        'The woman gives the boys food.'

    b.   Omukazendu me   **ve** pe ovikurya.
        1.woman   PRES.1SM 2OM give 8.food
        'The woman gives them food.'

  c. Omukazendu me **vi** pe ovazandu.
    1.woman PRES.1SM 8OM give 2.boys
    'The woman gives it to the children.'

(Marten & Kula 2012: 247)
(13) *applicative*
  a. Má-vé **vè** tjáng-ér-é òm-bàpírà.
    PRES-2SM 2OM write-APPL-FS 9-letter
    'They are writing them a letter.'
  b. Má-vá **ì** tjáng-ér-é òvà-nâtjé.
    pres-2SM 9OM write-APPL-FS 2-children
    'They are writing the children it.'

(Jekura Kavari, personal communication)
(14) *causative*
  a. Ma-ve **ve** tjang-is-a om-bapira.
    PRES-2SM 2OM write-CAUS-FS 9-letter
    'They make them write a letter.'
  b. *Ma-ve **i** tjang-is-a ova-natje.
    PRES-2SM 9OM write-CAUS-FS 2-children
    'They make the children write it.'

2.3. Type 3: only lexical symmetric
Type 3 is yet another step down the hierarchy. In Kiluguru, double objects behave symmetrically only for lexical ditransitives (15), but show asymmetries with both applicative and causative predicates (16)-(17).

Kiluguru (Marten & Ramadhani 2001: 266/269)[2]
(15) *lexical ditransitive*
  a. Chibua ko-**w**-eng'-a iwana ipfitabu.
    1.Chibua 1SM-2OM-give-FS 2.children 8.books

  b. Chibua ko-**pf**-eng'-a iwana ipfitabu.
    1.Chibua 1SM-8OM-give-FS 2.children 8.books
    'Chibua is giving children books.'

(16) *applicative*
  a. Mayi ko-**w**-ambik-il-a iwana ipfidyo.
    1.mother 1SM-2OM-cook-APPL-FS 2.children 7.food
    'Mother is cooking food for the children.'

  b. * Mayi ko-**pf**-ambik-il-a ipfidyo iwana.
     1.mother 1SM-7OM-cook-APPL-FS 7.food 2.children
    int. 'Mother is cooking food for the children.'

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[2] Marten & Ramadhani (2001: 266) note that "both orders of objects are fine, but only the benefactive object may be object marked (in general, the object marked object precedes the unmarked object, and it is the first object which is emphasized. In addition, applicatives without valency change can be used for predicate emphasis".

(17) *causative*

a.	Wanzehe	wa-**mw**-ambik-its-a	Chuma	ipfidyo.
	2.elders	2SM-1OM-cook-CAUS-FS	1.Chuma	8.food
	'The elders made Chuma cook food.'

b.	* Wanzehe	wa-**pf-**ambik-its-a	ipfidyo	Chuma.
	2.elders	2SM-8OM-cook-CAUS-FS	8.food	1.Chuma
	'The elders made Chuma cook food.'

2.4. Type 4: fully asymmetric

Finally, type 4 languages do not show any symmetrical properties in double object constructions - these have always been known as asymmetrical. In ditransitives, applicatives and causatives, only the recipient/applied/causee object can be object-marked.

Swahili
(18) *lexical ditransitive*

a.	A-li-**m**-pa kitabu.
	'She gave him a book.'

b.	* A-li-**ki**-pa Juma.
	'She gave it to Juma.'

(19) *applicative*

a.	A-li-**m**-nunul-i-a kitabu.
	'She bought him a book.'

b.	* A-li-**ki**-nunul-i-a Juma.
	'She bought it for Juma.'

(20) *causative*

a.	A-li-**m**-kat-ish-a kamba.
	'She made him cut the rope.'

b.	* A-li-**ki**-kat-isha Juma.
	'She made Juma cut it.'

2.5. Summary of asymmetrical patterns

The languages studied thus illustrate not only that 'symmetry' is not a property of a whole language, but also show that (some of) the variation in symmetrical object marking is structured, as summarised in Table 1.

	CAUS	APPL	DITRANS	languages
type 1	✔	✔	✔	Zulu, Shona, Lubukusu, Kîîtharaka, Kimeru, Kikuyu
type 2	✗	✔	✔	Otjiherero, Southern Sotho
type 3	✗	✗	✔	Luguru
type 4	✗	✗	✗	Swahili etc. (asymmetrical)

Table 1 Symmetric properties of double object constructions cross-Bantu

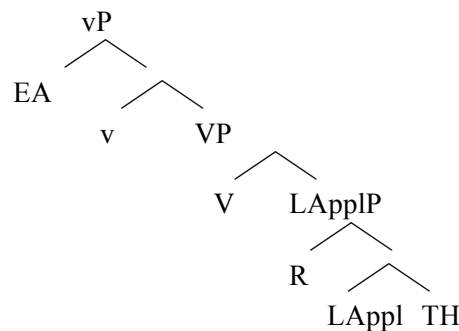## 3. Implications of the implicational hierarchy

This implicational relation poses an empirical as well as a theoretical question. The empirical question is the following: If the implicational hierarchy in (3) holds crosslinguistically, are there indeed no languages with symmetrical double objects for applicatives and/or causatives but not ditransitives, and similarly are there no languages with symmetrical causatives but no symmetrical applicatives? This is a very clear empirical prediction that should be tested as more data become available for more languages.

Assuming that the pattern in Table 1 is not accidental, the theoretical question is: How can we account for this implicational relation? In order to answer that, we need to know how symmetry is derived. And in order to answer that question, I first introduce the structure of ditransitives.
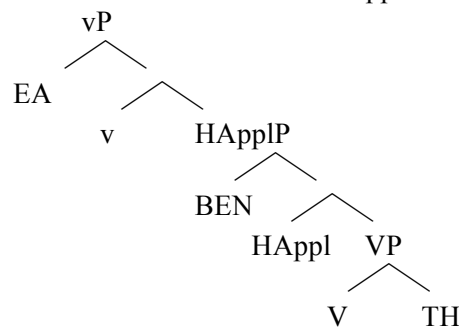
3.1. The structure of ditransitives

Following Pylkkänen (2008), I take the Recipient in a lexical ditransitive to be introduced by a low applicative head (LApplP), under V (21a). The Benefactive for an applied verb is introduced by a high applicative head (HApplP), between V and v (21b). Unlike Pylkkänen, I assume that the Causee is introduced by a causative head (CausP) between V and v (21c), although one could equally well assume a double little v with Caus in between, forming a bi-eventive structure.
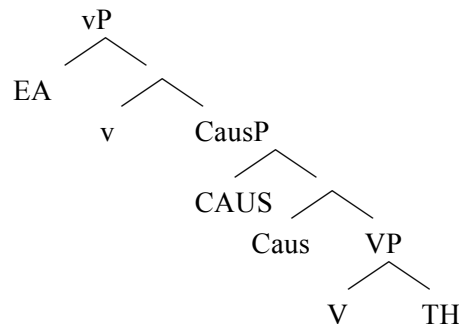
(21) a.

```
            vP
          /    \
        EA      \
              v    VP
                  /   \
                 V    LApplP
                      /    \
                     R      \
                         LAppl  TH
```

b.

```
            vP
          /    \
        EA      \
              v    HApplP
                   /    \
                 BEN     \
                     HAppl   VP
                            /   \
                           V     TH
```

c.

```
            vP
          /    \
        EA      \
              v    CausP
                   /    \
                 CAUS     \
                      Caus    VP
                             /   \
                            V     TH
```

If these structures underlie the double object constructions discussed, then they suggest that asymmetry is basic, and symmetry is derived.[3] This appears to be correct, since asymmetries keep cropping up in otherwise symmetrical languages but never the other way around, suggesting that asymmetry is always available and hence more basic. Furthermore, the asymmetry is always the same across Bantu: the Benefactive, Causee, or applied (i.e. higher) argument displays object properties, where the Theme argument lacks them. This supports an analysis of symmetry in terms of a derived accessibility of the Theme, i.e. the Theme starts out low and becomes available for syntactic operations (by movement, different featural probing or annihilating the intervening argument - see McGinnis (1998a, 2001), Anagnostopoulou (2003), Doggett (2004), Pylkkänen (2008), and Jeong (2011) for the movement/locality approach).

3.2. Object marking in ditransitives

I assume that Bantu object marking in ditransitives is the result of an Agree relation between little v and one of the objects. Within the Probe-Goal system of Agree (Chomsky 2001), I assume that object markers are the spell-out of little v's uninterpretable ϕ features agreeing with the interpretable ϕ features of an object Goal (Roberts 2010).[4] I further assume that lower arguments need Case licensing,[5] and that Case licensing can be independent of ϕ agreement, concretely that a lower functional head can be Case-licensing but not carry uϕ features (Baker 2012, Preminger 2014, Bárány 2015). Lower functional heads can thus have a [uϕ] and/or a [Case] feature.

In a monotransitive structure, the uninterpretable features on v simply probe, find the first and only object (the Theme) and agree with it.

In a double object construction, however, the Theme argument is always lower than the Recipient/Benefactive/Causee argument. Assuming that locality conditions hold (Minimal Link Condition),[6] the Theme is not available for agreement with the v or T head for object marking and passivisation, respectively. This is due to one of two reasons: either the higher argument will intervene between the Probe on v/T and the Theme, or the Appl/Caus head will already have licensed the Theme, making it inactive for further Agree relations. The result is asymmetry: the LAppl/HAppl/Caus head always licenses the Theme in its c-command domain, and v can only license the highest argument. Since only v has ϕ features, it follows that only the highest object can be spelled out as object marking (if the Goal is defective). This is represented in (22).
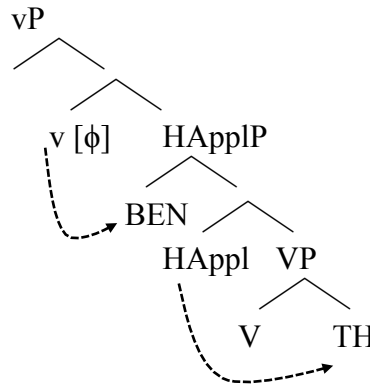
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[3] Perhaps for locative or instrumental applicatives this is different - tests involving animacy could help to assess whether there is a 'dative alternation' as in English or a true double object construction, see Oehrle (1976), among others.

[4] Under Roberts' (2010) approach, object marking is the spell out of an Agree relation with a defective Goal: if the features of the Goal are a subset of the features of the Probe, the Agree relation is 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 rise to incorporation of the Goal, being spelled out on the Probe. Whether the Agree relation is spelled out morphologically is thus dependent on the structure of the Goal. See Iorio (2014) for details on the approach as applied to the Bantu language Bembe, and Van der Wal (2015b) for a comparative approach to Bantu object marking.

[5] This is debatable for the Bantu languages; see Diercks (2012), Van der Wal (2015a) and Sheehan and Van der Wal (2016). However, the debatable status mostly concerns nominative Case.

[6] But see Baker & Collins (2006) who propose parameterisation of the Minimal Link Condition.

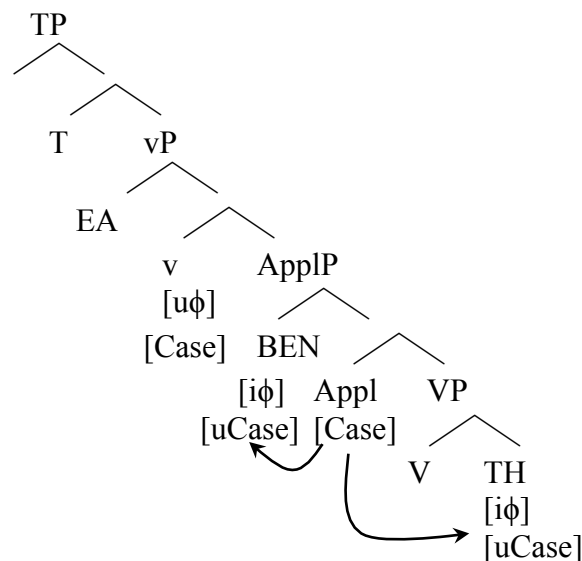(22) *v agrees with BEN (and can spell out as object-marker)*

```
                    vP
                   /\
                  /  \
              v [ϕ]   HApplP
                 ┊    /\
                 ┊   /  \
                 ┊→ BEN  /\
                    HAppl  VP
                        ┊  /\
                        ┊ /  \
                        ┊V    TH
                        ┊────→
```

3.3. Symmetry

In "symmetrical languages" the Theme can also be object marked. The [uϕ] features of v must thus have established an Agree relation with the lower Theme, despite an intervening Benefactive. Assuming locality conditions, if the Theme is agreed with, v must have been able to probe past the higher Benefactive argument.

Following suggestions by Haddican and Holmberg (2012, 2015), I propose that symmetry derives from the property of lower functional heads like the Applicative to license an argument either in its complement or in its specifier. This means that v agrees with the remaining object, which can be either the Benefactive or the Theme, thereby deriving symmetry.

(23)

```
                 TP
                /\
               /  \
              T    vP
                  /\
                 /  \
               EA    /\
                    /  \
                   v    ApplP
                 [uϕ]   /\
                [Case] /  \
                     BEN   /\
                     [iϕ] Appl  VP
                  [uCase] [Case] /\
                       ↖    ┊   /  \
                        ┊   ┊  V    TH
                        ┊   ┊     [iϕ]
                        ┊   └──────→[uCase]
```

There are thus two derivations. If the applicative head agrees with the Theme, then v agrees with the highest argument (Benefactive); this is the same as in asymmetrical languages, see (22). If in a symmetrical language the applicative head assigns Case to its specifier, i.e. to the Benefactive that it introduces, then this argument becomes invisible to v.[7] The Theme object can thus be probed by v, which agrees with it in both Case and ϕ, and potentially spell out as an object marker, as represented in (24).

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[7] Assuming no defective intervention.

(24) *v agrees with TH (and can object-mark it)*
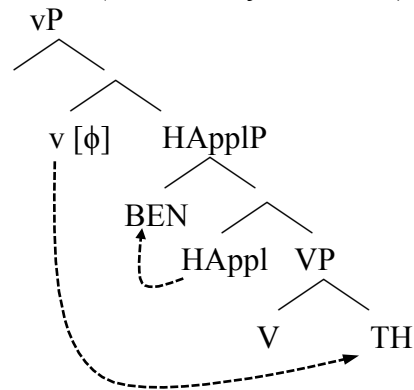
3.4. What determines up or down licensing?

While Case licensing by the Applicative is flexible, it is not arbitrary. There are two restrictions: 1) animacy, 2) topicality. Since Appl merges with a structure that already contains an argument, and itself also introduces an argument, it can 'see' both the Theme and the Benefactive argument. I propose that its Case-licensing abilities are determined by the argument it introduces: *Appl can only license arguments with the same or fewer features as the argument introduced in its specifier*.

Within the boundaries of the animacy restriction (not illustrated here - please ask if you want more info), which object is licensed by Appl and which agreed with by v depends on topicality. Appl can only license arguments that are equal or lower in topicality than the argument it introduces, with downward licensing as default.

If the Benefactive is topical, Appl can license any Theme, whether topical or not, and will do so because of the default downward licensing. This leaves v to agree with the Benefactive. Since in these languages only v has a ϕ probe,[8] object marking will thus only be with the Benefactive.

(25)

(26)

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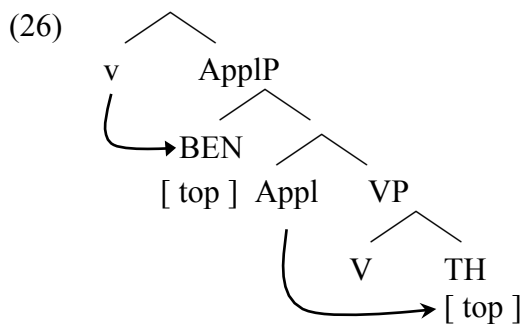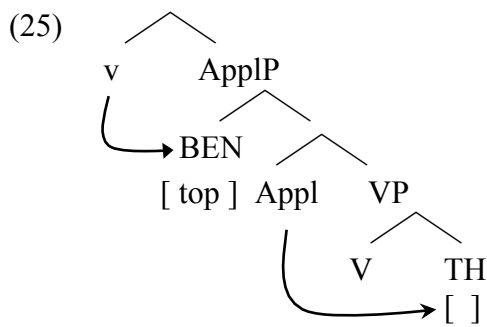
[8] Languages with multiple object markers can be accounted for by postulating ϕ probes on lower heads (Appl) as well.

This predicts that when both objects are topical (26), only the higher will be object-marked. This is in fact borne out in Zulu: when both objects are topical ϕPs, only the higher can be object-marked. In (27) we know that both DP objects are in a dislocated position because of the disjoint form of the verb and the accompanying prosodic phrases (not indicated here); see Zeller (2015) for further discussion and an alternative analysis. In the current analysis both objects are ϕP defective pronouns (the DPs being adjuncts), and object marking is only allowed for the Benefactive here.

Zulu (Adams 2010 via Zeller 2012: 224, 225)
(27) a. Ngi-ya-**m**-theng-el-a   **u-Sipho** u-bisi.
          1SG.SM-PRES.DJ-1OM-buy-APPL-FS 1a-Sipho 11-milk

      b. Ngi-ya-**m**-theng-el-a   u-bisi   **u-Sipho**.
          1SG.SM-PRES.DJ-1OM-buy-APPL-FS 11-milk 1a-Sipho
          'I am buying milk for Sipho.'

      c. *Ngi-ya-<u>lu</u>-theng-el-a   u-Sipho   <u>u-bisi</u>
          1SG.SM-PRES.DJ-11OM-buy-APPL-FS 1a-Sipho 11-milk

      d. *Ngi-ya-<u>lu</u>-theng-el-a   <u>u-bisi</u>   u-Sipho
          1SG.SM-PRES.DJ-11OM-buy-APPL-FS 11-milk 1a-Sipho
          int. 'I am buying milk for Sipho.'

If the Benefactive is non-topical, Appl can still license a non-topical Theme (default downwards), as in (28). A topical Theme, however, cannot be licensed, and instead Appl licenses its specifier, leaving the Theme for agreement with v, as in (29).

(28)

(29)
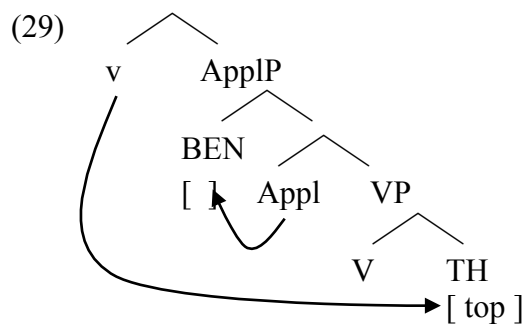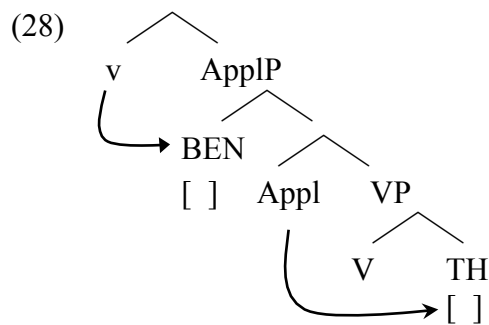
A consequence of this analysis is that it is the more topical of the two arguments that will be left available for agreement with v (in active) or T (in passive). Indeed, object marking (= agreement with v) is crosslinguistically typically with the more topical or
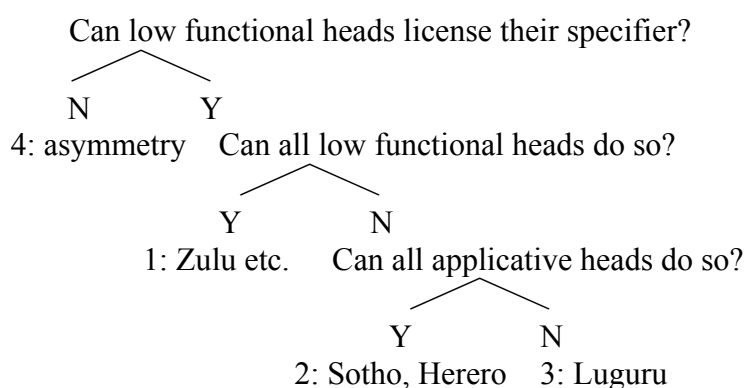
given object, in differential object marking as well as pronominalisation. Moreover, in a passive clause, T agrees with the more topical argument - passives are known to promote an erstwhile object not only to the syntactic function of subject, but also to the discourse function of topic. Furthermore, while not all diagnostics for symmetry in ditransitives pattern together, passivisation and object marking do so overwhelmingly (see e.g. Jerro 2015), which is predicted by the current account.

Note also that the sensitivity of low functional heads to information structure is not a new proposal: Marten (2003), Creissels (2004), Cann & Mabugu (2007) and de Kind and Bostoen (2012) also show that applicatives are more than simple argument-introducing heads; in various Bantu languages they can be used with a non-canonical, information-structural, interpretation.

4. Capturing the implicational relationship

The partial symmetry discovered for different predicate types can now be understood as subsets of low functional heads being flexible in licensing their complement or specifier. Languages vary, then, in which heads have this flexibility, i.e. flexible licensing must be parameterised. The implicational relation between different predicates can thus be captured in the following parameter hierarchy:

(30)   *Parameter hierarchy for the degree of symmetry*

Can low functional heads license their specifier?

N   Y
4: asymmetry   Can all low functional heads do so?

Y   N
1: Zulu etc.   Can all applicative heads do so?

Y   N
2: Sotho, Herero   3: Luguru

Apart from capturing the implicational relation between the different types of ditransitives, this parameter hierarchy is motivated by conceptual reasons too. First, organising parameters in a dependency relation rather than postulating independent parameters drastically reduces the number of possible combinations of parameter settings, i.e. the number of possible grammars, as shown by Roberts and Holmberg (2010), and Sheehan (2014).

Second, the parameter hierarchy can serve to model a path of acquisition that is shaped by general learning biases (the 'third factor' in language design, Chomsky 2005). Biberauer and Roberts (2015) suggest that two general learning biases combine to form a 'minimax search algorithm':

(31)   Feature Economy (FE): postulate as few features as possible to account for the input [generalised from Roberts & Roussou 2003]
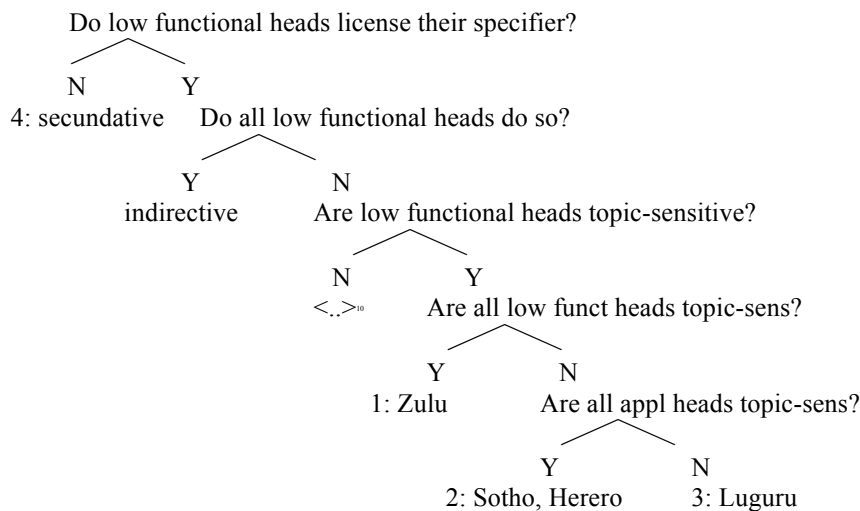
(32)   Input Generalisation (IG): maximise available features
         [generalised from Roberts 2007]

If both FE and IG are observed with respect to applicative and causative heads, no features will be postulated on these heads, which for the current analysis of double objects results in default downward licensing and hence an asymmetrical system.

When the language gives evidence that the higher object is sometimes licensed by a lower functional head, then an upwards licensing property must be postulated for such heads. This violates FE, but by IG the property is now taken to be present on all heads, leading to a system that is completely symmetrical (type 1). If the language then gives evidence that *some* heads are asymmetrical, the parameter question is which subset of heads has the property, e.g. applicatives versus causatives.[9] We thus derive a 'none-all-some' order of implicational parameters and of parameter acquisition.

If topicality is indeed the motivation for flexible licensing, then the parameter can be rephrased as 'Which heads are sensitive to topicality?'. This fits into a more general hierarchy of ditransitive alignment patterns (Sheehan 2013), which captures two types of asymmetry. The first is secundative alignment, where the Recipient object behaves like the monotransitive object, i.e. 'I gave him the cake' but not *'I gave my friend it' (as in English). The second is indirective alignment, where the Theme behaves like the monotransitive object, i.e. 'I gave my friend it' but not *'I gave him the cake' (as in Italian). See further the typological overviews in Malchukov (2010) and (2013).

(33) *Parameter hierarchy for (a)symmetry in ditransitive alignment*

```
            Do low functional heads license their specifier?
           ╱                              ╲
          N                                Y
   4: secundative          Do all low functional heads do so?
                         ╱                              ╲
                        Y                                N
                   indirective              Are low functional heads topic-sensitive?
                                            ╱                              ╲
                                           N                                Y
                                       <..>[10]              Are all low funct heads topic-sens?
                                                            ╱                              ╲
                                                           Y                                N
                                                       1: Zulu                Are all appl heads topic-sens?
                                                                              ╱                        ╲
                                                                             Y                          N
                                                                      2: Sotho, Herero            3: Luguru
```

We see that this parameter hierarchy follows the clausal hierarchy:

(34)   [vP [CausP [HApplP [VP [LApplP]]]]]

which is reminiscent of the final-over-final constraint (FOFC), see Biberauer and Sheehan (2012), Sheehan (2013), Biberauer et al. (2014). It suggests that c-selection is restricted here: a higher head with the focus sensitivity can only select for a lower head with the same property.

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[9] It remains to be seen what precise feature specification singles out the set of applicative heads.
[10] This is a theoretical possibility that I have not encountered in the data, representing flexible licensing that is sensitive to other factors.

5. Trouble
Even within the fully symmetrical type 1 languages, patches of asymmetry emerge, particularly in combinations of derivations (passive, applicative, causative). I discuss two here.

5.1. Combinations of extensions
In Zulu, objects of doubly derived verbs with both a causative and an applicative still behave symmetrically. That is, the Causee (35b), the Benefactive (35a) or the Theme (35c) can be object marked.

Zulu (Zeller 2011)
(35) *applicative + causative*
   a.   Usipho   u-**m**-fund-is-el-a   abafundi isiZulu (uLanga).
       1aSipho 1SM-1OM-learn-CAUS-APPL-FV 2.student 7.Zulu   1a.Langa
       'Sipho is teaching the students Zulu for him (Langa).'

   b.   Usipho   u-**ba**-fund-is-el-a   uLanga   isiZulu (abafundi).
       1aSipho 1SM-2OM-learn-CAUS-APPL-FV   1a.Langa 7.Zulu   2.student
       'Sipho is teaching them Zulu for Langa (the students).'

   c.   Usipho   u-**si**-fund-is-el-a   uLanga   abafundi (isiZulu).
       1aSipho 1SM-7OM-learn-CAUS-APPL-FV   1a.Langa 2.student 7.Zulu
       'Sipho is teaching it to the students for Langa (Zulu).'

This forms an interesting contrast with Kîîtharaka. Kîîtharaka is also a type 1 symmetrical language, like Zulu: either object can be object-marked in applicatives (36) as well as causatives (37).

Kîîtharaka (Muriungi 2008: 83,84)
(36) *applicative*
   a.   Maria   a-kû-**mî**-tûm-îr-a   John.
       1.Maria   1SM-T-9OM-send-APPL-FS 1.John
       'Maria has sent it to John.' [a letter]

   b.   Maria   a-kû-**mû**-tûm-îr-a   barûa.
       1.Maria 1SM-T-1OM-send-APPL-FS 9.letter
       'Maria has sent him/her a letter.'

(37) *causative*
   a.   Mu-borisi a-kû-**mî**-nyu-ithi-a   mû-ûragani.
       1-police   1SM-T-9OM-drink-CRC-FS 1-murderer
       'The policeman has coerced the murderer to drink it.' [the poison]

   b.   Mu-borisi a-kû-**mû**-nyu-ithi-a   cûmû.
       1.-police   1SM-T-1OM-drink-CRC-FS 9-poison
       'The policeman has coerced him/her to take the poison.'

However, when a predicate has both a causative and an applicative derivation, the objects in Kîîtharaka are no longer symmetrical: only the applied object can be object-marked (38a), and object-marking the Causee or the Theme results in ungrammaticality (38b,c).

(38) *applicative + causative*
   a.   I-ba-ra-**ka**-thamb-ith-î-îr-i-e   Maria   nyomba.
        FOC-2SM-PSTY-12OM-wash-CRC-APPL-PFV-IC-FS 1.Maria 9.house
        'They coerced Maria to wash the house for it (e.g the cat).'

   b. * N-a-ra-**ba**-thamb-ith-î-îr-i-e   ka-baka nyomba.
        FOC-1SM-PSTY-2OM-wash-CRC-APPL-PFV-IC-FS 12-cat   9.house
        'He/she coerced them to wash the house for the cat.'

   c. * I-ba-ra-**mî**-thamb-ith-î-îr-i-e   Maria   ka-baka.
        F-2SM-PSTY-9OM-wash-CRC-APPL-PFV-IC-FS 1.Maria 12-cat
        'They coerced Maria to wash it for the cat.'

My hypothesis is that this sudden asymmetry is due to Kîîtharaka having a combination of the short and long causative (Bastin 1986), glossed by Muriungi as 'CRC' (coerce causative) and 'IC' (inner causative), which occur on either side of the applicative. It may thus be that the coerce causative is flexible, but the structurally higher inner causative is not. If this is true, the hierarchy in (33) should involve an extra layer asking about different types of causatives.[11]

5.2. Symmetry in passives
In Zulu, Lubukusu, Kinyarwanda and Luganda both object marking and passivisation are symmetrical: either object can be object marked and either object can become the subject of a passive. However, the languages differ in the combination of these operations.

In Kinyarwanda and Luganda, either object can be object-marked in the active as well as the passive. That is, the Theme can be object-marked in a Benefactive passive (39b), and the Benefactive can be object-marked in a Theme passive (39c).

Kinyarwanda (Ngoboka 2005: 88, glosses adapted)
(39) *symmetrical passive OM*
   a.   Umusore   y-a-hiing-i-ye   umugore   umurima.
        1.young.man 1SM-PST-plough-APPL-ASP   1.woman   3.field
        'The young man ploughed the field for the woman.'

   b.   Umugore   y-a-**wu**-hiing-i-w-e   n' umusore.
        1.woman   1SM-PST-3OM-plough-APPL-PASS-ASP by 1.young.man
        lit. 'The woman was it ploughed for by the young man.'

   c.   Umurima   w-a-**mu**-hiing-i-w-e   n'   umusore.
        3.field   3SM-PST-1OM-plough-APPL-PASS-ASP by   1.young.man
        'The field was ploughed (for) her by the young man.'

Luganda (Ranero 2015)
(40) a.   e-ssente   za-a-mu-w-ew-a   luli   o-mw-ana
           AUG-9a.money 9aSM-PST-1OM-give-PASS the.other.day AUG-1-child
        'The money was given to him/her the other day, the child.'

---

[11] See also Ngonyani & Githinji's (2006) multiple applicatives in Kikuyu, which appear to behave asymmetrically despite the despite the language's otherwise fully symmetrical properties. It remains to be seen how animacy plays a role in these counterexamples, and also at which height the higher applicative is merged.

b.   o-mw-ana   y-a-zi-w-ew-a   luli   e-ssente
        AUG-1-child 1SM-PST-9aOM-give-PASS the.other.day AUG-9a.money
        'The child was given it the other day, the money.'

In Zulu and Lubukusu, on the other hand, the Benefactive/Recipient cannot be object-marked in a (otherwise perfectly acceptable) Theme passive, as in (41b) and (42b), whereas the opposite is still possible, as shown in (41a) and (42a).

Lubukusu (Justine Sikuku p.c. July 2015)
(41) a. *Recipient-passive with Theme-OM*
        Baa-sooreri   ba-a-**chi**-eeb-w-a   (chi-khaafu)
        2.boys   2SM-PAST-10OM-give-PASS-FV 10-cows
        'The boys were given them (cows)'
    b. *Theme-passive with Recipient-OM*
        ?? Chi-kaafu   cha-a-**ba**-eeb-w-a   (baa-sooreri)
          10-cows   10SM-PST-2OM-give-PASS-FV 2-boys
        'Cows were given to them (the boys)'

Zulu (Adams 2010: 26)
(42) a. *Recipient-passive with Theme-OM*
        Aba-ntwana ba-ya-**yi**-fund-el-w-a   (in-cwadi).
        2-child   2SM-PRES.DJ-9OM-read-APPL-PASS-FV 9-book
        'The children are being read it (the book).'

    b. *Theme-passive with Recipient-OM*
        * In-cwadi   i-ya-**ba**-fund-el-w-a   (aba-ntwana).
        9-book   9SM-PRES.DJ-2OM-read-APPL-PASS-FV 2-children
        int. 'The book is being read to them (the children).'

The generalisation is thus that the Theme can be object-marked in a Benefactive passive, but the Benefactive cannot be object-marked in a Theme passive. The same asymmetry holds for extraction: the Theme can be extracted from a Benefactive passive, but the Benefactive cannot be extracted from a Theme passive. Interestingly, Norwegian and North-Western English, which are otherwise symmetrical too, show the same restriction as Zulu and Lubukusu, *and* there are no languages in which the asymmetry is the other way around (i.e. banning Theme extraction in a Benefactive passive). A promising analysis of this asymmetry in passives is pursued by Sheehan, Holmberg and Van der Wal (in preparation).

6. Conclusions and directions for further research
- Languages are asymmetrical in basis.
- Not all ditransitive predicates behave the same for symmetry.
- Specifically, there appears to be an implicational relationship between various low argument-introducing functional heads, where if a higher head allows for symmetry, then the lower heads must do so to.
- Symmetrical behaviour of multiple objects is the ability of such heads to Case-license either the argument they introduce in their specifier, or the lower argument in their complement.
- Which argument it licenses depends on their relative topicality, with the low functional head licensing the least topical of the two.

- The implicational relationship between the types of predicates can be captured in a parameter hierarchy, motivated by third-factor principles.

The analysis can be extended to
- predicates with a DP and a PP argument (cf. Bruening 2010, Jeong 2007, Baker & Kramer 2016) and other grammatical roles such as Locatives and Instrumentals (see e.g. Baker 1988, Gerdts & Whaley 1991, 1992, Marantz 1993, Alsina & Mchombo 1993, Ngonyani 1996, 1998, Simango 1995, Nakamura 1997, Ngoboka 2005, 2106, Zeller & Ngoboka 2006, Jerro 2015), as well as possessor raising constructions that take a similar shape (Simango 2007, Morolong and Hyman 1977);
- other variation in ditransitive predicates (see Margetts & Austin 2007, Malchukov 2013);
- the correlation with doubling/non-doubling object marking (agreement vs pronoun), as in (43) and Table 2. This relation can also be accounted for by the need to formally mark salience (animacy and topicality) in the clausal or non-clausal domain, as shown in work in progress (Van der Wal 2016).

(43) *Relation between Asymmetry and Non-Doubling Object Marking (RANDOM)*
　　　All non-doubling languages allow symmetrical object behaviour.
　　　Languages without symmetrical object behaviour always allow doubling.

	non-doubling	doubling	doubling unknown
asymmetric		Makhuwa, Swahili, Kiyaka, Chichewa, Tumbuka, Chimwiini, Bemba, Sambaa, Ruwund, Kagulu, Yao, Chingoni, Chuwabo, Matengo, Lika	Lunda, Nsenga
symmetric	Bembe, Herero, Swati, Zulu, Sotho, Tharaka, Shona (Ikalanga), Kuria?, Tswana, Kinyarwanda, Kirundi, Haya (Byarushengo), Luganda, Kinande, Kikuyu, Maragoli, Mongo, Tshiluba, Xhosa, Totela	Lozi, Lubukusu, Haya (Riedel), Chaga, Nyaturu, Kiluguru, Shona (Manyika)	Ha, Digo, Gitonga, Kimeru, Changana, Ndebele
symm unknown	Setawana, Fuliiru	Ekoti, Rangi, Shimakonde, Makwe, Lucazi	

Table 2 Symmetric properties of double object constructions cross-Bantu

Acknowledgements

Abbreviations and symbols

Numbers refer to noun classes, or to persons when followed by SG or PL

APPL	applicative	OM	object marker
ASP	aspect	OPT	optative
BEN	benefactive	PASS	passive
CJ	conjoint verb form	POSS	possessive
CAUS	causative	PAST	past tense
CRC	coerce	PROG	progressive
DEM	demonstrative	R	recipient
DJ	disjoint verb form	RECPAST	recent past
DOC	double object construction	SM	subject marker
FS/FV	final suffix/final vowel	T	tense
IC	inner causative	TH	theme

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