

## Valency changing operations, with a special emphasis on Bantu

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### 1. Argument structure viewed from the lexical decomposition account

This chapter considers some of the operations applying to the verb more detailed. The verb, being in the center of a clause, widely determines its structure. In particular, verbs have a varying number of players.

- (1) Max was sleeping.  
 Anna saw a bird.  
 Jeromy send her a folded paper.

*Sleep* has one complement, *see* has two, and *send* has three complements. Accordingly, these verbs can be classified as one-place, two-place or three-place verbs; often also notions like intransitive, transitive and ditransitive are used. Valency (of a verb) refers to the number of elements that one needs to make the clause centered around this verb complete, which roughly means that it expresses a full proposition.

In the syntax, valency refers to the number of complements that are necessary to form a sentence with this verb, while semantically valency refers to the number of arguments that make a proposition out of the verbal head. Thus, a valency-changing operation is identical with what is called an operation on argument structure (Wunderlich 2012b).

Arguments are distinct from adjuncts: if an argument is omitted, the utterance is felt to be incomplete („Anna saw“ would invite the question „What?“), while an adjunct can more easily be omitted („Anna saw a bird“ doesn't similarly invite the question „Where?“). Under certain contextual conditions, even arguments might be omitted without any interpretational effect, however, pro-drop is not considered to be a type of valency change. Sometimes a distinction is made between core arguments, realized by structural case (accusative, ergative, dative, nominative), and peripheric arguments, realized obliquely – in that case valency refers to core arguments..

‘Valency-changing’ presupposes that there is some valency to begin with. Not all linguists share this assumption. According to the radical Neo-Davidsonian approach (Parsons 1990, Schein 1993), syntax begins with a categorial constellation into which lexical roots are inserted. These roots, such as *sleep*, *see*, or *give*, have no arguments by themselves, except that when a root is inserted into V, it achieves an eventive argument role. By means of higher functional categories further argument roles can be introduced. Thus, GIVE would become a three-place verbal entity by successive steps of valency-increasing:

#### (2) Radical Neo-Davidsonian approach

$$\lambda e \text{ GIVE}(x,y,z)(e) \Leftrightarrow \lambda e [\text{GIVE}(e) \wedge \text{THEME}(z,e) \wedge \text{RECIPIENT}(y,e) \wedge \text{AGENT}(x,e)]$$

An alternative way is lexical decomposition, where GIVE is considered a 3-place verb, which is internally structured (Bierwisch 1989, Wunderlich 1997):

#### (3) Lexical decomposition approach

$$\lambda e \text{ GIVE}(x,y,z)(e) \Leftrightarrow \lambda e [\text{ACT}(x) \ \& \ \text{BECOME POSS}(y,z)](e)$$

What is simplified as ‘&’ here, is an asymmetric connection, often called causal connection. In any case, if a stative predicate like POSS appears in the sequel of an action, the default interpretation is that it is caused by this action. In section 3.1 below I will show that (Bantu) causatives often also have a non-causal interpretation, where ‘&’ is a more adequate connector.

In the Neo-Davidsonian approach, arguments are extrinsic to a predicate: the meaning of a clause in which *give* appears as the root is produced by an interpretation of the syntactic configuration. In contrast, in the lexical decomposition approach arguments are intrinsic: they are part of a structured meaning. So it is meaningful to speak about shifting the number of arguments. If a lexical entity appears in a syntactic structure, it distributes its semantic properties on the parts of this structure. If there are more (or less) argument positions than admitted (or required) by this verb lexically, the syntactic structure would be defective. In the Davidsonian approach it is not so easy to determine whether a syntactic structure in which a lexical root is inserted is defective with respect to this root.

The (radical) Davidsonian approach is confronted with some general problems. First, a (universal) repertoire of thematic relations must be assumed, among them more complex ones like EXPERIENCER and RECIPIENT, which depend on other roles: an experiencer only lives in the context of a stimulus, and a recipient only lives in the context of a transposed object (the theme). Thus, certain thematic relations can only be assigned in the context of others.

Second, if one adds an argument by means of CAUSE or AGENT(x,e), it is often the case that one also must change further thematic roles. Consider CAUSE to see (=show), CAUSE to have (=give), CAUSE to eat (=feed), and CAUSE to sing; in each case, AGENT(x,e) is added. Simultaneously, the role of other participants must be reevaluated: an experiencer remains EXPERIENCER, the possessor becomes RECIPIENT, and both the eater and the singer become CAUSEE.

Third, since all verbs are assumed to be one-place semantic constants with an event argument, there must be further ways to characterize the various semantic classes of verbs. The fact that *give* and *show* normally have 3 syntactic argument positions, while *drink* or *help* only have 2, and *sleep* only 1 syntactic argument must be added in some or the other way.

Fourth, in order to adequately map arguments onto argument positions, the arguments must be ranked, but orderings such as agent > experiencer/recipient > theme could only be stipulated.

These problems do not show up in the Lexical Decomposition approach. First, thematic relations might be useful in speaking about certain classes of arguments, but they do not play an important theoretical role; the grammar of a language is not centered around such a notion. The arguments of a verb are not drawn individually from a stack of roles, but rather are related to each other. *This evil ate a bat*: what we know for certain from this sentence is that *this evil* denotes a creature able to eat, and *a bat* denotes something eatable. The verb makes that the arguments contrast to each other in exactly this sense (say, an actor and an undergoer). Similarly, one easily can expect that *he felt a midge*, *he saw an elephant*, *he heard a flute* are all instances of experiencer-stimulus relations.

Second, the causative adds ACT(x) in highest position, which means that all parts of the original meaning of the verb become downgraded. But nothing changes in their semantic relationships. So *he showed the dragon the lightening of a match* implies that the dragon saw the lightening of a match. Concerning argument ranking, *dragon > lightening* becomes *he > (dragon > lighthening)*, which means that the highest argument (*dragon*) becomes second-to-highest in the causative formation.

The third problem was induced by the assumption that verb roots only have an event argument; this problem does not appear if one assumes that all verbs are lexically connected with more articulated predicate-argument representations.

Finally, argument ranking is the crucial issue, which makes the Lexical Decomposition approach superior. By convention, the notation ACT(x) & BECOME POSS(y,z), in which ‘&’ is asymmetric, induces the ranking  $x > y > z$ . The smallest elementary predicates have at most two arguments; it is therefore an individual property of each of these predicates how the two arguments are ordered. According to the tests proposed by Barss & Lasnik 1986, and Larson 1988, the higher argument can asymmetrically bind the possessor of the lower argument (*every girl<sub>i</sub> loves her<sub>i</sub> mother*, but not *\*her<sub>i</sub> mother loves every girl<sub>i</sub>*). Furthermore, according to Bresnan & Nikitina 2003, and Wunderlich 2006, the higher argument is more likely to be more salient in terms of person, animacy, definiteness, and topic than the lower argument (*he<sub>i</sub> was loved by his<sub>i</sub> mother* is better than *his<sub>i</sub> mother loved him<sub>i</sub>*). Thus, for each individual verb the respective argument ranking can be deduced from the linguistic data. Considering the realization of arguments, their respective ranking is the major factor. In other words, case theory as well as agreement theory mainly work on the argument rankings given by the individual lexical verbs.

Summarizing so far, the Neo-Davidsonian approach characterizes the arguments of a verb by thematic relations between argument and event, so it has no way to derive relations among the arguments such as argument ranking. Consequently, this approach must seek for alternative ways to produce a hierarchy of arguments – mostly this is done by means of syntactic configurations. By contrast, the Lexical Decomposition approach, using tests that relate the arguments of a verb to each other, begins with a hierarchy of arguments independently of possible syntactic configurations, and so can predict the distribution of case as well as the agreement facts much easier.

In a representation such as (4a) the arguments x, y, and z have to be regarded as argument variables. By successive lambda abstraction, the configuration in (4b) yields; the sequence of  $\lambda$ -variables in which the argument ranking  $x > y > z$  is inherited by the ordering of abstraction might be called  $\theta$ -structure. The semantic representation of a sentence like *Eve gave Adam the apple* then results from stepwise lambda conversion (4c).

- (4) a.  $\lambda e [\text{ACT}(x) \ \& \ \text{BECOME POSS}(y,z)](e)$   
 b.  $\lambda z \lambda y \lambda x \lambda e [\text{ACT}(x) \ \& \ \text{BECOME POSS}(y,z)](e)$   
 c.  $\lambda z \lambda y \lambda x \lambda e [\text{ACT}(x) \ \& \ \text{BECOME POSS}(y,z)](e)(\text{eve})(\text{adam})(\text{the\_apple}) =$   
 $\lambda y \lambda x \lambda e [\text{ACT}(x) \ \& \ \text{BECOME POSS}(y,\text{the\_apple})](e)(\text{eve})(\text{adam}) =$   
 $\lambda x \lambda e [\text{ACT}(x) \ \& \ \text{BECOME POSS}(\text{adam},\text{the\_apple})](e)(\text{eve}) =$   
 $\lambda e [\text{ACT}(\text{eve}) \ \& \ \text{BECOME POSS}(\text{adam},\text{the\_apple})](e) \Rightarrow$   
 $\exists e [\text{ACT}(\text{eve}) \ \& \ \text{BECOME POSS}(\text{adam},\text{the\_apple})](e)$

There is an elegant mechanism of argument linking based on argument hierarchy, first proposed by Kiparsky (1992): both the argument hierarchy and the structural cases have to be encoded by the same set of relational features. For this purpose, Lexical Decompositional Grammar (Wunderlich 1997, 2000, 2006) uses the features +hr = ‘there is a higher argument role’ (= ‘not the highest role’), and +lr = ‘there is a lower argument role’ (= ‘not the lowest role’); for reasons of markedness, these features slightly differ from those proposed by Kiparsky. The structural cases are specified as follows: dative = [+hr,+lr] is compatible with the medial argument, accusative = [+hr] with a non-highest argument, ergative = [+lr] with a non-lowest argument, and nominative = [ ] (the unspecified case) with any argument. Default agreement with the subject is described by the feature [–hr] = ‘there is no higher role’.

(5) Featural encoding of the argument hierarchy in the  $\theta$ -structure:

*Sie zeigte ihm den Apfel.* ('She showed him the apple'; NOM – ACC – DAT)  
 $\lambda z \quad \lambda y \quad \lambda x \quad \text{PRED}(x,y,z)$   
 +hr    +hr    –hr  
 –lr    +lr    +lr

The actual case pattern (in this case NOM – ACC – DAT) follows as the optimal solution in a framework with ranked constraints. It should be clear that ergative appears under different circumstances than accusative, and that dative is present only in a subset of both the ergative- and the accusative-languages. Stiebels (2000, 2002) sketches a full typology of structural case systems in terms of those constraint rankings. Wunderlich (2003) also includes lexical case marking, which interacts with structural case; he shows that all possible case patterns of German (11 different ones) as well as all possible case patterns of Icelandic (18 different ones), including those that appear in the passive, are determined by the same constraint ranking; the main difference is that Icelandic has more lexical case marking than German.

Lexical case is represented by associating a feature that overrides what the actual hierarchy of arguments would predict. For instance, verbs with dative for the highest argument must be lexically marked, which is obvious when verbs with the same meaning have nominative instead, consider German *gefallen* vs. *mögen*, expressing the same psychological state.

(6) Lexical marked vs. unmarked case.

a. Er gefiel ihr.                      b. Sie mochte ihn.                      (both: 'She liked him.')

$\lambda y \lambda x \text{ LIKE}(x,y)$                        $\lambda y \lambda x \text{ LIKE}(x,y)$   
 +hr

When lexical marking is lost historically, the DAT-NOM verb shifts to a NOM-ACC verb, compare Icelandic *lika*, a DAT-NOM verb, with English *like*.

It should be pointed out that besides of argument linking by case or pronominal affixation, there exist other types of argument linking such as the active-inactive type (in Lakota), the inverse type (in Algonquian), the multiple-voice type (in the Philippine languages), and the positional type (in a great number of languages, including English), see Wunderlich 2006. English is an example of the positional type with SVO as the dominant order, where the position in front of the verb is [–hr], and the positions that follow the verb are [+hr].

Starting with an articulated argument structure of the verb, one can observe that the same verb often appears with a different number of arguments: the respective variants of the verb can have more or less arguments. Thus, the valency of the verb is either extended or reduced; these valency shifting operations can be made visible on the verb (such as *eat* – *feed*=CAUS(EAT)) or remain covert (such as *break<sub>itr</sub>* – *break<sub>tr</sub>*).

Valency extension is possible in two ways: either a new highest argument is added (by the causative or similar operations), or a new non-highest argument (a lowest or a medial one) is added (by an applicative operation). In principle, both kinds of operations can be iterated, so that constructions with five, or even six, structural arguments are not impossible.

On the other side, the number of arguments can be systematically reduced. While argument extension makes the verb more complex (by adding a predicate that licenses a new argument), argument reduction usually doesn't make the verb more simple. Passive is an operation, that binds the highest argument existentially, while antipassive is an operation that binds the lowest argument existentially. Both reflexive and reciprocal bind a lower argument to a higher one.

What is bothering from the theoretical point of view is the fact that valency changing operations are often ambiguous or polysemous in unpredictable ways. The so-called middle is a general detransitivization operation notoriously underspecified; for instance, the Chukchi affix *-tku/-tko* can be read as passive, antipassive, reflexive, or anticausative, dependent on the respective context (Nedjalkov 2006). Similarly, the Pama-Nyungan languages of Australia often have a transitivization marker (such as *-nti* in Kalkatunga), which means causative or applicative, dependent on the context. Such a constellation calls for an optimization selecting the most appropriate transitive reading. In the context of ‘fall’, *-nti* works as a causative (‘push over’), while in the context of ‘play’, *-nti* works as an applicative (‘play with’):

- (7) Transitivization in Kalkatunga (Austin 1997)
- |                 |                                  |
|-----------------|----------------------------------|
| a. nguyi ‘fall’ | nguyi-nti ‘push over’            |
| b. wani ‘play’  | wani-nti ‘play with (something)’ |

In the following, the working of the various valency changing operations will be studied with a special view on the Bantu languages, which have a particularly rich inventory of these operations, mostly readable from the verb’s agglutinative construction.

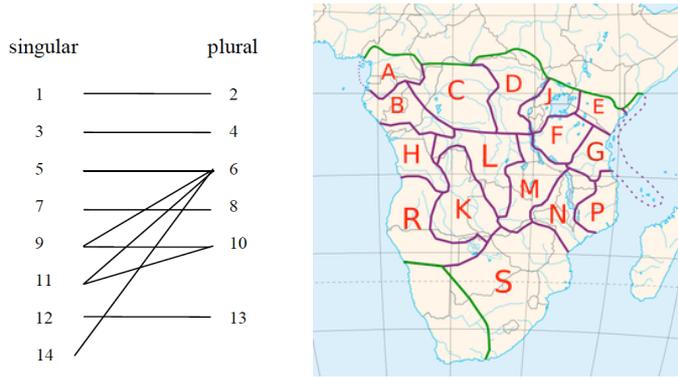
A notable fact about verbal suffixes like the causative and applicative in Bantu is that more than one of them can attach to a given verb root. For example, in the Chichewa sentence in (8) the verb root *-mang-* ‘tie’ is followed by both a causative and an applicative suffix, giving rise to three objects: a causee and a beneficiary besides the direct object of the verb. Even five objects are possible, as shown by the Kinyarwanda example (9) in which both the causative and the applicative are iterated (here, the second causative has instrumental function). How so many arguments can be managed in a language is thus an important topic for semanticists.

- (8) A four-argument verb in Chichewa (N31b; Good 2005)
- Ti-na-mang-its-ir-a*                      *atsikana alenje mbuzi.*  
 1plS-PAST-tie-CAUS-APPL-FV    2.girl    2.hunter    10.goat  
 ‘We made the hunters tie the goats for the girls.’

- (9) A seven-argument-verb in Kinyarwanda (Kimenyi 2006)
- a-ra-na-ha-ki-zi-ba-tu-n-som-eesh-eesh-er-er-ez-a*  
 1S-PRES-also-16O-7O-10O-2O-2plO-1sgO-read-CAUS-CAUS-APPL-APPL-IMP-FV  
 ‘She (the woman) is also making them read it (book) with them (glasses) to you for me there (in the house).’

## 2. Some typological characteristics of Bantu.

*Noun classes.* Bantu nouns are classified into several classes, often for semantic grounds. (Note that numerous nouns belong to a noun class for historical reasons and not because of their present meaning.) Bantu languages do not have a plural morpheme; instead, plurals belong to a different noun class than singulars. To be more complicated, the members of some classes have their plurals in different classes. For example, class 6 in Bembe (D54, Congo) contains plurals from 4 different singular classes (Iorio 2011). The number D54 refers to the Guthrie classification of Bantu languages (Guthrie 1967/71, Maho 2009).



Noun classes are usually marked by means of prefixes on the noun, on the nominal attributes (such as adjectivals), on the verb (subject and object agreement), on demonstrative and possessive pronouns and on relatives. For example, subject-verb agreement in Lubukusu is shown in (10). Noun classes 16 to 18 refer to spatial concepts.

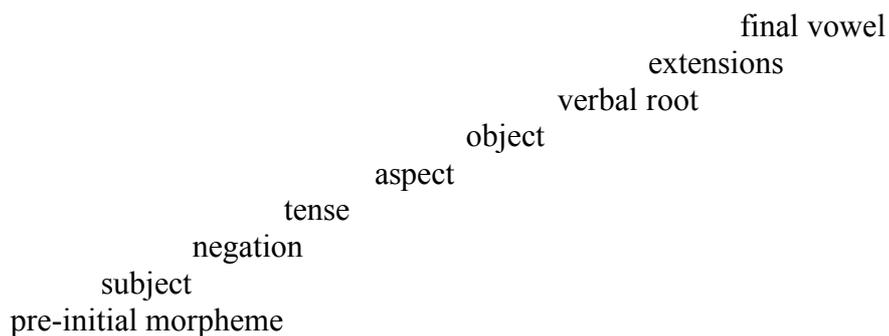
(10) Subject-verb agreement in Lubukusu (E31, Kenya, adapted from Wasike 2007)

1	<b>o</b> -mu-aana	<b>a</b> -akwa	the child fell
2	<b>ba</b> -ba-aana	<b>ba</b> -akwa	children fell
3	<b>ku</b> -mu-saala	<b>kw</b> -akwa	the tree fell
4	<b>ki</b> -mi-saala	<b>ky</b> -akwa	trees fell
5	<b>li</b> -li-ino	<b>ly</b> -akwa	the tooth fell
6	<b>ka</b> -me-eno	<b>ka</b> -akwa	teeth fell
7	<b>si</b> -sy-uuma	<b>y</b> -akwa	the bead fell
8	<b>bi</b> -bi-uuma	<b>by</b> -akwa	beads fell
9	<b>e</b> -n-dubi	<b>ya</b> -akwa	the basket fell
10	<b>chi</b> -n-dubi	<b>cha</b> -akwa	baskets fell
11	<b>lu</b> -lw-iki	<b>lw</b> -a-kw-a	the door fell
12	<b>kha</b> -kha-ana	<b>kha</b> -akwa	the small child fell
14	<b>bu</b> -bw-oongo	<b>bw</b> -akwa	brains fell
15	<b>khu</b> -khu-iicha	<b>khw</b> -abia	the coming turned bad
16	<b>a</b> -mesa	<b>a</b> -abia	at the table turned bad
17	<b>khu</b> -mesa	<b>khw</b> -abia	on the table turned bad
18	<b>mu</b> -mu-siinga	<b>mw</b> -abia	inside the hive was bad
19	<b>ku</b> -ku-aana	<b>kw</b> -akwa	the big child fell
23	<b>e</b> -ekimilili	<b>ya</b> -ang'oon	at Kimilili was good

*The structure of the verb.* The Bantu verbs are morphologically complex. The root is preceded by several grammatical morphemes in a strict order, including a subject marker and (optionally) up to five or so distinct object markers.

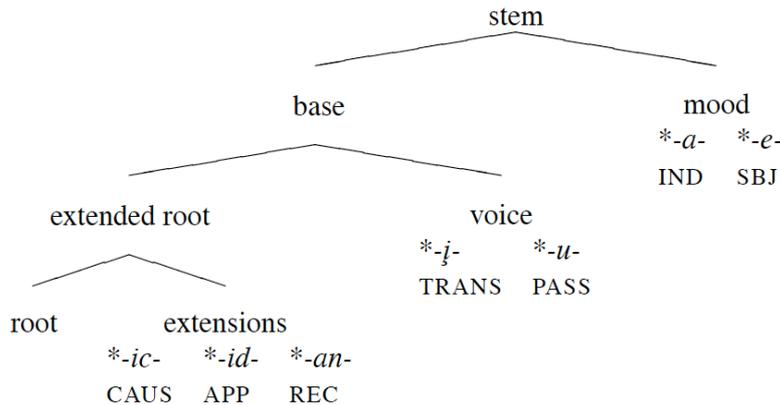
(11) The structure of the verb

PI – subj – neg – tense – asp – obj<sup>n</sup> – **root** – ext\* – FV



The root is followed by an open set of extension markers, among them those that characterize the respective valency status of the verb. Sometimes, the more complex markers for operations such as causative, applicative and reciprocal are considered to be base-internal, while the monovocalic markers for operations such as transitive (also called short causative) and passive are considered to be base-external. In any case, the monovocalic markers follow the more complex markers. Monovocalic is also the obligatory final vowel (FV), which marks indicative or subjunctive mood, or aspect.

(12) The reconstructed Proto-Bantu verb stem (Good 2005)



*Word order.* The major word order in Bantu is SVO, more precisely, SVO<sup>n</sup>, where the number of objects can maximally be extended to five or six. Most of these objects are introduced by valency-extending operations such as causative and applicative. The ordering of objects is determined by the interaction of several constraints: human > nonhuman, animate > inanimate, countable > uncountable, definite > indefinite, last added > earlier added argument.

Similarly, the ordering of the object prefixes on the verb depends on various circumstances. The order of these object markers is mostly an mirror image of the sequence of object NPs, with the last object marker corresponding to the first object NP. However, object markers often only appear if a corresponding object phrase is lacking. For convenience, the indices 1, 2, 3 in the Tswana examples indicate the morphemes that introduce the objects in (13a), and the corresponding object markers in (13b).

(13) Order of objects and object markers in Tswana (S31, Botswana; Creissels 2002:391)

- a. ki-tla -kwál-él-él-a ðwana batsáli lekwáló  
 1sgS-FUT-write<sub>1</sub>-APPL<sub>2</sub>-APPL<sub>3</sub>-FV child<sub>3</sub> parents<sub>2</sub> letter<sub>1</sub>  
 ‘I’ll write a letter to the parents for the child.’
- b. ki-tla -le-ba-mu -kwál-él-él-a  
 1sgS-FUT-it<sub>1</sub>-them<sub>2</sub>-him<sub>3</sub>-write<sub>1</sub>-APPL<sub>2</sub>-APPL<sub>3</sub>-FV  
 ‘I’ll write it to them for him.’

#### *Inversion structures*

Many Bantu languages have constructions where the initial NP, agreeing with the verb, is not the (logical) subject, which rather follows the verb. One of these constructions is S/O-reversal triggered by the rule that a topic precedes the verb, while a focussed entity follows the verb.

(14) S/O-reversal in Kinyarwanda (D61, Ruanda; Kimenyi 1980: 141)

- a. Umu-huu<sup>^</sup>ngu a-ra-som-a igi-tabo.  
 1-boy 1-PRES-read-FV 7-book  
 ‘The boy is reading the book.’

- b. Igi-tabo cyi-ra-som-a umu-huu^ngu.  
 7-book 7-PRES-read-FV 1-boy  
 ‘The book, the boy is reading.’

Another such a construction is locative inversion, first studied by Bresnan and Kanerva (1989). These authors demonstrated that locative phrases can be inverted with the subject of inactive verbs (unaccusatives) in languages such as Chichewa. In other languages locative inversion is also possible with agentive (unergative) verbs (Demuth and Mmusi 1997), and even with transitive active verbs (Marten 2006):

(15) Locative inversion in Chichewa (N31, Malawi)

- a. a-nyani a-a-khal-a m-mi-tengo  
 2-baboon 2S-PERF-sit-FV 18-4-tree  
 ‘Baboons are sitting in the trees.’
- b. m-mi-tengo mw-a-khal-a a-nyani  
 18-4-tree 18S-PERF-sit-FV 2-baboon  
 ‘In the trees are sitting baboons’

(16) Locative inversion in Digo (E73, Kenya)

- a. Tsaka-**ni** ku-na-imba atu.  
 forest-LOC 17S-CONT-sing 2people  
 lit. ‘In the forest are singing people.’
- b. **Mo** chumba-**ni** mu-na-andika mutu baruwa.  
 18.DEM room-LOC 18S-CONT-write 1person 9letter  
 lit. ‘In the room is someone writing a letter.’

The actual realization of locative inversion varies considerably, however, one should have in mind that it does not alter the valency status of the verb.

*Restriction in the number of objects.* Some Bantu languages do not allow more than two objects. In Shona (Wechsler 2014), a 3-place verb such as ‘give’ cannot be causativized. Ungrammaticality also results when a transitive verb undergoes CAUS-APPL extension.

(17) Object-restriction in Shona (S10, Zimbabwe)

- a. \*Tinotenda a-ka-ip-is-a Tatenda Tendai chipo.  
 T. 1S-PAST-give-CAUS-FV T. T. gift  
 ‘Tinotenda made Tatenda give Tendai a gift.’
- b. \*Ta- sung-is-ir-a vavhimi vasikana mbudzi  
 1pl-tie-CAUS-APPL-FV hunters girls goats  
 ‘We made the hunters tie the goats for the girls.’

It is not the combination CAUS-APPL as such which renders ungrammaticality, since this combination is possible with intransitive verbs.

- (18) a. Tinotenda a-ka-donh-es-er-a Tatenda poto ye-mvura.  
 Tinotenda 1S-PAST-fall-CAUS-APPL-FV Tatenda pot POSS-water  
 ‘Tinotenda dropped the water pot for/on Tatenda.’
- b. Tinotenda a-ka-tamb-is-ir-a Tendai Tatenda.  
 Tinotenda 1S-PAST-dance-CAUS-APPL-FV Tendai Tatenda  
 ‘Tinotenda made Tatenda dance for Tendai.’

That the excessive number of arguments overtly realized as NP (or pronominal affix) renders ungrammaticality, and not the valency of the verb itself, is shown by examples in which one argument of a 4-place verb remains implicit. Interestingly, the argument that is allowed to stay implicit differs in yet unrecognized ways.

(19) Implicit arguments in Shona

- a. mai a-ka-bik-is-ir-a mukomo chikafu  
 mother 1S-PAST-cook-CAUS-APPL-FV brother meal  
 Can only mean: ‘The mother made someone cook a meal for the brother.’
- b. Tinotenda a-ka-tamb-is-ir-a Tendai  
 Tinotenda 1S-PAST-dance-CAUS-APPL-FV Tendai  
 Can only mean: ‘Tinotenda made Tendai dance for someone.’

### 3. Valency-increasing operations

#### 3.1 Causative and similar operations

We first consider operations of adding an argument. Any argument must be licensed by a predicate, thus, if an argument is added, some predicate must be added, too. Either a higher predicate together with a higher argument is added, or a lower predicate together with a lower argument. A prototypical instance of the former type of operations is the causative, whereas various sorts of applicative are characteristic for the latter type of operations.

A causative in the narrow sense adds a causer, who instigates the event expressed by the basic verb, either by direct coercion, or more indirectly by giving an order or admitting a certain course of affairs. Some version of causative is found in nearly every language, and many languages have more than one type of causatives, differing both morphologically and semantically.

It is disputed in the literature whether the morphological causative has to be represented explicitly by the predicate CAUSE, or whether the causal relationship can be inferred from the lexical combination of an action predicate with another, more simple predicate (see, e.g., the different views advocated by Bierwisch 2002 vs. Wunderlich 2000, 2012a). For the purpose of this article, I use ‘&’ as an asymmetric connector AND, which may get various contextually-induced readings, among them ‘&<sub>CAUSE</sub>’. The thereby imported factive reading is expressed by existential binding of the verb’s original event variable.

$$(20) \text{ CAUS } [\lambda e' \text{ VERB}(\dots)(e')] = \dots \lambda x \lambda e \{ \text{ACT}(x) \& \exists e' \text{ VERB}(\dots)(e') \}(e)$$

In a typical causative formed from a transitive verb the causee becomes the medial argument; it is marked dative both in an accusative-based language like Japanese (21a) as well as in an ergative-based language like Basque (21b).

(21) Causative in Japanese (Washio 1995: 6) and Basque (Joppen & Wunderlich 1995: 145)

- a. John-ga Mary-ni tokei-o nusum-ase-ta.  
 John-NOM Mary-DAT watch-ACC steal-CAUS-PAST  
 ‘John let Mary steal a watch.’
- b. Ama-k haurr-a-ri zopa jan-eraz-i dio.  
 mother-ERG child-DET-DAT soup.NOM eat-CAUS-PERF have.3N.3sgD.3sgE  
 ‘Mother let the child eat the soup’  
 $\lambda z \lambda y \lambda x \lambda e \{ \text{ACT}(x) \&_{\text{CAUSE}} \exists e' \text{ EAT}(y,z)(e') \}(e)$

In the Bantu double object construction the causee is realized as the primary object (which can become subject under passive, can be co-indexed with an object affix, etc.). Besides this unmarked option, illustrated in (22a), there is also a marked option, in which the causee is

obliquely realized and does not function as a structural object (22b). Such a marked option is found in various languages, even in those that otherwise have a dative; in Hungarian, for instance, it can be captured by the assumption that the causative morpheme lexically assigns instrumental case (23b).

(22) Causative variation in Bantu: Chimwiini (a) vs. Chichewa-A (b)

(Baker 1988: 183,163; Chimwiini is a dialect of Swahili)

a. Mwa:limu Ø-wa-andik-ish-ize wa:na xati.

1.teacher 1S-2O-write-CAUS-ASP 2.children letter

‘The teacher made the children write a letter.’

b. Anyani a-na-wa-meny-ets-a ana kwa buluzi.

baboons 2S-PAST-2O-hit-CAUS-ASP children to lizard

‘The baboons made the lizard hit the children.’

(23) Medial arguments in Hungarian (Wunderlich 2002)

a. Anna Péter-nek adott egy könyv-et.

A. P.-DAT gave a book-ACC

‘Anna gave a book to Peter.’

b. Anna könyv-et olvas-tat Péter-rel.

A. book-ACC read-CAUS P.-INST

‘Anna has Peter read a book.’

The morphological causative should not be confused with the periphrastic causative, a construction formed with an object control verb, such as *force*, *make*, or *let* (*force him to go*, *make him go*, *let him go*). Such a verb adds two arguments, whereby it identifies the object with the subject of a dependent (infinitive) clause (24a). It would, therefore, be unexpected that a single morphological operation produces an object control configuration like (24a), as proposed by Alsina 1992 (see also Matsumoto 1998).

(24) Periphrastic vs. morphological causative

a.  $\lambda P \lambda y \lambda x \text{FORCE}(x,y,P(y))$

b.  $\lambda p \lambda x \{\text{ACT}(x) \ \&_{\text{CAUSE}} \ p\}$

More generally, an operation that adds a higher argument would have the semantic form (25a), which is simpler than the representation commonly found for the causative (25b).

(25) a. **OP** [ $\lambda e' \text{VERB}(\dots)(e')$ ] = ...  $\lambda x \lambda e \{\text{PRED}(x) \ \& \ \exists e' \text{VERB}(\dots)(e')\}(e)$

b. **CAUS** [ $\lambda e' \text{VERB}(\dots)(e')$ ] = ...  $\lambda x \lambda e \{\text{CAUSE}(\text{ACT}(x), \exists e' \text{VERB}(\dots)(e'))\}(e)$

Some languages have more than one causative suffix. Usually, these suffixes have acquired slightly different meanings. This already shows that causative is not a semantically strict operation with a fixed meaning but rather an operation that corresponds to a family of related meanings. If one assumes that CAUSE in the representation of the causative is a contextually-induced parameter, one could also define different parameters for slightly different concepts.

In the following I will defend the minimalist representation in (25a) by looking at the various alternative meanings enabled by the causative morpheme added to a Kinyarwanda verb.

As discussed in detail by Kimenyi (Ms), Kinyarwanda (D61, Rwanda) has a short causative *-y* and a long causative *-iish*, which both are inherited from Proto-Bantu. The short causative, sometimes also called ‘transitive’, is less productive and subject to more phonological and morphological constraints than the long one; on the other hand, the long causative allows for a greater number of additional interpretations. In some languages it is attested that the short causative derives transitive verbs, while the long causative derives ditransitive verbs:

(26) Causative morphemes in Nyoro (E 11, Uganda, Bastin 1986: 116)

<i>-og-a</i>	(bathe-FV)	‘bathe’
<i>-og-y-a</i>	(bathe-TRANS-FV)	‘wash’
<i>-og-is-a</i>	(bathe-CAUS-FV)	‘make wash’

Ditransitivization of an intransitive verb should be thought of as an operation in two steps; consequently, a language such as Ciyao combines the two causative morphemes, whereby the long causative always precedes the short one. It is also possible that an applicative is used between the two causative morphemes; the combination CAUS-APPL-TRANS is sometimes found as an idiomatic construction.

(27) Productive application of the two causative morphemes in Ciyao (P21, Malawi, Ngunga 2000: 236)

STEM	PROTO-BANTU	GLOSS
<i>-won-</i>	< *-bon-	‘see’
<i>-won-es-y-</i>	< *-bon-ic-i-	‘see-CAUS-TRANS’
<i>-won-ec-es-y-</i>	< *-bon-ic-id-i-	‘see-CAUS-APPL-TRANS’

**Direct and indirect causation.** Direct causation implies a direct link between the causer and the causee (such as control or resultative event), while indirect causation presupposes an intermediary agent between the causer and the causee. Note that the short causative cannot express indirect causation.

- (28) a. Umugabo a-ra-ambuk-s-a                      umugoré urúuzi.  
 man        1S-PRES-cross-TRANS-FV    woman    river  
 ‘The man is making the woman cross the river.’                      *direct causation*
- b. Umugabo a-ra-ambuk-iish-a                      umugoré urúuzi.  
 man        1S-PRES-cross-CAUS-FV    woman    river  
 ‘The man is having the woman cross the river.’                      *indirect causation*

Indirect causation involves a causative chain.

(29) ...  $\lambda x \lambda e \{ \text{ACT}(x) \ \&_{\text{CAUSE}} \ \exists y \text{ACT}(y) \ \&_{\text{CAUSE}} \ \exists e' \text{VERB}(\dots)(e') \} (e)$

**Causatives with instrumental meaning.** Another difference between the two causatives is that *-iish* allows the instrumental meaning (30a), while *-y* does not (30b). Expressing the instrumental in the presence of a short causative requires a prepositional phrase as in (30c).

- (30) a. Umugabo a-ra-ambuk-iish-a                      umugoré urúuzi    ubwáato.  
 man        1S-PRES-cross-CAUS-FV    woman    river        boat  
 ‘The man is helping the woman cross the river in a boat.’  
 literally: ‘The man causes\_with\_a\_boat that the woman crosses the river.’

- b. \*Umugabo a-ra-ambut-s-a                      umugoré urúuzi      ubwáato.  
 c. Umugabo a-ra-ambut-s-a                      umugoré urúuzi      n'ú-ubwáato.  
     man      1S-PRES-cross-TRANS-FV      woman      river      with/in-boat  
 'The man is helping the woman cross the river with/in a boat.'

In (30a), the causative seems to add two arguments, namely the causer and the instrument. Authors such as Kimenyi (Ms.) and Alsina (1992) assume that the instrument 'boat' is the direct object of the causative morpheme, which leads to the representation in (31a). However, the simultaneous addition of a higher and a lower argument is questionable because then the information of the basic verb would be squeezed between the added material (similar to the function of a circumfix on the phonetic side). I would rather prefer the view that a causative invites the adding of an instrumental by a further silent (non-expressed) operation (31b).

- (31) Alternative representations of the instrumental use of causatives  
 a. ...  $\lambda y \lambda x \lambda e \{ACT(x,y) \ \&_{CAUSE} \exists e' VERB( \dots )(e')\}(e)$   
 b. ...  $\lambda y \lambda x \lambda e \{ACT(x) \ \&_{CAUSE} \exists e' VERB( \dots )(e') \ \& INSTR(y)\}(e)$

Doubling the causative is also possible. This makes the causal chain of indirect causation transparent – the instrument functions as a sort of subordinated causer: 'the man makes the boat to make the woman cross the river'.

- (32) Doubling the causative in Kinyarwanda  
 Umugabo a-ra-ambuk-iish-iish-a                      umugoré ubwáato urúuzi.  
 man      1S-PRES-cross-CAUS-CAUS-FV      woman      boat      river  
 'The man is having the woman cross the river using a boat'.

This kind of argumentation might explain why the causative morpheme sometimes takes over pure instrumental function (in Bantu languages of the Kinyarwanda type).

- (33) Instrumental function of the causative (Kimenyi 1980:32-33)  
 a. Umugóre a-ra-andik-iish-a                      íbárúwa íkárámu.  
     woman      1S-PRES-write-INST-FV      letter      pen  
 'The woman is writing a letter with a pen.'  
 b. Umugóre a-ra-andik-iish-a                      ímáshiini.  
     ...                      typewriter  
 'The woman is typing.'

**Causation as assistance**, where physical or moral assistance but not control or manipulation of the causee is implied, is possible with both causative morphemes. That the helper is involved in the same action as the helpee, makes it possible to reach a certain result together – thus, it is well motivated to use the causative morpheme here.

- (34) a. Umwána a-ra-kúbuu-z-a                      umukoóbwa inzu.  
     child      1S-PRES-clean-CAUS-FV      girl      house  
 'The child is helping the girl to clean the house'.  
 'The child is making the girl clean the house.'  
 b. Umugoré y-eemer-e-ye                      umugabo ku-mu-huong-iish-a.  
     woman      1S-accept-APPL-FV      man      to-IO-escape-CAUS-FV  
 'The woman promised the man to help him escape.'

The assistive reading is also found in Wolof, an Atlantic-Congo language spoken in Senegal.

- (35) Assistance reading of the causative in Wolof (Shibatani & Pardeshi 2001, *S.6 Voisin*)  
 Tabax-le naa ko kër-am.  
 build-CAUS 1sg 3sgO house-3sg.POSS  
 I helped him build his house.

Note that Bolivian Quechua has separate morphemes for assistive and causative: *-ysi* vs. *-chi*.

- (361) Causative and Assistive in Bolivian Quechua (van de Kerke 1996: 153, 157)

- a. Mama-y Maria-ta maylla-**ysi**-wa-rqa  
 mother-1sg Mary-ACC wash-ASS-1ACC-PAST  
 ‘My mother helped me to wash Maria.’  
 $\lambda z \lambda y \lambda x \lambda e \{ \text{HELP}(x) \ \& \ \text{WASH}(y,z) \} (e)$
- b. Mama-y Maria-ta maylla-**chi**-wa-rqa  
 mother-1sg Mary-ACC wash-CAUS-1ACC-PAST  
 ‘My mother made me wash Maria.’  
 $\lambda z \lambda y \lambda x \lambda e \{ \text{ACT}(x) \ \&_{\text{CAUSE}} \ \text{WASH}(y,z) \} (e)$

**Causatives in adversative use.** Causatives in Kinyarwanda can also be used to relate not to causers of events but to individuals affected by events. The person the main verb agrees with is then a beneficiary or a maleficiary of the event. Note that the probably idiomatic combination CAUS-APPL+CAUS is used to express this effect.

- (37) a. Kagabo y-a-pf-**uush-ij-e** ababyéeyi.  
 Kagabo 1S-PAST-die-CAUS-APPL+CAUS-FV parents  
 ‘Kagabo's parents died.’  
 lit. ‘Concerning Kagabo, something caused his parents to die.’
- b. Uno mugabo y-a-hi-**ish-ij-e** inzu.  
 this man 1S-PAST-burn-CAUS-APPL+CAUS-FV house  
 ‘This man's house burned.’

An adversative interpretation of the causative is also found in Mongolian (Washio 1995: 148).

- (38) Bi bagš-aar nom-yg unš-uul-av.  
 1sg teacher-INS book-ACC read-CAUS-PAST  
 (i) ‘I made the teacher read my book.’  
 (ii) ‘My book was read by the teacher.’

In Korean, morphological causative and passive use the same suffix *-i* (or *-hi*, *-li*, *-ki*, depending on the phonological context), so (7a) turns out to be ambiguous, just in the same way as the Mongolian example (Washio 1995: 134,122). This ambiguity seems to reflect a more general interpretational ambiguity of causatives. In a way, as Washio (1995) discusses, the causative bears an affectedness relation: either the causer affects some event, or the event affects one of its participants. In Japanese, the construction for expressing the second meaning is known as adversative passive (39). Indeed, a construction with the possessor as the affected topic can best be launched as passive – by possessor raising, then, the possessor becomes the highest argument. Affectedness is a contextual reading of the special position of this possessor.

- (39) a. Na-nun sensayngnim-eykey chayk-ul ilk-hi-ess-ta. Korean  
 1sg-TOP teacher-DAT book-ACC read-CAUS/PASS-PAST-DECL  
 (i) ‘I made the teacher read the book.’  
 (ii) ‘As for me, my book was read by the teacher.’

- b. Boku-wa sensei-ni hon-o yom-are-ta. Japanese  
 1sg-TOP teacher-DAT book-ACC read-PASS-PAST  
 ‘As for me, my book was read by the teacher.’  
 $\lambda z \lambda y \lambda x \lambda e \{ \text{AFFECTED}(x) \ \& \ \text{POSS}(x,z) \ \& \ \text{READ}(y,z) \}(e)$

**Causatives without a resultative event.** Not only that causative constructions in Kinyarwanda may lack causees or causers, they also may not produce any resultative event. In this case there is only an attempt or trial.

- (40) Abagabo ba-á-gii-ye gu-héemb-eesh-a, ariko amafaraanga ba-ra-yá-b-iim-a.  
 men 2S-PAST-go-FV to-pay-CAUS-FV but money 2S-PAST-it-2O-refuse-FV  
 ‘The men went to get paid but they refused them the money.’

In summing up, one can state that the different readings of the causative can be derived much easier if the addition of a highest argument  $x$  is represented by something like  $\{ \text{PRED}(x) \ \& \ \text{VERB}(y,z) \}$ .

**Multiple causativization** is possible but occurs only with the *-iish* suffix because this morpheme can relate to different roles. An example ending up with five arguments is given in (9).

- (41) Umwáalimú y-a-sóm-eesh-eesh-eesh-ej-e ababyéeyi abáana ibitabo indórerwamó.  
 teacher 1S-PAST-read-CAUS-CAUS-CAUS-APPL+CAUS-FV parents children books glasses  
 ‘The teacher made the parents have the children read books with glasses.’

### 3.2 Applicatives

The applicative operation adds an object to the verb. In general this operation is even more polyfunctional than the causative – the added argument can be a location, a recipient/beneficiary, a possessor, a motif/reason, a subject-related reflexive (or reciprocal), or an instrument. Some languages distinguish classes of applicatives by means of different suffixes.

For example, Maasai, an Eastern Nilotic language spoken in southern Kenya and northern Tanzania, has two general applicative morphemes: (i) the dative applicative *-aki(n)*, which adds a benefactive or goal argument, and (ii) the instrumental applicative *-ié(k)*, which adds an instrument, associative, locative or agent role. Both can be attached to intransitive, transitive and ditransitive verbs, and appear also in the combination DAT-INST. The additional argument is always a core argument, due to the following tests: It can pronominally be indicated by one of the verb prefixes that encode a transitive relation; as an NP it appears with the accusative tonal pattern; in the passive/ middle it appears as subject (marked by a pronominal prefix or with nominative tonal pattern). Obligatory for the Maasai verb is only the pronominal prefix marking of the subject; with a 1sg or 2sg object a so-called inverse prefix marks both subject and object: *áa-* for 1sg>2sg, *áa-* for 3>1sg, and *kí-* for 2>1sg or 3>2sg. All objects can be realized by an accusative NP, regardless of whether they belong to the root or are added by an applicative; in principle, either one of them can become nominative in the passive/middle. It is possible to have four explicit NP arguments (42d). Oblique arguments are introduced with the preposition  $\epsilon$ .

- (42) Applicatives in Maasai (Lamoureaux 2004: 64, 40, 41, 54)

- a. e-ton-íék-i.  
 3sg-sit-INST-MED  
 ‘It will be used to sit.’

- b. áa-iger-óki            m-pálái  
 3>1sg-write-DAT fsg-letter.ACC  
 ‘He will write a letter to/for me.’
- c. áá-ishɔ-ɔkí            kanisa  
 1sg>2sg-give-DAT church.ACC  
 ‘I will give it to the church for you.’
- d. ε-súj-ákín-ìè            εn-kεράí            εn-kítεη            e-ηúdi            en-tím  
 3-follow-DAT-INST fsg-child.NOM fsg-cow.ACC fsg-stick.ACC fsg-forest.ACC  
 ‘The child will use the stick to follow the cow into the bush.’

It is interesting that the Maasai instrumental applicative also serves as causative; in this function it introduces a dependent agent role rather than a tool. That can easily be seen from the examples below: a machete is a good tool for felling a tree (43a), whereas children achieve the instrumental role when they are told to do the action (43b). This is also true when other languages have lexical causatives such as ‘look.at’ → ‘show’ in (43c,d). (43e) shows nicely the kind of ambiguity (polysemy) that can arise.

(43) Instrumental and causative uses of the applicative (Lamoureaux 2004: 80, 74; the ventive expresses a motion towards the point of reference)

- a. e-ur-íé                    ɔl-pánkà                    ɔl-catá  
 3sg-make.fall-INST msg.machete.ACC sg-tree.ACC  
 ‘He will use the machete to fell the tree.’
- b. e-ur-íé                    iη-kεrà                    il-paék  
 3sg-make.fall-INST fpl-children.ACC mpl-corn.ACC  
 ‘He will make the children bend the corn.’  
 lit. ‘He will use the children to bend the corn.’
- c. á-íηɔr-ìè                    ɔl-ηátúny                    ɔl-tɔrɔbíni  
 1sg-look.at-INST msg-lion.acc msg-binoculars.ACC  
 ‘I will look at the lions with the binoculars.’
- d. á-íηɔr-ìè                    ɔl-ηátúny                    ɔl-payían  
 1sg-look.at-INST msg-lion.acc msg-man.ACC  
 ‘I will show the man the lions.’  
 lit. ‘I will look at the lions with the man.’
- e. á-ínγàη-un-íé                    εn-kítεη  
 1sg-buy-VENT-INST fsg-cow.ACC  
 (i) ‘I will use something (e.g. money) to buy a cow.’  
 (ii) ‘I will make him/her buy a cow.’

Lamoureaux argues that in both the instrumental and the causative use, the added argument is not the highest one, in other words, what is introduced in the causative use is not a causer but a causee (manipulee). Thus, there is only one representation for the two readings of (e):

(44) λ<sub>y</sub> λ<sub>x</sub> λ<sub>s</sub> {BUY\_A\_COW(x) & PRED(y)}(e), where PRED = instrumental or manipulee

While the causative use is one of the many functions of the instrumental applicative in Maasai, in Kinyarwanda, as we have seen above, the instrumental use is one of the many functions of the causative (in contrast to other Bantu languages such as Chichewâ, Kichaga, Kilega, etc).

(45) Instrumental and causative use of the causative in Kinyarwanda

a. umugóre y-Ø-uhag-iish-ije                    umwáana isábune.

- woman 1S-PAST-wash-INST-PERF child soap  
 ‘The woman washed the child with soap.’
- b. umugóre y-Ø-uhag-iish-ije umukoóbwa umwáana.  
 woman 1S-PAST-wash-CAUS-PERF girl child  
 ‘The woman made the girl wash the child.’

Obviously, the respective readings depend on the sortal properties of the complements: usually a child but not a piece of soap is washed, while soap but not a child is an instrument of washing. However, this particular ambiguity might be motivated by another commonality between instruments and causees: in order to bring about a certain result, namely that the child get washed, one can work on another person to do it, or can take an instrument and let it do part of the job. Yet, for the time being, I do not have evidence that instruments in Kinyarwanda really behave like causees, so that (a) above would literally mean ‘The woman made the soap wash the child’. Both objects can become subject under passive, and their linear ordering is determined by their sortal properties.

Apart from instrumentals, the applicative in Kinyarwanda shows a range of different functions.

(46) Applicatives in Kinyarwanda (Kimenyi 1995)

- a. Umugabo a-ra-som-er-a umugoré igitabo.  
 man 1S-PRES-read-APPL-FV woman book  
 ‘The man is reading a book to the woman’ (locative)  
 ‘The man is reading a book for the woman’ (benefactive)  
 ‘The man is reading the woman’s book’ (possessive)
- b. Umugabo a-ra-som-er-a igitabo amatsiko.  
 ‘The man is reading the book because for curiosity’ (motif)
- c. Umugabo a-r-íi-som-er-a igitabo.  
 ‘The man is reading a book for himself.’ (subjectivity)

Baker (1988) assumed that applicatives derive from preposition incorporation. Note that in many instances an alternative construction is possible in which the applicative function is expressed by a preposition.

- (47) a. Umugabo a-ra-som-a igitabo cy’umugoré  
 man 1S-PRES-read-FV book of woman  
 ‘The man is reading the book of the woman.’
- b. ... ku matsiko  
 on curiosity  
 ‘The man is reading the book on curiosity.’

According to the incorporation analysis, these sentences represent an underlying structure, and the abstract preposition is moved into the verb. However, it is doubtful whether syntactic movement can operate into words. Instead of assuming a derivational relation between having a PP adjunct and having an applicative suffix, one can assume two different (semantically related) constructions: one is morphological and the other is syntactic.

Kimenyi (1995) focuses on the function of the applicative in introducing an event localizer (spatial or temporal). When either the place or the time of an event is unclear, the embedded wh-question needs to be constructed with applicative.

- (48) Sii-n-zí ahó abáana ba-záa-du-hámagar-ir-a.  
 NEG-I-know where/when children 2S-FUT-1pIO-call-APPL-FV

- ‘We don't know where the children will call us from.’  
 ‘We don't know when the children will call us.’

Note that a localizing PP functions differently in constructions without and with an applicative morpheme. In (a), the PP functions as a locative adjunct, introducing a goal for the book, while in (b) it functions as a core argument; here it is the event of throwing that takes place in the water. In that case, another PP can be added as a goal (c).

- (49) a. Umwáana y-a-jugun-ye            igitabo mu máazi.            *locative adjunct*  
 child    1S-PAST-throw-PERF book    in water  
 ‘The child threw the book into the water.’  
 b. Umwáana y-a-juguny-i-ye            igitabo mu máazi.    *event localizer*  
 child    1S-PAST-throw-APPL-PERF book    in water  
 ‘The child threw the book (while) in the water.’  
 c. Umwáana y-a-juguny-i-ye            mu máazi igitabo mu gihuru.  
 child    1S-PAST-throw-APPL-PERF in water book in bush  
 ‘(While) in the water, the child threw the book into the bush.’

Applicatives introduce an object; thus, it does not surprise that Bantu languages have a counterpart for what was called ‘raising to object’ in early generative grammar. *Ang* ‘refuse’ is a proposition-embedding verb. Combined with applicative, such a verb extracts the subject from the dependent proposition, so that a VP remains, expressing a property of the extracted subject.

- (50) Raising-to-object in Kinyarwanda (Kimenyi 1995)  
 a. Umugabo a-rá-ang-a            kó abáana    ba-som-á    igitabo.  
 man    1S-PRES-refuse-FV that children 2S-read-FV book  
 ‘The man refused that the children read books.’  
 b. Umugabo a-rá-ang-ir-a            abáana    gu-som-a    igitabo.  
 man    1S-PRES-refuse-APPL-FV children to-read-FV book  
 ‘The man refused the children to read books.’

(51) This invites the following representations:

- a. *ang* (refuse):             $\lambda p \lambda x \lambda e \text{ REFUSE}(x, \exists e' p(e'))(e)$   
 b. *ang-ir* (refuse-APPL):     $\lambda P \lambda z \lambda x \lambda e \text{ REFUSE}(x, \exists e' P(z)(e'))(e)$

Considering the various functions of the applicative, its general semantic representation must be rather vague. Some applicatives such as possessor applicatives clearly introduce a relation between individuals, while other applicatives, such as the above discussed event localizers, introduce a relation between an individual and an event (see also Pylkkänen 2002/2008, to be discussed below).

(52) Applicative is an operation on the verb that adds an object, and a predicate by which it is licensed. Canonically, the applicative applies to transitive verbs.

- APPL** [VERB(x,y)(e)] = VERB(x,y)(e)  
 & POSS(z,y)(e)            ‘z is (or becomes) a possessor of y’  
 & INST(z,y)(e)            ‘z operates as an instrument on y’  
 & LOC(e AT z)            ‘e is located at z’  
 &  $\exists e' [y=P(z)(e')]$     ‘a propositional argument is splitted of’  
 Also the following extensions could play a role:  
 & BEN(z)(e)            ‘z is a bene-/maleficiary in e’

& INST(z)(e)      ‘z is an instrument in e’  
 & LOC(y AT z)(e)    ‘y is (or becomes) located at z’

Similar to what we have seen with causatives, multiple applicatives are possible, too, as shown by the examples in (53). Here, the first applicative is combined with a reflexive (‘the woman herself is reading’) – a so-called subjective extension; the second applicative introduces the event localizer ‘in the house’, and the third applicative introduces a beneficiary (‘children’), a possessor (‘man’), or a motif (‘for money’).

(53) Multiple applicatives in Kinyarwanda

- |    |   |                                     |          |            |          |
|----|---|-------------------------------------|----------|------------|----------|
| a. | Umugoré   | a-r-íi-som-er-er-er-a               | abáana   | igitabo    | muu nzu. |
|    | woman   | 1S-PRES-REFL-read-APPL-APPL-APPL-FV | children | book       | in house |
|    | ‘The woman is reading the book to/for the children in the house.’ |                                     |          |            |          |
| b. | Umugoré   | a-r-íi-som-er-er-er-a               | umugabo  | igitabo    | muu nzu. |
|    | woman   | 1S-PRES-REFL-read-APPL-APPL-APPL-FV | man      | book       | in house |
|    | ‘The woman is reading the man's book in the house’.               |                                     |          |            |          |
| c. | Umugoré   | a-r-íi-som-er-er-er-a               | igitabo  | mafaaranga | muu nzu. |
|    | woman   | 1S-PRES-REFL-read-APPL-APPL-APPL-FV | book     | money      | in house |
|    | ‘The woman is reading the book in the house for money’.           |                                     |          |            |          |

*Symmetry and asymmetry of objects*

In general one would expect that in case of multiple objects a language has formal ways to distinguish their respective semantic contributions. It is questionable whether such means exist in the Kinyarwanda examples in (53), due to the observation that the direct object of ‘read’ assumes different positions, while the locative is always ordered in the end. Given the sortal properties of the objects, the interpretation of these sentences is clear, regardless of how the objects are ordered. The first object in a sequence of objects is the ‘primary object’. One might think that the primary object has a special role in grammar (not possible for secondary objects), for instance, in becoming subject in the passive.

Swahili and Chichewa (Mchombo 2004) are languages that fulfil this expectance. However, other languages such as Kinyarwanda (Kimenyi 1980) and Kichaga (Bresnan & Moshi 1990) show symmetry of objects to varying degree, which means that word ordering and the availability of passive are not strictly determined, and some sentences remain ambiguous. It is unclear by what specific features this symmetries are triggered. Since there are various factors that determine the order of objects (familiarity, humanness, animacy, definiteness etc.), it might be the case that real ambiguities only seldom occur.

Symmetry of objects means that in a clause such as (54a) both objects allow the same operations to apply. Mostly they are based on extraction out of the VP, as shown in (54b).

(54) Extraction of objects out of a causative VP

- |    |  |  |                      |
|----|--|--|----------------------|
| a. | Umugabo  | á-r-úubak-iish-a   | <b>abákozi inzu.</b> |
|    | man  | 1S-PRES-build-CAUS-FV                                      | workers house        |
|    | ‘The man is making the workers build the house.’ |  |                      |
| b. | abákozi <sub>i</sub>                             | [... úubak-iish ... t <sub>i</sub> inzu ] <sub>VP</sub>    |                      |
|    | inzu <sub>i</sub>                                | [... úubak-iish ... abákozi t <sub>i</sub> ] <sub>VP</sub> |                      |

Object symmetry has first been studied systematically by Kimenyi (1980: 170f.); he used passive, pronominalization, relativization and clefting as operations to show whether double objects are symmetric or asymmetric.

## (55) Tests for symmetry of objects &lt;&lt;geschweifte Klammern !!&gt;&gt;

## a. Passive:

「 abákozi bá- ʔ r-úubak-iish-w-a 「 inzu ʔ n'umugabo.

└ inzu í- ʔ └ abákozi ʔ

PASS by man

‘The workers are made to build the house by the man.’

‘The house is made to be built by the workers by the man.’

## b. Pronominalization:

umugabo á-rá-「b ʔ -úubak-iish-a 「 inzu. ʔ

└ y ʔ └ abákozi. ʔ

‘The man is making them build the house.’

‘The man is making the workers build it.’

## c. Relativization:

N-a-boon-ye 「abákoziʔ umugabo y-uúbak-iish-a 「inzu. ʔ

└ inzu ʔ └ abákozi. ʔ

1sg-PAST-see-PERF

REL

‘I saw the workers who the man is making build the house.’

‘I saw the house that the man is making the workers build.’

## d. Clefting:

N’ 「aabákoziʔ umugabo y-uúbak-iish-a 「inzu. ʔ

└ inzu ʔ └ abákozi. ʔ

‘It is the workers that the man is making build the house.’

‘It is the house that the man is making the workers build.’

Symmetry or asymmetry do not automatically hold for all multiple-object constructions in a language. Machobane (1989) demonstrated a case of split symmetry in Sesotho (S32, South Africa): applicatives behave symmetrically, while causatives behave asymmetrically.

## (56) Symmetric applicatives in Sesotho (Machobane 1989:24)

## a. Sello o-shap-el-a Lineo ba-shanyana.

Sello 1S-beat-APPL-FV Lineo 2-boys

(i) ‘Sello beats Lineo for the boys’

(ii) ‘Sello beats the boys for Lineo.’

## b. Lineo o-shap-ets-o-e ba-shanyana.

Lineo 1-beat-APPL-PASS-FV 2-boys

‘Lineo was beaten for the boys.’

## c. ba-shanyana ba-shap-ets-o-e Lineo.

2-boys 2-beat-APPL-PASS-FV Lineo

‘The boys were beaten for Lineo.’

## (57) Asymmetric causatives in Sesotho (Machobane 1989:30)

## a. Sello o-shap-is-itse ba-shanyana Lineo.

Sello 1S-beat-caus.asp 2-boys Lineo

(i) ‘Sello made the boys beat Lineo.’

(ii) \* ‘Sello made Lineo beat the boys.’

- b. Ba-shanyana ba-shap-is-o-a Lineo.  
2-boys 2S-beat-CAUS-PASS-FV Lineo  
'The boys were made to beat Lineo.'
- c.\* Lineo o-shap-is-itse ba-shanyana  
L. 1S-beat-CAUS-PASS-FV 2-boys  
'Lineo is made to be beaten by the boys'

According to Baker et al. (2012), Lubukusu (E312, Kenya) has asymmetric objects only if one of the objects of a (lexical or morphological) causative is a 1st or 2nd person; otherwise, the objects are symmetric.

(58) Symmetric and asymmetric objects in Lubukusu.

- a. N-okesy-a embwa Wekesa.  
1sg-show-FV dog Wekesa  
(i) 'I showed the dog to Wekesa'  
(ii) 'I showed Wekesa the dog'
- b. Okesy-a ese Wekesa.  
3sgS.show-FV me Wekesa  
(i) 'He showed me Wekesa'  
(ii) \* 'He showed me to Wekesa.'
- c. Ese n-okesy-ebwa Wekesa.  
I 1sgS-show-PASS Wekesa.  
(i) 'I was shown Wekesa'  
(ii) \* 'I was shown to Wekesa'

In Kinyarwanda, locatives behave differently from all other types of applicative (including instrumentals): locatives are asymmetric, while the other applicatives are symmetric. In the locative only the applied object (the respective location) can become subject under passive or be realized with an object marker (not shown here), while otherwise either object can become subject under passive or be realized with an object marker on the verb (59). Note that the morpheme ordering in the locative also differs from that in the benefactive: the locative marker *-ho* follows the aspect marker. However, I don't think that this is relevant for the different grammatical potential.

(59) Passive of Kinyarwanda applicatives (Kimenyi 1980: 89,95,127)

Locatives

- a. Ishuûri ry-oohere-j-w-é-ho igitabon'úmwáalímu.  
school 5S-send-ASP-PASS-ASP-LOC book by teacher  
'The school was sent the book by the teacher.'
- b. \*Igitabo cy-oohere-j-w-é-ho ishuûri n'úmwáalímu.  
book 10S-send-ASP-PASS-ASP-LOC school by teacher  
'The book was sent to school by the teacher.'

Benefactives

- c. Umukoóbwa a-ra-andik-ir-w-a íbáruwa n'úmuhuúngu.  
girl 1S-PRES-write-APPL-PASS-FV letter by boy  
'The girl is written the letter for by the boy.'
- d. Íbáruwa i-ra-andik-ir-w-a umukoóbwa n'úmuhuúngu.  
letter 9S-PRES-write-APPL-PASS-FV girl by boy  
'The letter is written for the girl by the boy.'

So what we see is the following: causative (the more precisely definable valency-extending operation) tends to be more asymmetric than applicatives; within the causatives the especially-marked 1st and 2nd persons tend to be more asymmetric than the 3rd person, and

within the applicatives the specially distinguished locatives tend to be more asymmetric than all other applicatives. Obviously, only the marked options tend to be asymmetric, while the unmarked options stay symmetric. Contrary to what one may expect, symmetry of objects seems to be the unmarked option, perhaps because it is the genealogically prior variant.

The exceptional state of locatives might be explained as follows. If a location is added, it is always the lowest argument, regardless whether the event or an individual argument is located. By contrast, what the benefactive adds might be cognized in two different ways: (i) it adds a benefactive to the event (BEN(z)), so that the added argument is the lowest one, or (ii) it adds a possessor to another argument of the event (POSS(z,y)), so that the added argument is not the lowest one. Assuming that only the lowest argument can become subject under passive, the distribution in (59) follows automatically. In other words, the symmetric applicatives allow for different analyses.

Pylkkänen (2008) distinguishes between high and low applicatives: low applicatives establish a possessor relation between two individual arguments, such as recipient and theme, while high applicatives establish a relation between an individual and the event. She further assumes that syntactically, the low applicative is contained within the verbal phase (VP), whereas the high applicative operates above of it. In the above-used notation, ‘& POSS(z,y)’ characterizes a low applicative, and ‘& BEN(e,z)’ a high applicative. Consequently, when an applicative is low, it can only operate on transitive verbs, whereas when it is high it can also operate on intransitive verbs.

In this respect, all Maasai applicatives, which are possible for intransitive verbs, are high. By contrast, the Salish languages of North America have an applicative morpheme that only applies to intransitive verbs and therefore should be high (*me*=APPL1), and another one that applies to transitive verbs and could be low (APPL2). All the documented semantic roles of the applied objects introduced by the second morpheme, such as recipients, sources, possessors, raised possessors and even delegatives (‘instead of’), are based on a two-place relation between individuals. But here the delegative reading is problematic for a syntactic account because it relates the applied object to the subject, which is VP-external.

(60) Delegatives in Interior Salish (Kiyosowa 2006: 183)

- a. Coeur d’Alene (Doak 1997: 157)  
 níč-ši -t-s-es                      x<sup>w</sup>e pilí.  
 cut-APPL2-TR-1sgO-3S    DET Felix  
 (i) ‘Felix cut (wood) instead of me.’  
 (ii) ‘Felix cut (wood) for me.’
- b. Okanagan (Mattina 1993: 272)  
 k<sup>w</sup>u    q<sup>w</sup>əlq<sup>w</sup>íl-x-t-s.  
 1sgO talk-APPL2-TR-3S  
 ‘He talked for me (in my stead).’

McGinnis and Geerds (2003) study the position of objects as well as quantifier binding between them in several applicatives for determining their relative ordering. They also compare various multiple applicatives in Kinyarwanda, looking for the objects that can become subject under passive. They conclude that the possibility of passivization depends on the ranking BEN > LOC > [VP transitive THEME > INST]. Since all these applicatives are possible with intransitives, they should be high, contrary to what one would expect. One of the inherent problems of their account is that high/low is associated with several other contrasts: intransitive vs. transitive base, symmetric vs. asymmetric objects, phasal vs. non-phasal interpretation, interpreted as (z,y) vs. (e,z) relation. McGinnis (2005) admits that there might be some mismatching between the structure in which an applicative merges syntactically and the structure in which it is interpreted; for her, instrumentals merge low, but are high

semantically. Since, however, both instrumentals and benefactives are marked nearer to the verbal root than locatives, they both could be judged morphologically as ‘lower’ than locatives.

For Baker, the difference between causatives and applicatives amounts to the effect that causatives have an internal phase, while applicatives do not. Thus, the direct object can freely be moved in applicative structures, while it is caught within the internal phase of causatives. The problem with this explanation is that in strict asymmetric object languages the movement within applicatives is blocked, while in unrestricted symmetric languages the movement out of the internal phase of a causative is allowed. Moreover, the person asymmetry in Lubukusu, where the 1st/2nd person behaves differently from 3rd person, cannot be explained by such a syntactic account.

#### 4. Valency-decreasing operations

Valency-decreasing operations reduce the number of syntactically active arguments; prototypically, they do not shift the meaning of a predicate, but rather form a more simple instance of the predicate – thus, these operations apply directly on the  $\theta$ -structure.

*Passive* is an operation found in 43% of languages (Siewierska 2011); it binds the highest non-eventive argument existentially, so that it cannot be expressed (but possibly is reintroduced by an adjunct phrase).

$$(61) \quad \text{PASS} [\dots \lambda x \lambda e \text{ VERB}(x, \dots)(e)] = \dots \exists x \lambda e \text{ VERB}(x, \dots)(e)$$

–hr

Some languages only allow passivization of transitive verbs, while other languages also include intransitive verbs. Often only agentive verbs are passivized, but sometimes nonagentive verbs as well. Existential binding means that the passivized n-place verb realizes at most n-1 arguments morphosyntactically: a transitive verb is detransitized, and an intransitive verb becomes impersonal. Consequently, another argument advances to the morphosyntactic subject. As we have seen already, the passive of multiple-object constructions in Bantu often allows either object to advance. In general, those passives underlie an optimization based on a certain constraint ranking, which can differ from language to language. (62) and (63) illustrate different options for ditransitive verbs in Yaqui versus Georgian. In both languages the recipient (the primary object) usually precedes the theme (the direct object), and both objects are marked accusative in the active, however, it is the recipient that becomes subject under passive in Yaqui, while it is the theme in Georgian. Thus, languages differ in whether the primary or the direct object is the preferred one (Dryer 1986).

(62) Double accusative and passive in Yaqui (Van Valin 2006)

- a. Joan Peo-ta      ?uka      vaci-ta      miika-k.  
Juan Pedro-ACC    DET.ACC    corn-ACC    give-PERF  
‘Juan gave Pedro the corn.’
- b. Peo ?uka      vaci-ta      miik-wa-k.  
Pedro DET.ACC    corn-ACC    give-PASS-PERF  
‘Pedro was given the corn.’
- c. \*U?u      vaci      Peo-ta      miik-wa-k.  
DET.NOM    corn      Pedro-ACC    give-PASS-PERF  
‘The corn was given to Pedro.’

(63) Double accusative and passive in Georgian (Joppen-Hellwig 2001:50)

- a. Ketino Eka-s      xalitša-s      s-čukni-s.  
Ketino Eka-ACC    carpet-ACC    3D-present-PRES.3N  
‘Ketino presents Eka with a carpet.’

- b. xalitša e-čuk-eb-a                      Eka-s.  
 carpet PASS-present-TH-PRES.3N      Eka-ACC  
 ‘The carpet is presented to Eka.’
- c. \* Eka e-čuk-eb-a                      xalitša-s.  
 Eka PASS-present-TH-PRES.3N      carpet-ACC  
 ‘Eka is presented with a carpet.’

Given that the arguments are ordered like  $x > y > z$ , then in case where  $x$  is demoted,  $y$  would be the natural option for subject in a language without case. All Bantu languages have this option, in addition, some Bantu languages also allow for non-primary objects to become subject. Consider the following examples from Kinyarwanda, where all three objects can be promoted to subject:

- (64) Passive of a 4-place verb in Kinyarwanda (Kimenyi 1980: 133)  
 $\lambda u \lambda z \lambda y \lambda x \lambda e \{ACT(x) \& SEE(y,z) \& BEN(u)\}(e)$
- a. Umugabo y-eerek-e-ye                      umugóre ábáana      ibitabo.  
 1.man      1S-show-APPL-PERF      1.woman 2.children 8.book  
 ‘The man showed books to the children for the woman.’
- b. Ibitabo by-eerek-e-w-e                      umugóre ábáana      n’umugabo.  
 8.book      8S-show-APPL-PASS-PERF      1.woman 2.children by man  
 ‘The books were shown to the children for the woman by the man.’
- c. ábáana b-eerek-e-w-e                      umugóre ibitabo      n’umugabo.  
 2.children 2S-show-APPL-PASS-PERF      1.woman 8.book by man  
 ‘The children were shown books for the woman by the man.’
- d. Umugóre y-eerek-e-w-e                      ábáana      ibitabo n’umugabo.  
 1.woman 1S-show-APPL-PASS-PERF      2.children 8.book by man  
 ‘The woman was shown the books for to the children by the man.’

Interestingly, many Bantu languages passivize also inactive as well as intransitive verbs, which shows that semantic conditions play a less important role than in many other languages; existential binding is thus the adequate means for characterizing passive in general.

- (65) Passive of inactive verbs in Kinyarwanda (Kimenyi 1980: 128)
- a. Ibíro bíne bi-pim-w-a                      n’iki gitabo.  
 kilo four      8S-weigh-PASS-FV      by this book  
 ‘Four kilos are weighed by this book.’
- b. Ibyíshiimo byiinshi bi-fit-w-e                      n’umwáana.  
 8.joy      a lot      8S-have-PASS-PERF      by child  
 ‘Much joy is had by the children.’
- c. Urúpfu rúbi rw-aa-pfuu-w-e                      n’umujuura.  
 11.death bad      11S-PAST-die-PASS-PERF by thief  
 ‘A bad death was died by the thief.’
- (66) Passive of intransitive verbs in Kikuyu (E51, Kenya; Waweru 2005: 112)
- a. Ciana nĩ-ci-a-nyot-a.  
 Children FOC-2S-PAST-become\_thirsty-FV  
 ‘The children have become thirsty.’

- b. Nĩ-kũ-a-nyot-w-o (nĩ ciana)  
FOC-EXPL-PAST-become\_thirsty-PASS-FV (by children)  
'It has been grown thirsty (by the children).'

(67) Passive of intransitive verbs in Ndebele (S44, Zimbabwe; Khumalo 2007:114, 200).

- a. Theng-is-el-w-an-a.  
buy-CAUS-APPL-PASS-REC-FV  
'(There is) selling to each other.'
- b. Chat-shis-el-an-w-a.  
hide-CAUS-APPL-REC-PASS-FV  
'(There is) hiding from each other.'
- c. E-sikolo be-ku-bon-an-w-a laba-balisi.  
LOC-school PAST-S-see-REC-PASS-FV with-teachers  
'At school there was seeing each other by the teachers.'

Some Bantu languages lack passive morphology, they allow quasi "passive readings" by means of left dislocation (= object topicalization); an example is given in (68).

(68) Bare-passive in Mbuun (B87, DRC; Bostoen & Mundeke 2011)

- ba-án taar o-á-(bá-)bol.  
2-child father 1S-PRES-(2O-)beat  
'The children, father beats (them)' = 'The children are beaten by father.'

The same strategy is sometimes also used when a morphological passive exists, as in Bàsàá (A43, Cameroon). Interestingly, morphological passive must then be impersonal (69a), while object topicalization (together with a resumptive pronoun) allows the addition of an agent phrase (69b).

(69) Passive in Bàsàá (Hamlaoui 2014:172)

- a. tòlò à-n-dzé-βâ (\*nì síngá).  
1.mouse S1-PAST-eat-PASS (\*by 9.cat)  
'The mouse was eaten (by the cat).'
- b. tòlò síngá ì-n-dzé nḙ  
1.mouse 9.cat 9S-PAST-eat 1.PRO.  
'The mouse, the cat ate it.' = 'The mouse was eaten by the cat.'

Similarly behaves Bemba (M42, Zambia), but here the topic structure seems to develop into passive. Note that the verb in (70b) agrees with the class 2 subject marker denoting a 3rd person plural.

(70) Passive in Bemba (Kula & Marten 2010)

- a. úmu-náni u-alí-ípík-w-a (\*kulí Mutalé).  
3-food 3S-PAST-cook-PASS-FV (\*by Mutalé)  
'The food was cooked.'
- b. Ify-ákulya bá-alí-ly-a (ku mu-mbúlu).  
7-food 2S-PAST-eat-FV (by 3-wild.dog)  
'The food, they eat (it) by the wild dog' = 'The food was eaten by the wild dog.'

The presence of the oblique agent phrase indicates that the agent is existentially bound but reintroduced, so one can conclude that this is a real passive. But literally the verb has an unspecific subject of a different class than the wild dog. It has, therefore, been argued in the literature that the prefix *bá* is reinterpreted as a passive morpheme.

In contrast to the just-discussed examples, I do not think that an example like (71) with a specific subject is a sort of passive, although it is translated so. In Kinyarwanda, where passive exists, subject-object reversal is triggered by the requirement that the focused element (including subjects) must be postverbal.

- (71) *igi-tabo cyi-ra-som-a umuhuungu.*  
 7-book 7S-PRES-read-FV 1.boy  
 ‘The book is being read by the BOY.’ (Kimenyi, 1980: 141)

**Antipassive** is the counterpart to passive; it binds the lowest (rather than the highest) argument existentially, as shown in (72).

- (72)  $\text{ANTIPASS} [\lambda z \dots \lambda e \text{ VERB}(\dots, z)(e)] = \exists z \dots \text{VERB}(\dots, z)(e)$   
 -lr

While passive could be seen as triggered by a particularly high salience status of the lower argument, antipassive is triggered by a particularly low status of this argument. Therefore one expects it to be a less universal operation than passive; in fact, it is present only in 25% of languages (Polinsky 2011). Whereas a canonical NOM-ACC verb turns to  $\emptyset$ -NOM by passivization, a canonical ERG-NOM verb turns to NOM- $\emptyset$  by antipassivization; in both instances, a realization with a marked case is avoided. Although antipassive is often found in ergative languages, it is not restricted to them, so as passive is not restricted to accusative languages. A language can display both passive and antipassive by means of marked morphemes; an example is given in (73). Languages like English and German, which do not have an antipassive morpheme, can produce the antipassive effect by means of object deletion (*he is eating*).

- (73) Passive and antipassive in Zoque (Johnson 2000)  
 a. *huʔc-ʔəm-wə bi wakaš.*  
 stab-PASS-COMPL DEF cow  
 ‘(They) killed the cow.’  
 b. *behča cəm-ʔoy-pa.*  
 horse carry-ANTIP-INCOMPL  
 ‘The horses will carry (it).’

Bantu languages do not have a special antipassive morpheme, therefore, this operation remained unnoticed for a long time. Only recently it was discovered that the reciprocal *-an* also fulfils antipassive function (Dom et al. 2015, Bostoen et al. 2015):

- (74) Antipassive in Kirundi (D62, Burundi; Ndayiragije 2006: 276)  
 I-gi-ti ki-á-kubit-an-a.  
 7-7-tree 7-PAST-hit-REC-FV  
 ‘The tree hit people<sub>arb</sub> (=someone).’

**Reflexive and Reciprocal.** Another valency-decreasing operation is the lexical reflexive. It establishes an anaphoric relationship by identifying a lower argument with the highest one. Such an operation is distinct from using a reflexive anaphora (like *themselves*) in the syntax.

$$(75) \quad \text{REFL} [\lambda z \dots \lambda x \text{ VERB}(x, \dots, z)] = \lambda x \text{ VERB}(x, \dots, x)$$

+lr      -lr                                      -lr

Consider the following examples from Quechua. (76a) represents the canonical case, in which a transitive verb is detransitivized. In (76b) however, the verb remains transitive; in this case a possessor is added, which is then identified with the highest argument. In general, the reciprocal functions similarly, but has a more complex semantics (Heim et al. 1991, Williams 1991): the antecedent  $X$  must be plural and must receive a distributed interpretation, and any  $x \in X$  is paired with some (or every)  $y \in X$ , where  $y \neq x$ . Interestingly, (76c) illustrates a case in which the reciprocal morpheme must be combined with the reflexive in order to unfold its full semantics.

(76) Reflexive and Reciprocal in Bolivian Quechua (van de Kerke 1996: 160, 146)

- a. Pedru maylla-ku-n  
 P wash-REFL-3sg  
 ‘Pedro washes himself.’  
 $\text{REFL}[\lambda y \lambda x \text{ WASH}(x,y)] = \lambda x \text{ WASH}(x,x)$
- b. Pedru uya-n-ta maylla-ku-n  
 P face-3sg-ACC wash-REFL-3sg  
 ‘Pedro washes his (own) face.’  
 $\text{REFL}[\lambda z \lambda y \lambda x \{\text{WASH}(x,z) \ \& \ \text{POSS}(y,z)\}] = \lambda z \lambda x \{\text{WASH}(x,z) \ \& \ \text{POSS}(x,z)\}$
- c. maylla-na-ku-yku  
 wash-REC-REFL-1pl  
 ‘We wash each other.’

In Bantu, reflexive and reciprocal behave differently. The reflexive is a bound anaphoric pronoun, which, together with other object markers, is prefixed to the verbal root, while the reciprocal belongs to the extension suffixes. Mchombo (1993b) detected an important semantic difference between the two operations, illustrated by the following sentences: the reciprocal in (77a) only allows the sloppy identity reading, while the reflexive (77b) in addition allows the strict reading.

(77) Reciprocal and reflexive in Chichewa (Mchombo 1993b)

- a. Alenje á-ma-nyoz-án-á kupósá asodzi.  
 2.hunters 2S-HAB-despise-REC-FV exceeding 2.fishermen  
 ‘The hunters despise each other more than the fishermen despise each other.’  
 $|\lambda X \{\forall u \in X \exists v \in X \text{ DESPISE}(u,v)\}(\text{hunters})| >$   
 $|\lambda X \{\forall u \in X \exists v \in X \text{ DESPISE}(u,v)\}(\text{fishermen})|$
- b. Alenje á-ma-dzi-nyoz-á kupósá asodzi.  
 2.hunters 2S-HAB-REFL-despise-FV exceeding 2.fishermen  
 ‘The hunters despise themselves more than the fishermen despise the hunters.’  
 (i)  $|\lambda X \text{ DESPISE}(X,X)(\text{hunters})| > |\lambda X \text{ DESPISE}(X,X)(\text{fisherman})|$   
 (ii)  $|\lambda X \text{ DESPISE}(X,X)(\text{hunters})| > |\lambda Y \lambda X \text{ DESPISE}(X,Y)(\text{hunters})(\text{fisherman})|$

Sentence (77a) has only one reading: ‘Regarding the amount in which they despise each other, the hunters exceed the fishermen’, while sentence (77b) is ambiguous, and can also mean ‘Regarding the amount in which they despise the hunters, the hunters exceed the fishermen’. Bruening (2004) remarks, with respect to these examples: „The difference between the verbal reflexive and the verbal reciprocal, as Mchombo shows, is that the reciprocal is a piece of derivational, valence-changing morphology. The reflexive, in contrast, appears in the position of incorporated object pronouns and acts as though it is an incorporated pronoun.“

**Stative** (or neuter) in Bantu is a valency-decreasing operation of the anticausative type. While the causative adds a causer to the verb (i), the anticausative in a way ignores the causer (ii). Consider the following pairs:

- (i) *the trousers shortened* → *he shortened the trousers*, and  
 (ii) *he broke the china* → *the china broke*.

The stative, expressed by *-ek* in Chichewa, clearly contrasts with the passive. While in the passive the suppressed subject of the verb can be reintroduced via an oblique phrase (78a), in the stative is that impossible (78b). Similar observations can be made in other Bantu languages as well, e.g. Swahili (79).

(78) Agent phrases in Chichewa passive vs. stative (Mchombo 1993a).

- a. Isi-valo sa-val-w-a ngu Thabo.  
 7-door 7S-shut-PASS-FV by Thabo  
 ‘The door was shut by Thabo.’  
 b. Isi-valo sa-val-ek-a (\*ngu Thabo).  
 7-door 7S-shut-STAT-FV by Thabo  
 ‘The door got shut (\*by Thabo).’

(79) Swahili stative

- Kikombe ki-me-vunj-ik-a (\*na Juma).  
 cup 7S-PERF-break-STAT-FV by Juma  
 ‘The cup is broken (\*by Juma).

In the passive the highest argument is made arbitrary, which is characterized by existential binding, while in the stative the whole causing event is made arbitrary, so that the instigator of the causal chain becomes fully invisible. So to speak, the stative cuts out the result of the action (and is therefore also sometimes called ‘resultative’). If one assumes that a change-of-state verb such as transitive ‘break’ can idealiter be decomposed in an activity and an affectedness predicate, the difference between passive and stative becomes rather obvious, see (80).

Besides the simple stative meaning, the morpheme *-ek/-ik* can also produce a potential or ability reading; for example, (78b) can mean ‘the door is closable’, and (79) ‘the cup is breakable’. In this case, *e* is not a specific state, but a generalized state. In nuce, the potential reading expresses that the causal event is arbitrary.

(80) The passive-stative distinction semantically

- a. ‘break<sub>TR</sub>’:  $\lambda y \lambda x \lambda e \{ \text{ACT}(x) \ \& \ \text{BREAK}(y) \}(e)$   
 b. PASS (‘break<sub>TR</sub>’):  $\lambda y \exists x \lambda e \{ \text{ACT}(x) \ \& \ \text{BREAK}(y) \}(e)$   
 c. STAT (‘break<sub>TR</sub>’):  $\lambda y \lambda e \{ \text{BREAK}(y) \}(e)$   
 d. STAT (‘break<sub>TR</sub>’):  $\lambda y \text{ GENE } \{ \text{BREAK}(y) \}(e)$  *potential reading*

It is sometimes questioned whether a nonmonotonous operation, which loses information, is admissible at all. In defending such an operation, one might argue that it selects just a part of a more complex information package (81a); alternatively, one can consider the stative to be

the result operation over the verb content (81b); the nature of the cause (including the causer) then becomes arbitrary.

- (81) a.  $\text{STAT} [\dots \lambda y \lambda x \lambda e (\text{ACT}(x) \ \& \ \text{RESULT}(y, \dots)) (e)] = \dots \lambda y \lambda e \text{RESULT}(y, \dots) (e)$   
 b.  $\text{STAT} [\dots \lambda y \lambda x \lambda e \text{VERB}(x,y, \dots) (e)] = \dots \lambda y \lambda e \text{RESULT}(\text{VERB}(y, \dots)) (e)$

As Dubinsky & Simango (1996) observed, the meaning differences between passive and stative are enlarged if one adds negation, as illustrated by (82).

- (82) Passive and stative negated in Ndebele (S44, Zimbabwe)
- a. isi-valo a-si-val-w-ang-a  
 7-door NEG-7S-shut-PASS-NEG-FV  
 ‘The door was not shut (at all).’
- b. isi-valo a-si-val-ek-ang-a  
 7-door NEG-7S-shut-STAT-NEG-FV  
 ‘The door was not shut (properly)’

The negated passive sentence (82a) implies that the door was never acted upon, while its stative counterpart (82b) implies that the door was not fully closed. This semantic difference follows from the respective representations shown in (81): in (81a) the activity predicate is in the scope of negation, while in (81b) only the result predicate is in its scope.

The passive construction can also co-occur with purpose clauses and agent oriented adverbs, while the stative construction cannot – as has been reported for Chichewa (Mchombo 1993a) and Ndebele (Dubinsky & Simango 1996).

- (83) Passive and stative with purpose clauses in Ndebele
- a. Isi-valo sa-val-w-a ukuthi aba-ntwana ba-nga-godol-i  
 7-door 7S-shut-PASS-FV that 2-children 2S-NEG-cold-NEG  
 ‘The door was closed so that children do not get cold.’
- b. \*Isi-valo sa-val-ek-a ukuthi aba-ntwana ba-nga-godol-i  
 7-door 7S-shut-STAT-FV that 2-children S2-NEG-cold-NEG  
 ‘The door closed so that children do not get cold.’
- (84) Passive and stative with agentive adverbs
- a. isi-valo sa-val-w-a ngabomo.  
 7-door 7S-shut-PASS-FV deliberately  
 ‘The door was closed deliberately.’
- b. \*Isi-valo sa-val-ek-a ngabomo.  
 7-door 7S-shut-STAT-FV deliberately  
 \*‘The door closed deliberately.’

These examples clearly show that passive, but not stative, allows reference to the action. What about instrumental phrases? Specific instruments such as ‘with a pencil’ are not admitted in the stative (85b), while arbitrary instruments such as ‘by force’ are compatible with statives (86).

- (85) Passive and stative with an instrumental in Chichewa (Dubinsky & Simango 1996:752)
- a. Kalata i-na-lemb-edwa ndi pensulo.  
 letter 4S-PAST-write-PASS with pencil  
 ‘The letter was written with a pencil.’
- b. Kalata i-na-lemb-eka (\*ndi pensulo)  
 letter 4S-PAST-write-STAT with pencil  
 ‘The letter got written (with a pencil).’

(86) Stative with instrumental in Ndebele (Khumalo 2007: 210-211).

Isi-valo si-val-ek-a nga mandla.  
7-door 7-close-STAT-FV by force  
'The door was closed by force.'

***Sociative and other functions of the reciprocal morpheme***

Bantu languages show a rich variation of minor semantic facets, both intra- and interlinguistically. Some of these can be illustrated with the reciprocal, which sometimes also gets *sociative* and *antipassive* readings. The sociative indicates that people are working together by interaction; clearly, in (87a) they do not cultivate each other, but are rather involved in a common enterprise. Originally, the morpheme *-an* could have had sociative function, which is more general than the reciprocal function.

(87) Sociative in Kinyarwanda (D61, Coupez 1985) and Luvale (K14, Zambia; Horton 1949)

- a. Ba-ra-guhing-*an*-a umurimá.  
2S-PRES-cultivate-REC-FV field  
'They are cultivating a field together.'
- b. Vali na-ku-li-hangas-*an*-a.  
they FUT-2S-REFL-chase-REC-FV  
'They are chasing one another; one running and the other pursuing.'

That both stative suffixes of Swahili, *-ek* and *-am*, are capable of combining with the reciprocal morpheme as in (88) indicates that the sociative reading of *-an* is not accidental. Maybe is the stative semantics a suitable substrate for combining with sociative: (88a) describes class instruction as a network of interactions, and (88b) describes the density of a forest as a network of unpassable connections.

(88) Sociative in Swahili (Seidl & Dimitriadis 2003)

- a. Wa-li-somesh-ek-*an*-a.  
2S-PAST-teach-STAT-REC-FV  
'They were taught together.'
- b. Mwitu i-me-fung-am-*an*-a.  
forest 5S-PERF-tie-STAT-REC-FV  
'The forest is impenetrable.'

Interestingly, one can find ambiguities between the more peripheric meanings of the morpheme *an*, which lets us suppose that the reciprocal meaning 'each other' may not be the central meaning of *an*.

(89) Sociative/antipassive ambiguities in Kirundi (D62 ; Ndayiragije 2006)

- a. Abo bagoré ba-a-tamb-*an*-ye.  
those women 2S-PAST-dance-REC-PERF  
'Those women danced together/with people<sub>arb.</sub>'
- b. Abo bagabo ba-a-sambur-*an*-ye inzu yanje.  
those men 2S-PAST-destroy-REC-PERF house of.me  
'Those men destroyed my house together/with people<sub>arb.</sub>'

In the so-called *discontinuous reciprocal* the logical subject is split into a singular subject and a 'with' phrase. Obviously a mismatch: the verb agrees with a singular subject, but semantically the subject is plural.

(90) Discontinuous reciprocal in Swahili (Seidl & Dimitriadis 2003).

Juma a-na-pend-*an*-a na Pili.  
 Juma 1S-PRES-love-REC-FV with Pili  
 ‘Juma and Pili love each other.’  
 $\exists e \text{ LOVE}(\text{juma} \oplus \text{pili}, \text{each other})(e)$

The reciprocal morpheme may also adopt a purely *comitative* function. In (91), Juma and Pili are involved in a common eating event.

(91) Comitative in Swahili

Juma na Pili wa-li-l-*an*-a.  
 Juma and Pili 2S-PAST-eat-REC-FV  
 ‘Juma and Pili ate together.’  
 $\exists e \text{ EAT}(\text{juma} \oplus \text{pili}, \text{together})(e) = \exists e \{ \text{EAT}(\text{juma}) \ \& \ \text{EAT}(\text{pili}) \}(e)$

### 5. Multiple operations and the order of derivation

In the course of this chapter, we have seen several examples with multiple extensions, involving both valency-increasing and valency-decreasing in various orders. Baker (1985), in viewing Bantu, postulated the mirror principle in assuming a strict correspondence between morphological and syntactic derivations, where „syntactic derivation“ was the way of generative grammar to speak about semantic composition. Several other studies have followed the same fundamental assumption, among them Muysken (1986) and van de Kerke (1996) about Quechua. That the mirror principle is about the semantic effects of a sequence of affixes is pointed out by Stiebels (2003) as well as by Rice (2000).

(92) Mirror Principle

- a. Morphological derivations must directly reflect syntactic derivations (and vice versa). (Baker 1985:375)
- b. Revised: The affix order must mirror semantic composition. (Stiebels 2003: 292)

(93) Scope Hypothesis

Affix order corresponds to semantic scope. (Rice 2000)

The working of semantic scope can easily be seen in examples from the Atlantic language Pulaar. In (94a), the causative precedes the repetitive (suggesting that he taught me before), while in (94b) these operations are reversed (suggesting that I learned before).

(94) Affix order in Fuuta Tooro Pulaar (Paster 2005)

- a. o jaŋŋ-in-it-ii kam.  
 3sg learn-CAUS-REP-PAST 1sg  
 ‘He taught me again.’  
 AGAIN(ACT(x) & LEARN(y))
- b. o jaŋŋ-it-in-ii kam.  
 3sg learn- REP-CAUS-PAST 1sg  
 ‘He made me learn again.’  
 ACT(x) & AGAIN(LEARN(y))

The mirror principle would certainly be part of an invented ideal language. However, considering the various infelicities within the Bantu family, including ambiguity, polysemy and idiomaticity, Bantu is less ideal than one usually assumes for an agglutinative morphology. On the basis of an increasing set of observations about the order of verbal extensions in

Bantu, Hyman (2003) concluded that Proto-Bantu must have started with a fixed CARP-template (verb-CAUS-APPL-REC-PASS) of which many residuals are still present.

The following sentences from Chichewa (95) show that it makes an important semantic difference whether causative applies before or after the instrumental applicative. Chichewa belongs to the majority of Bantu languages, in which causative and applicative are only combined in the order CAUS-APPL. Consequently, the order **-íts-il** is ambiguous; to resolve this ambiguity, one has to know that spoons are an instrument of eating, while sticks rather are an instrument of making someone cry.

(95) Affix order in Chichewa (Hyman 2003)

- a. alenjé a-ku-líl-íts-il-a mwaná ndodo.  
 hunters 3pl-PROG-cry-CAUS-APPL-FV child sticks  
 ‘The hunters are making the child cry with sticks.’  
 (ACT(x) & CRY(y)) & INSTR(z)
- b. alenjé a-ku-takas-íts-il-a mkázi mthiko.  
 hunters 3pl-PROG-stir-CAUS-APPL-FV woman spoon  
 ‘The hunters are making the woman stir with a spoon.’  
 ACT(x) & (STIR(y) & INSTR(z))

Good (2005) investigated 32 Bantu languages from different regions; he found only 4 languages, in which both orderings CAUS-APPL and APPL-CAUS are productively used: Makhuwa (P31), Bukusu (E31c), Korekore (S11, a dialect of Shona), and Xhosa (S41).

(96) Affix order in Makhuwa (Kathupa 1991: 307)

- a. o- wi-ih-er-a  
 INF-come-CAUS-APPL-FV  
 ‘bring something for somebody / bring for some reason’  
 (ACT(x) & COME(y)) & BEN(z)
- b. o- we-el-ih-a  
 INF-come-APPL-CAUS-FV  
 ‘cause to come for something’  
 ACT(x) & (COME(y) & MOTIF(z))

In Makhuwa, as well as in Bukusu and Korekore, APPL-CAUS is only possible under specific semantic conditions. Unrestrictedly productive is this order only in Xhosa. But even here, as Good points out, CAUS-APPL is potentially ambiguous, see (97a), while the reverse order is not.

(97) Affix order in Xhosa (Satyo 1985: 261, 296)

- a. A’bazingéli ba-qhum-ís-el-a ínyo<sup>h</sup>si.  
 hunters 2S-smoke-CAUS-APPL-FV bees  
 ‘Hunters plague the bees with smoke.’  
 = ‘Hunters ((cause something to smoke) around the bees).’  
 or: ‘Hunters (cause something (to smoke around the bees)).’
- b. Utitshala u-bhal-él-is-a ínqúnunu íleta ngá bafúndi  
 teacher 1S-write-APPL-CAUS-FV principal letter by students  
 ‘The teacher makes the students write a letter to the principal.’

It is interesting that Bukusu, allowing both orders, gives interpretations to them which are inverse to what one expects on the basis of the Scope Hypothesis. This clearly indicates that innovations are on the way. Moreover, since the semantic circumstances for APPL-CAUS so much differ in the mentioned languages, one should infer that these languages invented the



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