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Symmetrical objects in Moro: Challenges and solutions[1]

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This paper examines the syntactic and semantic behavior of object arguments in Moro, a Kordofanian language spoken in central Sudan. In particular, we focus on multiple object constructions (ditransitives, applicatives, and causatives) and show that these objects exhibit symmetrical syntactic behavior; e.g., any object can passivize or be realized as an object marker, and all can do so simultaneously. Moreover, we demonstrate that each object can bear any of the non-agentive roles in a verb's semantic role inventory and that the resulting ambiguities are an entailment of symmetrical object constructions of the type found in Moro. Previous treatments of symmetrical languages have assumed a syntactic asymmetry between multiple objects and have developed theoretical analyses that treat symmetrical behaviors as departures from an asymmetrical basic organization of clausal syntax. We take a different approach: we develop a Head-Driven Phrase Structure Grammar account that allows a partial ordering of the argument structure (ARG-ST) list. The guiding idea is that languages differ with respect to the organization of their ARG-ST lists and their consequences for grammatical function realization: there is no privileged encoding, but there is large variation within the parameters defined by ARG-ST organization. This accounts directly for the symmetrical behaviors of multiple objects. We also show how this approach can be extended to account for certain asymmetrical behaviors in Moro.

[1] We would like to dedicate this article to the memory and inspiration of our colleague, mentor, and friend Ivan Sag. He loved grappling with the complex details of grammars through formally explicit analyses, and the whole field benefited by his passion and example.

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1. INTRODUCTION

This paper explores theoretical consequences of objects in Moro, a Kordofanian language from the Nuba Mountains of North Sudan. In particular, we discuss the implications of Moro objects with respect to familiar linguistic theories which assume a strict asymmetry in the syntactic realization of arguments.

Familiar linguistic theories assume that semantic asymmetries among predicate arguments are mirrored by asymmetries in their syntactic realization. This is achieved in different ways, largely depending on whether the framework employs grammatical relations/functions as primitive constructs independent of their surface realization or derives syntactic relation effects via structural configurations. Abstracting from these differences, however, each argument is, by hypothesis, associated with a unique syntactic role. That is, each argument can bear only a single grammatical relation or, equivalently, bear a single structural relation to the verb, with every syntactic role itself restricted to a single appearance in a clause. Accordingly, this hypothesis predicts that the same syntactic role cannot be associated with multiple distinct arguments. This makes strong predictions about the limits of cross-linguistic variation: languages should exhibit asymmetrical syntactic behaviors among all their arguments, with symmetrical behaviors, should they occur, entailing auxiliary explanations.

Different theories codify this assumption in different ways: it follows from STRATAL UNIQUENESS in Relational Grammar and from FUNCTIONAL UNIQUENESS in Lexical Functional Grammar, since both of these frameworks posit grammatical relations/functions as theoretical primitives. In configurational frameworks such as Principles and Parameters and Minimalism, it follows from the UNIFORM THETA-ROLE ASSIGNMENT HYPOTHESIS (UTAH) or from assumptions about the nature of syntactic structure, such as binary branching and the nature of Merge. In other words, syntactic asymmetry follows from key assumptions in each theory. Abstracting away from theory-internal implementations, we refer to this as ASYMMETRICAL ENCODING.[2] As noted above, this asymmetrical encoding assumption has an important empirical domain of application: it accounts directly for asymmetrical syntactic behaviors among arguments. That is, whenever two arguments display differential syntactic behaviors, these can be attributed to their distinct syntactic roles.

A theoretical question examined in this paper is what to do when a language departs from the predictions of asymmetrical encoding. In particular, how does this hypothesis accommodate cases where several distinct semantic arguments exhibit identical syntactic behaviors? The typical cross-theoretical response has been to adapt the formal assumptions of specific theories in ways that account for these unexpected behaviors, but that, crucially, preserve asymmetrical encoding. In effect then, the asymmetrical encoding assumption is established as a default

[2] See Bresnan & Moshi (1990) for the use of the terms asymmetrical and symmetrical to refer to the data distributions documented in numerous previous descriptive and theoretical works.

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universal grammatical pattern, with departures from it requiring modifications of otherwise more simple assumptions.

An alternative approach might dispense with universal asymmetrical encoding and treat symmetrical behaviors at face value: assume that they reflect a basic SYMMETRICAL ENCODING. Under this approach, (a)symmetrical encoding might be taken as a parameter of language variation. However, this alternative approach faces a number of empirical and theoretical questions. One is essentially the converse of that mentioned above: what if co-arguments, in a particular language, exhibit both symmetrical and asymmetrical behaviors. If a basic symmetrical syntax is assumed, then something other than syntactic symmetry must account for the asymmetries. Another question concerns the analytical space that an (a)symmetrical parameter entails: what kinds and what degree of empirical asymmetry motivate a particular setting of the parameter?

Against the backdrop of syntactic asymmetry, which we take to be the dominant position, we use Moro data to explore an alternative approach that assumes syntactic symmetry – one in which all internal arguments have symmetrical syntactic statues.[3] We claim that all of these should be treated as syntactic objects (in a sense we make precise below) and are therefore equal targets for a variety of syntactic operations. However, despite displaying the diagnostic behaviors for symmetrical objects, these elements additionally exhibit some asymmetries. As argued below, our symmetrical syntactic account explanatorily appeals to other domains to account for these asymmetrical phenomena. To the extent that these asymmetric phenomenon domains are explicable in terms of independently motivated assumptions, our symmetrical proposal is interpretable as a viable alternative to the more familiar asymmetrical accounts of multiple object phenomena. For both the symmetrical and asymmetrical behaviors we develop an account of object behavior based on Head-Driven Phrase Structure Grammar (HPSG). Unlike many other formal frameworks, we demonstrate that the HPSG architecture is sufficiently flexible to allow for direct expression of syntactic symmetries, such as those found in Moro. Given the simplicity of addressing observations about symmetrical phenomena within HPSG, this article additionally provides a novel analytic option for the treatment of double objects – an alternative to the more familiar approaches developed in frameworks such as Relational Grammar, Lexical Functional Grammar, and Principles and Parameters/Minimalism – all of which subscribe to the Asymmetrical Encoding in some manner.

[3] Our view of symmetrical behaviors is not completely novel, at least not for symmetrical arguments: several insights similar to ours, as well as some of the specific arguments we employ, are found in previous literature, though our development of their theoretical consequences is different. We build upon previous proposals (Gary & Keenan 1977, Kimenyi 1980, Hyman & Duranti 1982, Alsina 2001, Beck 2006, among others) whose importance and significance have been largely neglected in the theoretical literature. They have argued, each in their own way, that there is no asymmetric default: they do not assume asymmetry.

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In Section 2 we begin by presenting some relevant data from Moro, a Kordofanian language spoken in Sudan. In addition to reviewing some familiar syntactic arguments for symmetrical behavior in Moro, this section also addresses a less familiar phenomenon associated with symmetrical objects: under certain conditions there is pervasive semantic role ambiguity for all of the objects. This forms an empirical basis for later sections. Section 3 discusses a range of Minimalist accounts of symmetrical behaviors, all constrained by the assumption of strict syntactic asymmetry. We argue that these approaches must resort to a number of diacritical devices in order to address symmetrical behaviors: such devices contribute questionable theoretical machinery in order to achieve descriptive adequacy. In Section 4 we develop an HPSG account of symmetrical objects in Moro. Our basic proposal represents a simple modification of an otherwise unexamined assumption in HPSG, namely that ARG-ST lists have been conventionally represented as consisting of a total order over distinct arguments. We suggest that these lists can be partitioned into a list of partially ordered arguments in which one element in the list is a set whose members can be freely ordered among themselves. Given that we propose that the choice between partial and total orders with respect to the ARG-ST list falls within the architecture of the theory, our approach tackles the (a)symmetrical nature of object realizations head-on. In Section 5 we discuss certain asymmetrical behaviors among co-arguments. While these might be taken as reflexes of some basic and underlying syntactic asymmetry, we identify an alternative analysis in which these behaviors follow from assumptions that are required independent of symmetrical behavioral phenomena. Section 6 summarizes our conclusions.

2. Objects arguments in Moro

The data presented in this paper are from the Thetogovela dialect of Moro, spoken in the Nuba mountains of Sudan. As Kordofanian languages are generally classified as part of the larger Niger-Congo family, Moro is probably related to Bantu languages; while there are almost no cognates between Moro and Bantu languages, they share striking similarities in phonology, morphology, and syntax. It has a basic SVO* word order.[4] The nouns are partitioned into approximately 24 classes, and class membership is reflected in prefixes on the nouns and concord markers on agreeing categories such as verbs and adjectives (Gibbard, Rohde & Rose 2009). Nouns can co-occur with pre-nominal and post-nominal affixes (and particles) to convey a number of spatial and case relations. The verbal system displays the most complexity among lexical categories with respect to its variety of morphosyntactic properties and their morphological encodings. The

[4] As argued below, Moro allows several post-verbal objects. Other post-verbal elements include locatives, instrumentals, and various adjuncts. See Ackerman & Moore (2013) for a discussion of locative and instrumental nominals, where it is argued that these also may be syntactic objects, although with a different range of behaviors.

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verbal morphosyntactic properties encompass tense/mood/aspect distinctions, clause status (main or dependent), distributive, causative, applicative and passive suffixes, and agreement/pronominal incorporation. The structure of the verb is of particular relevance to the phenomena under discussion. We will assume, following Jenks & Rose (2011, 2015), the Moro verb template in (1):[5]

(1) Moro verb template:
(SM)-CL-CLAUSE.TYPE-(OM)-STEM-(DIST)-(CAUS)-(APPL)-(PASS)-ASP.MOOD-(OM)-(OM)

Finally, a two-tone phonological system distinguishes morphosyntactic properties, with few instances of lexical tone contrasts (Jenks & Rose 2011, 2015). Several of these characteristics will be evident in the data below.

In the remainder of this section we will identify properties diagnostic of object status in Moro – properties that align with the proto-patient argument rather than the proto-agent of simple or underived transitive verbs (Dowty 1991; Ackerman & Moore 1999, 2001; Primus 1999; Beavers 2006, among others). Following this we examine a variety of multi-valent constructions and demonstrate that properties diagnostic of object status hold for several thematically distinct arguments: this implicates the existence of multiple co-occurring objects in Moro with the attendant challenge of developing an empirically responsible theoretical treatment of this cross-linguistically attested phenomenon typified by Moro.

2.1 *Object properties*

As mentioned previously, Moro transitive clauses have basic SVO* word order; hence, the subject precedes the verb, while an object follows it, as in (2):

(2) kúku g-a-ləvətʃ-ó ɲogopájá
CLg.Kuku CLg.SM-MAIN-hide-PFV CLɲ.cup
'Kuku hid the cups.'

When the object is realized by a proper name, it optionally bears the case suffix *-ŋ*, while the co-occurring subject never does:

[5] The template in (1) represents a subset of Moro verbal morphology, containing only elements cited in this work; see Ackerman & Moore (2013) for a fuller description of Moro verbal morphology. We use the following inter-linear glosses and conventions: SM 'subject marker', CL 'noun class', MAIN 'main clause verb', DUR/ITER 'durative/iterative', CAUS 'causative', APPL 'applicative', PASS 'passive', PFV 'prefective', REL 'relative', OM 'object marker' (1SG, 3SG, 3PL, etc.), and ACC 'accusative'. Particular noun classes are identified by their agreeing prefix (e.g., CLg, CLɲ, etc.). Lexical tone is marked, but not the effects of tone sandhi (Jenks & Rose 2011, 2015); high tone is marked with an acute accent; low tone is unmarked. The effects of certain phonological and morphophonological processes have been undone in order to show the morphological structures more clearly. Finally, the template indicates the possibility of multiple co-occurring object markers; their morphotactics are examined in Ackerman (2009), Rose (2013), and Jenks & Rose (2015).

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(3) ŋál:o g-ʌrːʌŋətʃ-ú[6] kúku-**ŋ**
CLg.Ngallo CLg.SM-teach-PFV CLg.Kuku-**ACC**
'Ngallo taught Kuku.'

Other types of proto-patients display no distinct morphological marking (e.g. (2) above). We will refer to the overtly marked object in (3) as bearing ACCUSATIVE marking.

While agreement prefixes on verbs reflect the person/number/noun class properties of the subject, object arguments with pronominal status are realized by inflectional markers on the verb: these reflect person/number properties of the object, but not noun class:[7]

(4) kúku g-a-ləvətʃ-ɔ́-**lo**[8]
CLg.Kuku CLg.SM-MAIN-hide-PFV-**3PL.OM**
'Kuku hid them.'

Bresnan & Mchombo (1987) argue that the complementary distribution between object markers and overt nominals in the Bantu language Chicheŵa provides evidence that object markers are incorporated pronominals. Moro exhibits the same complementary distribution (as shown in (5)) and, consequently, we adopt their account that inflectional markers in some languages have pronominal, rather than agreement, status: we treat the markers as pronominal in Moro.[9]

(5) *kúku g-a-ləvətʃ-ɔ́-**lo** ɲogopájá
CLg.Kuku CLg.SM-MAIN-hide-PFV-**3PL.OM** CLɲ.cup

Proto-patient arguments can passivize, indicated on the verb by the passive suffix *-ən*:

(6) ɲogopájá ɲ-ʌ-ləvətʃ-**ən**-ú
CLɲ.cup CLɲ.SM-MAIN-hide-**PASS**-PFV
'The cups were hid.'

[6] The verb root *ʌrːʌŋətʃ* 'teach' in (3) triggers vowel harmony and raises the vowel height of affixes.

[7] In this respect Moro differs from numerous Bantu languages where object markers vary according to the noun class of the object (see Marten & Kula 2012). Overt object markers are used for all human objects as well as inanimate plural objects. Inanimate singular objects are not expressed overtly. In cases where there is more than one object marker, they may both occur verb-finally (perfective) or one may appear before the verb root and the other at the end (imperfective); see Ackerman (2009) for further discussion.

[8] When another suffix follows the perfective suffix (*-o* or *-u*), as in (4), it reduces to *-ɔ́*.

[9] This has become the conventional analysis within lexicalist frameworks for numerous languages where there is evidence for the pronominal status of verbal person/number markers.

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Based on these data we can conclude that Moro objects exhibit the following formal properties:

(7) *Object properties: An object will*
  (a) occur post-predicate position, if it is an overt non-pronominal nominal
  (b) bear accusative case, if it is a proper name, otherwise it appears morphologically unmarked
  (c) be realized by an object marker, when pronominal
  (d) be able to undergo passivization

In the next subsections we discuss a number of constructions that provide evidence for the hypothesis that Moro is a symmetrical object language; that is, in several constructions more than one internal argument exhibits object properties. The relevant constructions are headed by simple ditransitives, applicativized verbs, and causative verbs. The behaviors of these arguments suggest that, if any one of the arguments deserves to be classified as an object, then they all do, since they all display identical syntactic behaviors.

2.2 *Underived ditransitive predicates*

Several basic Moro verbs, including *natʃ* 'give', are three-place predicates that entail agent, theme, and goal arguments. As illustrated in (8), the two internal arguments (goal and theme) occur post-verbally:[10]

(8) é-g-a-natʃ-ó óráŋ ŋerá
1SG.SM-CLg-MAIN-give-PFV CLg.man CLŋ.girl
'I gave the girl to the man.' / 'I gave the man to the girl.'

The gloss indicates that the sentence is ambiguous: the interpretation, accordingly, cannot be keyed to the linear sequence of Noun Phrases (NPs). [11]

Both internal arguments of *natʃ* 'give' exhibit the full range of object properties identified in (7). We have seen that they both occur in a post-verbal position; the examples in (9–10) show the remaining properties:

[10] Moro ditransitives lack an alternation between double objects and prepositional/oblique objects. For convenience, we use atomic semantic role labels (e.g. agent, theme, etc.); this could be recast in terms of proto-roles (Dowty 1991, Primus 1999, Ackerman & Moore 2001, among others).

[11] The ambiguities reported here depend on plausible contexts and, therefore, are sometimes delicate: similar judgments concerning systematic multiple alternative interpretations have been attested in two dialects of Totonoc (Beck 2006, McKay & Trechsel 2008), among other languages. Semantic ambiguity is further discussed below as being a reliable predictor of syntactic symmetries. There is reason to believe that independent of ambiguity Moro exhibits a preference for the non-theme arguments (in this case the goal) to immediately follow the verb; the non-theme argument, thus, precedes the theme argument. Word order preferences are discussed in more detail in Section 5.

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(9) (a) *Accusative marking*
é-g-a-natʃ-ó ŋállo-**ŋ** kóɗa-**ŋ**
1SG.SM-CLg-MAIN-give-PFV CLg.Ngallo-**ACC** CLg.Kodja-**ACC**
'I gave Ngallo to Kodja.' / 'I gave Kodja to Ngallo.'

(b) *Represented as object markers*
é-g-a-natʃ-ə́-**lo** ŋerá
1SG.SM-CLg-MAIN-give-PFV-**3PL.OM** CLŋ.girl
'I gave them to the girl' / 'I gave the girl to them.'

The ambiguity in (9b) shows that either argument can be represented as an object marker. Similarly, either object can passivize, yielding ambiguity in (10):

(10) *Passivization*
óráŋ g-ʌ-nʌtʃ-**ən**-ú ów:á
CLg.man CLg.SM-MAIN-give-**PASS**-PFV CLg.woman
'The man was given a woman.' / 'The man was given to a woman.'

Because the passivized subject can be interpreted as either a theme or a goal, we know that either internal argument is able to passivize.

The examples thus far have shown that either internal argument can display certain object properties. Putting aside the double accusative marking in (9a), (9b) shows that either may be represented as an object marker, and (10) shows that either may passivize. However, according to the typology discussed in Harford (1991) and Alsina (1996, 2001), this is not sufficient evidence to establish Moro as a true symmetrical language. In these works three types of (a)symmetry are discussed:

(11) (a) Non-alternating asymmetrical: only one particular internal argument (usually the goal/beneficiary) can show primary object properties (e.g. object marking and passive). Chichewa instantiates this type (Bresnan & Moshi 1990, Alsina & Mchombo 1993).

(b) Alternating asymmetrical: either internal object may display primary object properties, but no two can do so simultaneously. Kitharaka instantiates this type (Harford 1991).

(c) Symmetrical: both internal objects may exhibit primary object properties simultaneously; e.g. both may expressed as object markers or one may passivize while the other is expressed as an object marker. Kinyarwanda instantiates this type (Kimenyi 1980, Bresnan & Moshi 1990).

Evidence that Moro is a true symmetrical language comes from the following examples; in (12a) we see two object markers and in (12b) we see passive in conjunction with an object marker. Crucially, both of these examples are ambiguous, showing that either internal argument may occupy either object marker slot and either may passivize while the other is realized as an object marker.

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(12) (a) *Multiple object markers*
é-g-a-natʃ-ɔ́-**ŋɔ́-lo**
1SG.SM-CLg-MAIN-give-PFV-**3SG.OM-3PL.OM**
'I gave him to them.' / 'I gave them to him.'

(b) *Object marking* cum *passivization*
órâŋ g-ʌ-nʌtʃ-**ən**-ɔ́-**ŋɔ́**
CLg.man CLg.SM-MAIN-give-**PASS**-PFV-**3SG.OM**
'The man was given to her.' / 'She was given to the man.'

It should be noted that the order of object markers within the verb reflects a person/number hierarchy and not semantic roles or grammatical functions (Ackerman 2009, Rose 2013, Jenks & Rose 2015).

Based on these data, Moro, like Kinyarwanda, Kichaga, and many other languages, behaves as a symmetrical language. Each of the relevant non-subject arguments displays the full set of object properties.[12] The symmetrical nature of Moro will be further confirmed below in applicative and causative constructions.

2.3 *Applicatives*

There is a class of beneficiary applicatives in Moro.[13] This construction involves an applicative suffix *–(ə)ɻ̩* (which triggers vowel harmony) with the corresponding beneficiary exhibiting object properties. This applicative strategy is obligatory in the sense that if there is a beneficiary argument, there must be an applicative suffix on the verb; that is, it does not alternate with a prepositional/oblique beneficiary.[14]

(13) (a) é-g-alaŋ-ó
1SG.SM-CLg-sing-PFV
'I sang.'

(b) í-g-ʌləŋ-**əɻ̩**-ú ów:á
1SG.SM-CLg-sing-**APPL**-PFV CLg.woman
'I sang for the woman.'

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[12] We restrict ourselves to arguments that appear as bare NPs, leaving to another forum the analysis of complex NPs that also display OBJ properties (Ackerman & Moore 2013).

[13] Although not discussed here, there are also locative and instrumental applicatives which, while not always obligatory, can display similar symmetrical object behaviors observable with the other valence increasing constructions; see Ackerman & Moore (2013).

[14] There are cases of non-applicative prepositionally marked adjuncts, but with a distinct semantics:

(i) é-g-aləŋ-ó ta ów:á
1SG.SM-CLg-sing-PFV PART CLg.woman
'I sang because of the woman.' ('The woman wanted me to sing.')

In addition, some beneficiary arguments, when co-occurring with a causative verb, will be marked with *ta* and will not trigger beneficiary applicative morphology; see Section 5.3.

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The examples in (14) show that applicative arguments behave as objects:

(14) (a) *Accusative marking*
í-g-ʌləŋ-**ə̰t̰**-ú káka-**ŋ**
1SG.SM-CLg-sing-**APPL**-PFV CLg.Kaka-**ACC**
'I sang for Kaka.'

(b) *Represented as object marker*
í-g-ʌləŋ-**ə̰t̰**-ɔ́-**ŋó**
1SG.SM-CLg-sing-**APPL**-PFV-**3SG.OM**
'I sang for him.'

(c) *Passivization*
káka g-ʌləŋ-**ətʃ-ən**-ú
CLg.Kaka CLg.SM-sing-**APPL**-PASS-**PFV**
'Kaka was sung for.'

When applicative arguments co-occur with a transitive verb, the result is a double-object construction; in (15) the example is ambiguous, showing that either argument may bear either semantic role.

(15) k[15]-ʌ-wːʌð-i**t̰**-ú ŋerá umːiə
CLg.SM-MAIN-find-APPL-PFV CLg.girl CLg.boy
'He found the boy for the girl.' / 'He found the girl for the boy.'

Both internal objects exhibit object properties:

(16) *Accusative marking*

(a) í-g-ʌ-rr-**ə̰t̰**-ú káka-**ŋ** ŋóréðá
1SG.SM-CLg-MAIN-pound-**APPL**-PFV CLg.Kaka-**ACC** CLŋ.sesame
'I pounded sesame for Kaka.'

(b) í-g-ʌ-rʌb-**ḭt̰**-ú emer̰t̰á
1SG.SM-CLg-MAIN-pick up-APPL-PFV CLg.horse
ŋállo-**ŋ**
CLg.Ngallo-**ACC**
'I carried Ngallo for the horse.'

(17) *Represented as object markers*

(a) í-g-ʌ-rː-**ə̰t̰**-ə-**ŋó** ŋóréðá
1SG.SM-CLg-MAIN-pound-**APPL**-PFV-**3SG.OM** CLŋ.sesame
'I pounded sesame for him.'

(b) í-g-ʌ-rː-**ə̰t̰**-ɔ́-**lo** káka-ŋ
1SG.SM-CLg-MAIN-pound-**APPL**-PFV-**3PL.OM** CLg.kaka-ACC
'I pounded them for Kaka.'

[15] The g-noun class marker in (15) is realized as /k/ in phrase-initial position.

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(18) *Passivization*

(a) káka g-ʌ-rː-**ətʃ-ən**-ú ŋóréðá
CLg.Kaka CLg.SM-MAIN-pound-**APPL-PASS**-PFV CLŋ.sesame
'Kaka was pounded sesame for.'

(b) ŋóréðá ŋ-ʌ-rː-**ətʃ-ən**-ú
CLŋ.sesame CLŋ.SM-MAIN-pound-**APPL-PASS**-PFV
káka-ŋ
CLg.Kaka-ACC
'The sesame was pounded for Kaka.'

Double object markers (19a) and the interaction between passive and object markers (19b) confirm Moro's status as a symmetrical language; again, note the expected ambiguities:

(19) (a) k-ʌ-wːʌð-**iṯ**-ə́-**ɲə́-lo**
CLg.SM-MAIN-found-**APPL**-PFV-**1SG.OM-3PL.OM**
'He found me for them.' / 'He found them for me.'

(b) í-g-ʌ-wːʌð-**itʃ-ən**-ə́-**lo**
1SG.SM-CLg-MAIN-found-**APPL-PASS**-PFV-**3PL.OM**
'I was found for them.' / 'They were found for me.'

2.4 *Causatives*

Moro causatives, reflected on the verb with an *-i* suffix and vowel harmony (Strabone & Rose 2012), are similarly associated with valence increase, but here a cause argument is added; this is illustrated with both intransitive and transitive predicates in (20):

(20) (a) í-g-ʌləŋ-í kúku-ŋ
1SG.SM-CLg-sing-CAUS.PFV CLg.Kuku-ACC
'I made Kuku sing.'

(b) k-ʌ-bug-í ŋálːo-ŋ kúku-ŋ
CLg.SM-MAIN-hit-CAUS.PFV CLg.Ngallo-ACC CLg.Kuku-ACC
'He made Ngallo hit Kuku.' / 'He made Kuku hit Ngallo.'

It should be noticed that when a transitive predicate is causativized, the result is a double-object construction, as in (20b). As seen by the ambiguous glosses, the word order between the causee and the theme is not fixed.

Both internal arguments in (20) exhibit all object properties; as seen in (20), they can bear accusative case. The examples in (21) illustrate the remaining properties:

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(21) (a) *Represented as object markers*
í-g-ʌ-bug-í-**ŋó** um:iə
1SG.SM-CLg-MAIN-hit-CAUS.PFV-**3S.OM** CLg.boy
'I made him hit the boy.' / 'I made the boy hit him.'

(b) *Passivization*
um:iə g-ʌ-bug-i-**n**-ú ogómá
CLg.boy CLg.SM-MAIN-hit-CAUS-**PASS**-PFV CLg.thief
'The boy was made to hit the thief.' / 'The thief was made to hit the boy.'

The examples in (22) show that the two internal arguments exhibit simultaneous object properties:

(22) (a) *Double object markers*
k-ʌ-bug-**í-ŋə́-lo**
CLg.SM-MAIN-hit-**CAUS**.PFV-**1SG.OM-3PL.OM**
'He made me hit them.' / 'He made them hit me.'

(b) *Passive with object marker*
í-g-ʌ-bug-i-n-ə́-lo
1SG.SM-CLg-MAIN-hit-**CAUS-PASS**-PFV-**3PL.OM**
'I was made to hit them.' / 'They were made to hit me.'

2.5 *Multiple objects*

We have seen several examples of double-object constructions where each object exhibits the full range of object behaviors. Here, we show examples containing more than two objects, most spectacularly, a triple-object construction that is six-ways ambiguous, each interpretation being most accessible in particular discourse contexts.[16]

Since ditransitive predicates select two objects and applicative constructions add an additional object, the two can be combined to yield a total of three object arguments:

(23) í-g-ʌ-nʌʤ-**ə̰t**-ú aljásər-**o** kúku-**ŋ**
1SG.SM-CLg-MAIN-give-**APPL**-PFV CLg.Elyasir-**ACC** CLg.Kuku-**ACC**
ŋállo-**ŋ**
CLg.Ngallo-**ACC**

This sentence was judged to be six-ways ambiguous: any of the three objects could be aligned with each of the three semantic roles: theme, goal, and beneficiary. Hence, (23) could mean:

[16] Our present understanding of Moro information packaging and the grammatical reflexes of discourse structure is rudimentary. The semantic ambiguities, however, are clear.

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(24) (a) 'I gave Elyasir to Kuku for Ngallo.'
(b) 'I gave Elyasir to Ngallo for Kuku.'
(c) 'I gave Kuku to Elyasir for Ngallo.'
(d) 'I gave Kuku to Ngallo for Elyasir.'
(e) 'I gave Ngallo to Kuku for Elyasir.'
(f) 'I gave Ngallo to Elyasir for Kuku.'

As seen in (23), all three internal arguments are accusative marked. Further evidence for simultaneous object status in triple-object constructions is given in (25):

(25) (a) *Object marking (goal or beneficiary)*
í-g-ʌ-nʌdʒ-**ət̪**-ɔ́-**ŋɔ́** kúku-ŋ
1SG.SM-CLg-MAIN-give-**APPL**-PFV-**3SG.OM** CLg.Kuku-ACC
ád̪ámá
CLg.book
'I gave a book to him for Kuku.' / 'I gave a book to Kuku for him.'

(b) *Passivization of theme*
ád̪ámá g-ʌ-nʌdʒ-**ətʃ-ən**-ú ŋál:o-ŋ
CLg.book CLg.SM-MAIN-give-**APPL-PASS**-PFV CLg.Ngalo-ACC
kúku-ŋ
CLg.Kuku-ACC
'The book was given to Ngalo for Kuku.' / 'The book was given to Kuku for Ngalo.'

(c) *Passivation of theme with object marker*
ád̪ámá g-ʌ-nʌdʒ-**ətʃ-ən**-ɔ́-**ŋɔ́** ŋerá
CLg.book CLg.SM-MAIN-give-**APPL-PASS**-PFV-**3SG.OM** CLŋ.girl
'The book was given to him for the girl.' / 'The book was given to the girl for him.'

Ditransitive predicates can be causativized, again, yielding three objects. In this instance, we did not find six-way ambiguity; rather, there was a strong preference for the first object to be interpreted as the causee and the last object could not be interpreted as the cause:

(26) í-g-ʌ-nʌtʃ-í kúku-ŋ ŋál:o-ŋ
1SG.SM-CLg-MAIN-give-**CAUS**.PFV CLg.Kuku-ACC CLg.Ngallo-ACC
káka-ŋ
CLg.Kaka-ACC
'I made Kuku give Ngalo to Kaka.' / ?'I made Ngallo give Kuku to Kaka.'

Regardless of limitations on interpretations, each of the internal objects exhibits object properties:

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(27) *Causee or goal passivizes; causee or theme as object marker*:
kúku g-ʌ-nʌtʃ-i-n-ɔ́-ŋó
CLg.Kuku CLg.SM-MAIN-give-**CAUS-PASS**-PFV-**3SG.OM**
káka-ŋ
CLg.Kaka-ACC
'Kuku was made to give him to Kaka.'
'Kaka was made to give him to Kuku.'
'He was made to give Kuku to Kaka.'
'He was made to give Kaka to Kuku.'

In principle it should be possible to add both causative and applicative morphology to a simple transitive predicate to, again, derive a triple-object construction. This appears to be impossible, however. We return to this in Section 5.

2.6 *Semantic role ambiguities: an independent criterion for object symmetries*

Our discussion of each syntactic property of objects has included ambiguous examples. Lexical NPs and incorporated pronouns, or a combination of both, can bear multiple non-agentive roles. This phenomenon has often been reported anecdotally in the description and analysis of numerous other symmetrical languages. Sometimes, as in Misantla Totonac (McKay & Trechsel 2008), Runyambo (Rugemalira 1991), or Kinyarawanda (Kimenyi 1980), it is restricted to a subset of symmetrical object phenomena. However, in other languages, such as Upper Necaxa Totonac (Beck 2006) and Moro, it is far more prevalent. While the descriptive and extensive syntactic literature has frequently mentioned this phenomenon in passing, this semantic profile can actually be construed as an entailment of syntactic symmetry, and vice versa: these are two independent and interdependent properties of symmetrical objects. However, the differences in the accessibility of ambiguities in languages showing syntactic symmetry suggest that there are certain additional conditions that need to be identified which permit alternative readings.

Rugemalira (1991) makes some observations concerning the nature of these conditions in terms of what he refers to as *strategies for argument differentiation*. Interpreting his remarks from the present perspective, there are marking strategies such as word order, verbal morphotactics, case marking, etc. that serve a disambiguating function in distinguishing the semantic roles of multiple objects: the presence of strategies that specify distinctive semantic roles for particular object arguments, naturally, precludes ambiguous role interpretations. For example, he suggests that potential ambiguity arises in Runyambo when there are two animate objects, but that certain readings are prohibited by a constraint on object marking morphotactics. In particular, several constraints may interact to limit ambiguity. One such situation results from an animacy constraint that places inanimates to the left of animate prefixes and a constraint against inanimates serving as goals; (28a) shows this effect. Another semantic role constraint that orders theme prefixes to the left of goal prefixes curtails the potential ambiguity in (28b).

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(28) (a) *Constraints on combination of (in)animate pronominal prefixes*
a-ka-ga-mú-ha
SHE-PAST-IT-HIM-give
'She brought it to him' / *'She brought him to it.'

(b) *Constraints on combination of 1st and 2nd pronominal prefixes*
a-ka-kú-m-pa
SHE-PAST-YOU-ME-give
'She gave you to me' / *'She gave me to you.'

In contrast, when neither morphotactic order nor the linear order of lexical NPs mandates a specific interpretation, then ambiguity arises; here we see a single pronominal marker, hence no marker order restriction, and a lexical NP; the result is ambiguous:

(29) *Combination of pronominal marker and lexical NP*
a-ka-mu-reet-er-á abakázi
SHE-PAST-HIM-bring-APPL-FV woman
'She brought him to the women.' / 'She brought the women to him.'

The relevant ambiguities are far more prevalent in Moro. Case marking does not help to distinguish non-subject arguments in Moro (accusative case is tied to animacy, not to semantic role) and there is no necessary linear order associated with semantic role. Consequently, any object can be associated with any semantic role, as long as the semantic role inventory of the verb is satisfied. The same is true for the interaction of lexical NPs with incorporated pronouns and for a sequence of incorporated pronouns within the verbal complex. In this latter domain Moro differs from Runyambo significantly, despite the fact that its incorporated pronominal morphotactics is constrained by a person/number and by an animacy hierarchy. Since in Moro pronominal object marker positions are not associated with specific roles but rather are determined by a person/number hierarchy (Ackerman 2009, Rose 2013, Jenks & Rose 2015), all possible semantic interpretations are available. In particular, the sorts of alternative readings precluded from Runyambo in (28b) above are possible in Moro. Moro does preclude inanimate goals, however, so (28a) would be unambiguous in Moro as well.

The contrasts between Runyambo and Moro with respect to the phenomenon of ambiguity seem to be instructive about a general issue concerning grammar design, namely languages are not perforce designed to prohibit the sorts of ambiguities that are ordinarily precluded in languages with asymmetric encodings. The (im)possibility of such readings is a function of grammatical constraints and their interaction in different languages, and this is a contingent, historically determined fact about specific grammars, not a general property of language per se. This should probably not be surprising, given that resolution to the likeliest interpretations can be efficiently guided by knowledge of particular discourse contexts in which a multiple object construction occurs. The basic generalization within the domain of multiple object constructions appears to be

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this: in syntactically symmetrical object constructions, if independent grammar constraints do not prevent it, there is ambiguity in the semantic role interpretation for objects. Viewed from this perspective, semantic ambiguity should be considered a diagnostic property of symmetrical object constructions. From a practical perspective, a researcher encountering multiple ambiguities for multivalent clausal constructions can predict syntactic symmetry as reliably as the presence of syntactic symmetry predicts the possibility for multiple ambiguity modulo independent constraints of the types we have discussed.

2.7 *Object properties: summary*

In this section we have seen clear evidence for the existence of symmetrical objects in Moro. In the case of inherently ditransitive, applicative, and causative constructions we find that internal semantic arguments display the full range of object behaviors, both individually and simultaneously. Furthermore, we have seen that when predicates select for up to three internal semantic roles, all exhibit object behaviors and, consequently, are symmetrical objects. Given these distributions and behaviors, we argue that all of these arguments should be treated identically with respect to their syntactic status. Moreover, we have argued that syntactic symmetry entails multiple ambiguity when other grammatical properties of Moro permit it. This entailment is only foreclosed when some specific property independent of the symmetrical status of objects prevents it. The consequence of this evidence is, as mentioned in the introduction, that the type of syntactic asymmetry found in most formal theoretical treatments of double objects requires reconsideration. In order to see why this is so, Section 3 reviews accounts of symmetrical languages that assume asymmetrical encoding as a universal property of double objects. We demonstrate that these accounts must stipulate a range of *ad hoc* devices in order to address object symmetries. From the perspective of theory construction it is important to observe that we are not suggesting that every response to an unexpected empirical fact is *ad hoc*: clearly, theories change in order to become more responsive to new and unanticipated data. On the other hand, when there are pervasive patterns of cross-linguistic variation that are at odds with a particular theoretical assumption, one should consider whether the technical solutions may mask a deeper understanding of the phenomena. It is in this spirit that we suggest an alternative proposal – one that does not assume universal asymmetrical encoding.

3. ASYMMETRICAL ENCODING

Asymmetrical encoding follows from fundamental assumptions of most formal theories of syntax – both frameworks that rely on phrase structural explanation, as in Principles and Parameters/Minimalism, and those that rely on primitive

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grammatical relations/functions, such as Relational Grammar and Lexical Functional Grammar. This generalized notion of asymmetrical encoding reflects several presumed architectural universals of clausal organization, including (i) all languages map arguments into distinct structural positions for a finite inventory of grammatical functions such as SUBJECT and OBJECT, or (ii) each distinct structural position or grammatical relation/function corresponds to a distinct semantic argument, and (iii) each pairing can be represented only once per clause. This can be represented schematically as follows, where SR_i indicates a unique semantic role, GF_i indicates a unique structural position or grammatical relation/function, and the variables x, y, z indicate the valence slots associated with the predicator.

(30)
$$\begin{array}{ccccccc} & \text{SR}_1 & & \text{SR}_1 & & \text{SR}_n & \\ & | & & | & & | & \\ P\langle & x, & & y, & & z & \rangle \\ & | & & | & & | & \\ & \text{GF}_1 & & \text{GF}_1 & & \text{GF}_n & \end{array}$$

Thus, for any predicate P, there is a bi-unique mapping between the associated set of semantic roles distinct from their grammatical realizations. This precludes alignments of the following sorts:

(31)
$$\begin{array}{ccccc} \text{SR}_1 & & & \text{SR}_1 \quad \text{SR}_2 & \\ \diagup\ \diagdown & & & \diagdown\ \diagup & \\ \text{GF}_1 \quad \text{GF}_2 & & & \text{GF}_1 & \end{array}$$

In addition to the assumption of biunique mappings, these frameworks further assume that asymmetrical semantic roles are mirrored by asymmetrical encodings. That is, the relative positions of co-arguments on a thematic hierarchy map to encoding asymmetries – mediated either through asymmetric c-command or relational/functional hierarchies.

In this section we review some of the double-object literature cast within Principles and Parameters and Minimalist assumptions and explore how asymmetrical encoding fares when faced with symmetrical phenomena, such as found in the behavior of Moro objects.[17]

[17] There is a large literature on Bantu applicative constructions in Relational Grammar and Lexical Functional Grammar traditions (Relational: Kimenyi (1980) and Dryer (1983); Lexical Functional: Bresnan & Moshi (1990), Alsina & Mchombo (1993), and Alsina (2001), among others). The Lexical Functional Grammar accounts were instrumental in developing the LEXICAL MAPPING THEORY (Bresnan & Kanerva 1989, Bresnan 2001), which, while maintaining asymmetrical assumptions at the level of grammatical functions, defines an additional level of feature classifications that allows for limited symmetry. Thus, under this approach, symmetrical internal arguments remain asymmetrically encoded in terms of grammatical functions, but, under certain conditions, exhibit symmetrical intrinsic feature classifications (Bresnan & Moshi 1990).

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Although standard Transformational Grammar did not recognize a primitive status for grammatical relations, it was often possible to define them in a derived manner, based on their position within phrasal representations. Accordingly, the NP daughter of S was the SUBJECT, the NP sister of V was the DIRECT OBJECT, etc. With the addition of several theoretical assumptions from the 1990s to the present, it has been more difficult to equate SUBJECT and OBJECT functions with particular syntactic positions in a Minimalist derivation (cf., Davies & Dubinsky (2001) and, particularly, McCloskey (2001)). Nonetheless, as we will see below, it may still be possible to approximate a mapping between grammatical functions and positions where specific features are checked.

There are two assumptions of the Minimalist Program which yield a syntactic asymmetry between the dual objects in applicative constructions – both have roots in Larson's influential work on double-object constructions (Larson 1988). The first is the assumption of binary branching. While this had been proposed before (e.g., Kayne 1984), Larson's paper was particularly influential in this domain; essentially all subsequent work in Principles and Parameters and Minimalism assumes binary branching, generally without argument.[18] The second assumption follows, in part, from binary branching. Crucial to Larson's analysis of English double objects is the proposal that an extra projection above the VP provides a specifier where the first of two objects receives Case. This LARSONIAN SHELL analysis was generalized in Chomsky (1995) and has been a standard assumption in the Minimalist Program, whereby there is at least one distinct head for each syntactic argument. In (32) we see a common phrase structure configuration, where two verbal heads, *v* and V, are assumed for a transitive clause. The higher *v* head introduces the external argument, while the lower V head introduces the internal argument.[19] Various Case/EPP features drive movement: as illustrated in (32), the internal argument moves to the specifier of *v* to check accusative Case, while the external argument moves to a higher functional projection to check the EPP feature, and, possibly, nominative Case.[20]

[18] The principal argument for binary branching has been from learnability theory, where it is claimed that the learning space of a theory that permits n-ary branching is larger than that of one that assumes binary branching only (Haegeman 1992). Collins (1997) notes that binary branching may be a consequence of the Minimalist operation Merge. See Culicover (2000) for a discussion of the history of binary branching and arguments that it is under-motivated. See Jackendoff (2011) for comments concerning the absence of explicit motivation for this pervasive assumption.

[19] The development of the *v*P projection has been based on both Larsonian shells and Kratzer's (1993) Voice projection; this latter work explicitly ties a functional projection to the introduction of the external argument.

[20] The term 'EPP' is carried over from Government and Binding Theory, where it was an acronym for EXTENDED PROJECTION PRINCIPLE – a theoretical principle introduced in Chomsky (1982) that included the original Projection Principle (Chomsky 1981), plus the stipulation that all clauses require subjects (defined in phrase structural terms). In practice, however, the term EXTENDED PROJECTION PRINCIPLE was used to denote only the latter, 'extension', as did its acronym EPP. In the Minimalist Program, the acronym EPP has been generalized to any abstract feature that forces movement to a specifier, when the feature

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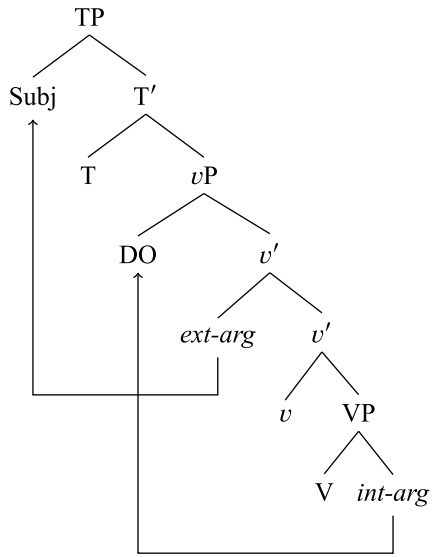
(32)



Given this configuration, one could define the argument that checks the EPP feature in the specifier of TP as the subject, while the argument moving to the specifier of *v*P can be interpreted as the direct object. There are, however, a number of complicating factors with this type of translation across theories, as discussed in several articles in Davies & Dubinsky (2001).

In order to extend the sort of configurational account in (32) to double-object constructions, there would have to be three projections inside the verbal shell – this then allows each of the three arguments to be associated with a VP-internal syntactic head. For example, Travis (2010: 50) proposes that dative shift involves an 'inner passive' – i.e. movement of the goal argument from a base position to a 'derived object' position, in particular, the specifier of a functional projection, as in (33); the logical object remains *in-situ*:

cannot be grounded in Case or some other morphological and/or semantic feature. Hence, EPP features allow Minimalist analyses to be construction specific, in a manner not unlike Standard Transformational Grammar (see Moore 2009).

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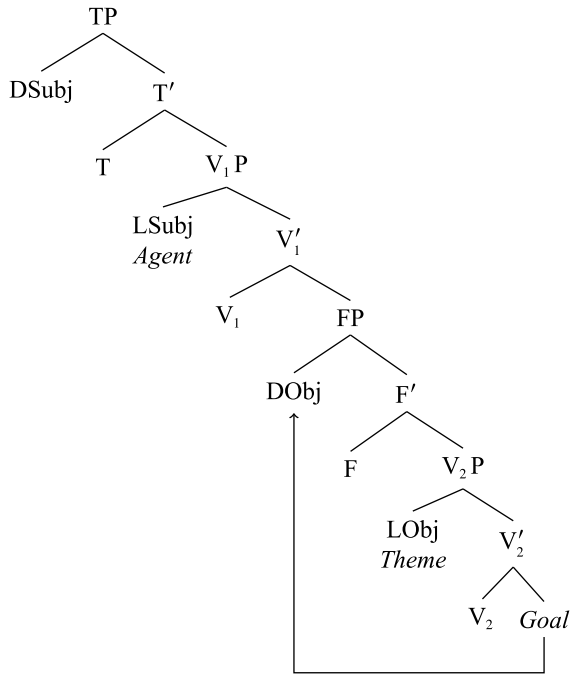
(33)



(LSubj, LObj = 'logical subject, object'; DSubj, DObj = 'derived subject, object')

It should be noticed that the assumption of binary branching, perhaps as a consequence of the structure building operations Merge and Move, results in asymmetrical c-command between all three surface arguments:

(34) D(erived)Subj ≫ DObj ≫ LObj

Because of the movement in (33), the goal, as a derived object, c-commands the logical object. Thus, the goal, being closer to the specifier of TP than the theme, is predicted to be able to passivize, and, perhaps, exhibit other object behaviors, given common assumptions about minimality of movement.[21] Conversely, under these same assumptions, the theme argument is predicted not to

[21] The locality of movement is commonly held to be a consequence of a SHORTEST MOVE PRINCIPLE (Chomsky 1995, among others). This is a generalized version of Rizzi's (1990) RELATIVIZED MINIMALITY, which, among other things, prevented A-movement across a c-commanding A-specifier. However, RELATIVIZED MINIMALITY was formulated in the context of a phrase structure that did not include Larsonian shells or their successors; hence, the only relevant A-specifier was Spec of IP, which made the principle similar to the earlier SPECIFIED SUBJECT CONSTRAINT (Chomsky 1973), which essentially captured the clause-bounded nature of NP-Movement. With the generalization of RELATIVIZED MINIMALITY to SHORTEST MOVE and the concurrent elaboration of intra-clause structures, including multiple heads and specifiers, the theory has had to develop additional machinery to circumvent unwanted intervention effects. This will become apparent in the following paragraphs.

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exhibit such object behaviors. Thus, the asymmetrical c-command in (33) predicts asymmetrical behavior. As we will see below, however, special stipulations are required to account for symmetrical behavior.

Interestingly, pre- and post-movement positions of theme and goal are reversed in terms of c-command relations. Pre-movement c-command reflects the assumption, expressed in Larson (1988), that themes outrank goals on the thematic hierarchy, and that this asymmetrical ranking is reflected by underlying asymmetrical c-command. This claim is commonly known as the UNIFORM THETA ASSIGNMENT HYPOTHESIS. However, as discussed in Baker (1996), the relative thematic ranking of themes and goals has been controversial; below we see alternative accounts which assume that goals outrank themes.[22] It should be noticed that in derivational frameworks like Principles and Parameters/Minimalism, Uniform Theta Assignment translates the thematic hierarchy into underlying c-command asymmetries, while asymmetrical syntactic behaviors may depend on derived post-movement structure. Hence, the empirical effects of asymmetrical encoding reflect the thematic hierarchy only indirectly. Binary branching, thus, plays the primary role in deriving asymmetrical encoding effects.

A related approach to applicatives is presented in Pylkkänen (2008), and has been applied to Bantu data and developed in a series of papers by McGinnis and others (McGinnis 2001, 2005, 2008; McGinnis & Gerdts 2004). Central to this work is the claim that applicatives come in two basic varieties, each associated with a distinct underlying structural configuration; following Pylkkänen (2008), these are known as 'high' and 'low' applicatives.

The different structures are hypothesized to reflect a semantic distinction. High applicatives, which include beneficiaries and instrumentals, are taken to modify events – for example, a beneficiary argument modifies the event denoted by the predicate and the theme. In contrast, low applicatives, e.g. goals in transfer of possession predicates, are claimed to modify themes directly. This semantic distinction is encoded in the proposed syntactic representations: applicative arguments are introduced by applicative heads, which can either select a VP (high) or a DP (low):[23]

[22] Traditionally, Uniform Theta Assignment is a constraint on the linking between lexical representations and syntactic structure (Baker 1988, among others). More recently, following Hale & Keyser (1993), it has been proposed that syntactic lexical representations are mapped more or less directly into the syntax, where the effects of Uniform Theta Assignment follow from the relative positions of the sublexical heads in these syntactic lexical representations and which types of arguments they introduce (see Pylkkänen (2008) and Travis (2010), among others).

[23] The applicative arguments in (35) are labeled 'IO'.

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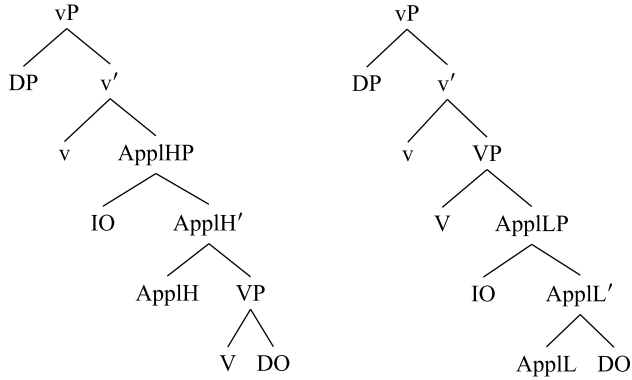
(35) (a) High applicative (b) Low applicative



(McGinnis 2001: 111)

Pylkkänen (2008) proposes that the configurational contrast in (35) (which, in turn, follows from a semantic contrast) results in a range of distinct syntactic behaviors. First, since a low applicative selects a DP goal object, it is predicted to be incompatible with unergative predicates, since such verbs do not select for an object. Thus, English double objects, which are treated as low applicatives, are only compatible with transitive verbs:

(36) (a) I gave him the book.
(b) *I ran him.

In contrast, high applicatives, by hypothesis, select a VP, predicting that they should be compatible with unergatives. We see this borne out in Luganda beneficiary applicatives:

(37) Mukasa ya-tambu-le-dde Katonga
Mukasa 3SG.PAST-walk-APPL-PAST Katonga
'Mukasa walked for Katonga.' (Pylkkänen 2008: 20)

Given that Moro applicatives introduce a beneficiary argument, Pylkkänen's account would predict that they exhibit behaviors associated with high applicatives. With respect to compatibility with unergative predicates, this prediction is borne out:

(38) í-g-ʌləŋ-ə̰t̪-ú káka-ŋ
1SG.SM-CLg-sing-APPL-PFV CLg.Kaka-ACC
'I sang for Kaka.'

Another diagnostic distinguishing high from low applicatives comes from the ability to control into depictive secondary predicates. Adopting Geuder's (2000) analysis of the semantics of depictives, Pylkkänen predicts that the applied argument of a high, but not a low, applicative will be able to control into a depictive

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predicate. The example in (39) shows that this control is possible with the high applicative in Luganda, while impossible in the English low applicative:[24]

(39) (a) Mustafa ya-ko-le-dde *Katonga* nga *mulwadde*.
Mustafa 3SG.PAST-work-APPL-PAST Katonga sick
'Mustafa worked for Katonga while sick.' (Katonga was sick)
(Pylkkänen 2008: 31)

(b) *Kim* gave Robin the book *sick*. (only Kim can be sick)[25]

As shown in (40), Moro applicative arguments can control a depictive, again, showing that they pattern like Pylkkänen's high applicative:

(40) í-g-ʌ-r-ʌb-ə̪ṯ-ú **óráŋ**$_i$ ŋerá
1SG.SM-CLg-MAIN-DUR/ITER-pick.up-APPL-PFV **CLg.man** CLŋ.girl
g-í-rəmug-ú$_i$
CLg-REL-be.drunk[26]
'I carried the girl for the man$_i$ drunk$_i$.'

Of particular relevance to the Moro data is the adaptation of Pylkkänen's high/low distinction, along with a minimalist theory of locality to account for the symmetrical/asymmetrical contrast. As noted above, there is a minimalist literature, primarily by McGinnis (McGinnis 2001, 2005, 2008; McGinnis & Gerdts 2004), that seeks to derive this symmetrical/asymmetrical contrast from this high/low distinction. If this attempt were successful, relying as it does on a potentially independently motivated semantic distinction, one could argue that the data distributions follow from basic theoretical constructs of Minimalism, parameterized through the high/low applicative contrast.

McGinnis employs a PHASE-based theory of locality (Chomsky 2001). Under this approach, derivations are completed in PHASES – these are chunks/packets of syntactic material that are spelled out in the course of a derivation and which are, therefore, not accessible to further syntactic operations. Only material at the phase edge is hypothesized to remain visible to operations at the next phase; in this manner some of the classic effects of strict-cyclicity are replicated in minimalist derivations. Chomsky proposes that the phase domains are CP, vP, and DP. Here, CP and DP correspond to the classic cyclic nodes (S or S′ and NP) of Standard Theory; the phase domain status of vP corresponds to the claim in *Barriers* (Chomsky 1986) that VP is a barrier. The proposal that material at phase edges is accessible to further syntactic operations is the minimalist implementation of an 'escape hatch' found in earlier versions of Generative Grammar – e.g. successive

[24] Pylkkänen also predicts that resultative secondary predicates are possible with high applicatives, but impossible with low applicatives.

[25] The observation with respect to English is due to Williams (1980); it is possible that not all English speakers share this judgment.

[26] The depictive predicate agrees in noun class with the nominal it modifies.

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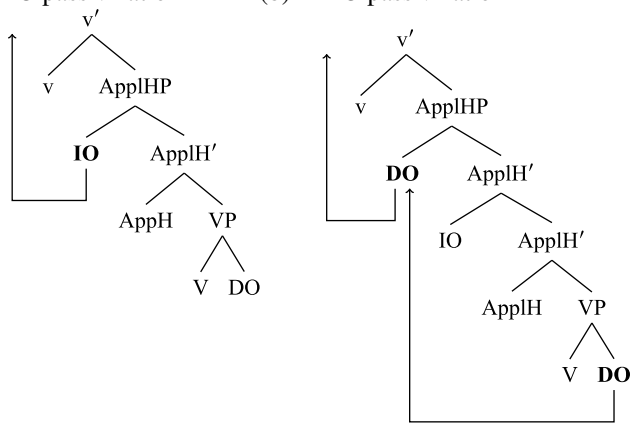
cyclic movement from COMP to COMP (or though the spec of CP) and the VP adjunction in Chomsky (1986). Thus, the architecture of phase theory as well as the specific choice of CP, vP, and DP as phase domains represents a new construal of a tradition within Chomskyan Generative Grammar that has produced several implementations over the past decades.

It should be recalled that the primary structural difference between high and low applicatives, illustrated in (35), is the position of applicative arguments relative to the VP; in high applicatives the applicative head selects VP, while V selects the low applicative phrase. As a consequence, the argument introduced by the applicative is in a relatively high specifier in high applicatives and a lower position in low applicatives. McGinnis proposes that symmetrical behavior may be a consequence of the high applicative structure if we assume the following:

(41) (a) ApplHP is a phase domain (in addition to the other phase domains).
(b) Embedded objects can move to the edge of ApplHP.

If ApplHP is a phase domain, and if material at its edge is accessible to further movement, then, for example, passive can either target the IO, which is base generated at the phase edge, or a DO, which has moved to the phase edge:

(42) (a) IO passivization (b) DO passivization



In the case of a low applicative, IO passivization is allowed as before. However, movement of the DO to a phase edge (in this case, vP) would require a shortest move/relativized minimality violation, as the IO is base generated in a position that is closer to the phase edge than the DO:

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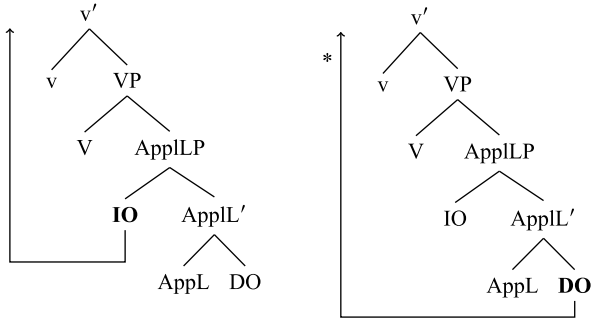
(43) (a) IO passivization (b) DO passivization – not allowed



Thus, given the assumption that both vP and AppHP (but not ApplLP) are phases, symmetrical behaviors seem to follow from the high applicative structure and asymmetrical behavior from low applicative structure.[27]

The first question to ask is whether the assumption that ApplHP is a phase domain is independently motivated. Unfortunately, it does not appear to be so. McGinnis (2001: 111–112) hypothesizes that it might follow from a larger generalization, but recognizes that the proposed explanation is speculative. In the absence of a compelling reason or independent arguments for the phasehood of ApplHP, we are left with an irreducible diacritic, in addition to the high/low applicative distinction, which plays a crucial role in accounting for the symmetrical/asymmetrical contrast.

More problematic, however, is the fact that the symmetrical/high applicative and asymmetrical/low applicative correlation seems to be empirically inaccurate. This is discussed in Doggett (2004), Jeong (2007), and McGinnis (2008). There are well-attested cases of high applicatives that are asymmetrical (e.g., Chichewa beneficiary and Kinyarwanda locative applicatives) and symmetrical low applicatives (e.g. British English double objects and Haya goal applicatives). There have been various proposals to reconcile these data with the high/low applicative distinction, including parameterized EPP or case features (e.g. the lack of such a feature in a high applicative prevents the DO from moving to the phase edge, (Doggett 2004, Jeong 2007, Citko 2011)), alternative base-word orders (Doggett 2004, McGinnis 2008), selective relaxation of intervention effects (Doggett 2004, Jeong 2007, McGinnis 2008), and, most radically, a reformulation of Merge such that phrases can be merged deeply inside existing structures (McGinnis & Gerdts 2004, McGinnis 2005). Below we consider one such proposal, but it should be apparent that the initial promise of deriving contrasting symmetrical/asymmetrical

[27] There is a good deal of additional machinery required to achieve this result, including the availability of an EPP feature to drive the DO's movement to a phase edge, the possibility of multiple specifiers, and the lack of intervention effects when there is both base generated IO and a moved DO at phase edge. All of these are achieved by the interaction of a number of assumptions, some of wider currency than others – see below.

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behaviors from a, perhaps independently motivated, high/low applicative parameter, without additional stipulations, has been lost.

In addition to the fact that the initial simplicity of the parameterized solution fails to account for syntactic behaviors when extended beyond the data used to motivate it, Moro provides evidence against the semantic basis of the high/low applicative distinction. It should be recalled that goal arguments of transfer of possession predicates are treated as low applicatives. Thus, these are predicted to be incompatible with unergatives, should not allow control into depictives, and should not exhibit symmetrical behavior. In Section 2 we discussed double objects found in Moro with underived ditransitive predicates, including *natʃ* 'give'. As a transfer of possession predicate, the goal argument should be introduced by a low applicative projection. However, these goal arguments pattern, in part, like high applicatives.

Underived unergative predicates cannot simply add a goal argument; thus, (44) is ungrammatical with a goal reading associated with the object.[28] This is consistent with an analysis where these goal constructions are treated as low applicatives.

(44) é-g-alaŋ-ó ŋerá
1SG.SM-CLg-sing-PFV CLŋ.girl
*'I sang to the girl.'

While both transfer of possession semantics and the impossibility of adding a goal argument to an unergative in (44) suggest that underived ditransitives in Moro should pattern like low applicatives, we see that goal arguments can control a depictive, counter to the prediction of a low applicative analysis:

(45) é-g-a-natʃ-ó ŋerá **um:iə**$_i$
1SG.SM-CLg-MAIN-give-PFV CLŋ.girl **CLg.boy**
g-í-rəməg-ú$_i$
CLg-REL-be.drunk-PFV
'I gave the girl to the man$_i$ drunk$_i$'

In fact, Moro depictives appear to be sensitive simply to the argumenthood status of constituents. Thus, subjects and objects, including themes, goals, beneficiaries, and causees may all control depictives; this control is ambiguous, unless the distinct arguments belong to different noun classes (in which case, the noun class concord disambiguates).[29] We have already seen beneficiary and goals as controllers (40 and 45); the remaining cases are illustrated in (46):

[28] Example (44) is grammatical with a different reading: *laŋ* means 'give birth'; hence (44) parsed as *é -g-a-laŋ-ó* with the main clause marker *a-* (which is deleted before *alaŋ* 'sing' due to vowel hiatus) means 'I gave birth to a girl.'

[29] This recalls what was observed previously concerning multiple ambiguity in symmetrical languages unless some independent property of the grammar prohibits it.

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(46) (a) Subject control
ŋgerá$_i$ ŋ-ʌ-sːʌtʃ-ú óráŋ ŋ-í-rəməg-ú$_i$
CLŋ.girl CLŋ-MAIN-see-PFV CLg.man CLŋ-REL-be.drunk-PFV
'The girl$_i$ saw the man drunk$_i$.'

(b) Theme object control
ŋgerá ŋ-ə-sːʌtʃ-ú óráŋ$_j$ gfd-í-rəməg-ú$_j$
CLŋ.girl CLŋ-MAIN-see-PFV CLg.man CLg-REL-be.drunk-PFV
'The girl saw the man$_j$ drunk$_j$.'

(c) Causee control
í-g-ʌ-við-ú ŋgerá$_i$ umːiə
1SG.SM-CLg-MAIN-slap-CAUS.PFV CLŋ.girl CLg.boy
ŋ-í-rəməg-ú$_i$
CLŋ-REL-be.drunk-PFV
'I made the girl$_i$ slap the boy drunk$_i$.'

In (47) we see that an adjunct may not control:

(47) *é-g-alaŋ-ó ta ŋerai ŋ-í-rəməg-úi
1SG.SM-CLg-sing-PFV PART CLŋ.girl CLŋ-REL-be.drunk-PFV
'I sang because of the girl$_i$ drunk$_i$.'

Therefore, control into depictives is completely orthogonal to the high/low applicative distinction – any subject or object may act as a controller.

Finally, we have already seen in Section 2 that both the goal and the theme arguments of *natʃ* 'give' exhibit the full range of object behaviors – that is, these constructions are symmetrical.

Of course, one might simply say that Moro transfer of possession goals are high applicatives, but this would undermine the semantic basis of the high/low applicative contrast and would not account for their incompatibility with unergatives.

From the preceding paragraphs it can be concluded that the initial promise of a high/low applicative contrast deriving symmetrical/asymmetrical effects has simply not panned out. More recent Minimalist work has sought to pin the possibility of symmetrical behaviors on a single diacritic – an EPP feature that allows a lower theme argument to move beyond a c-commanding goal. This is based on a similar 'escape hatch' proposal in Anagnostopoulou (2003) and is the essence of Citko's (2011) account of symmetrical applicatives in Bantu:

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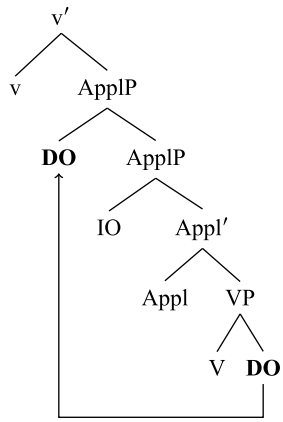
(48)



In (48) we see the theme object moving across the applicative object (as a second specifier, which does not violate SHORTEST MOVE), from where it can further passivize. Either because this movement is optional or because the two specifiers are equidistant from the subject position, either the applicative object or the theme can advance to subject via passivization. Because the EPP feature that triggers the movement in (48) is language and/or construction specific, it is absent in languages or constructions that asymmetrically allow only the applicative object to passivize.[30]

While the above analysis pins the possibility of symmetrical behavior on a single parameter – the presence or absence of the relevant EPP feature – this requires a number of ancillary assumptions, as mentioned in footnote 27. These include specific notions of equidistance, multiple specifiers, etc., whose sole purpose is to selectively circumvent the predictions of SHORTEST MOVE.

The larger theoretical issue raised by this type of approach is clear: while binary branching, UTAH, and SHORTEST MOVE may each receive a simple formulation within a grammar architecture that seems likewise simple at the macro level, each requires selective and diacritic readjustments at the micro level in order to address the diversity of behaviors attested in cross-linguistic data. Given the nature and the necessity of the departures from core formulations of the theory, it seems reasonable to inquire whether there are theoretical alternatives where analyses conform more straightforwardly to core assumptions of the framework. In the next section we develop such an alternative: we explore Moro's symmetrical objects from the point of view of a framework that begins with fewer restrictions, but

[30] Citko (2011: chapter 4) proposes the analysis in (48) for the type of symmetrical applicatives commonly found in Bantu languages. The lack of the triggering EPP feature would result in asymmetry. She also discusses another type of asymmetry, found in Polish, whereby the theme and not the applicative object passivizes – for this type of asymmetry she proposes a Case-based account.

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requires addition of the necessary restrictions to account for residual asymmetries. To the extent that these additional restrictions are independently motivated, we argue that this approach is superior on both empirical and theoretical grounds.

4. AN HPSG ACCOUNT OF SYMMETRICAL OBJECTS

In this section, we will present an analysis of Moro object built on HEAD-DRIVEN PHRASE STRUCTURE GRAMMAR (Pollard & Sag 1994, Sag, Wasow & Bender 2003), a lexicalist, constraint-based grammatical framework. In HPSG, as in the Minimalist analyses described in Section 3, the asymmetric properties of arguments in familiar languages like English follow from their positions in an asymmetric representation. For example, in the lexical entry for an English three-place predicate like *give*, the agent/subject precedes the theme/direct object in the ARG-ST of the verb's lexical entry:

(49)
$$\begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \boxed{2}, \boxed{3} \rangle \end{bmatrix} \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}_i, \boxed{2}\text{NP}_j, \boxed{3}\text{NP}_k \rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & e_1 \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{give\_rel} & \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{THEME} & j \\ \text{GOAL} & k \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

Crucially, the argument structure (ARG-ST) is distinct from both the valence features (VAL), which govern how a verb combines with its dependents syntactically, and from the semantic features (SEM), which determine the thematic roles assigned to each argument. However, while these levels cannot be conflated or mapped directly from one to the other (via, e.g., a principle comparable to the UTAH), there are general default principles that relate them, at least in the canonical case. In particular, the default relationship between the argument structure and the valence is given by the Argument Realization Principle (Bouma, Malouf & Sag 2001, Ginzburg & Sag 2001, Sag et al. 2003), where $\oplus$ denotes list concatenation:

(50) **Argument Realization Principle**

$$\begin{bmatrix} \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \\ \text{ARG-ST} & \boxed{3} \end{bmatrix} \rightarrow \langle \boxed{1} \rangle \oplus \boxed{2} = \boxed{3}$$

By default, the first argument is the subject and the remaining arguments are complements, though this may be overridden.

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The relation between the thematic roles in SEM and the argument structure in ARG-ST is also mediated by a set of default constraints on lexemes which enforce canonical argument linking. There are many competing proposals on the precise formalization of these constraints in the literature (Dowty 1991; van Valin 1993; Primus 1999; Davis & Koenig 2000; Ackerman & Moore 1999, 2001; Koenig & Davis 2003, 2006; Beavers 2005, 2006), but for our purposes here we can adapt Dowty's (1991) original formulation:

(51) **Argument Selection Principle** (adapted from Dowty 1991: 576)

(a) In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of proto-agent properties will be lexicalized as the first item on the predicate's ARG-ST.

(b) The argument for which the predicate entails the greatest number of proto-patient properties will be lexicalized as the second item on the predicate's ARG-ST.

Proto-agent entailments include volitional involvement in the event or state, sentience and/or perception, causing an event or change of state in another participant, movement relative to the position of another participant, and existence independent of the event named by the verb (Dowty 1991: 576). Proto-patient entailments, on other hand, include undergoing a change of state, being an incremental theme, being causally affected by another participant, being stationary relative to movement of another participant, and not existing independently of the event (Dowty 1991: 576). For the English verb *give*, the AGENT has the most proto-agent properties and the THEME has the most proto-patient properties. This predicts that the AGENT role in (49) will be the first argument and that the THEME role will be the second. The GOAL shows a mixture of proto-agent and proto-patient properties and is what Primus (1999) calls a 'proto-recipient'. Because the Argument Selection Principle in (51) is silent on the lexicalization of a proto-recipient, it ends up last in the ARG-ST.[31]

For a symmetric language like Moro, in contrast to the situation in English, there is no language-internal evidence to support any relative ordering of the internal arguments. We can transparently capture that intuition by generalizing

[31] Dowty (1991: 576) presents corollaries of his Argument Selection Principle, including COROLLARY 2, which entails that the proto-recipient of a three-place predicate will be lexicalized as something other than a subject or object. Of course, it is well known that proto-recepients are sometimes lexicalized as objects (e.g. in double-object constructions). Primus (2002) presents an Optimality Theory implementation of argument selection, very much in the spirit of Dowty's theory. Her system is set up so that, in the majority of German predicates, a proto-recipient will be lexicalized as a dative – very much as Dowty's COROLLARY 2 entails. However, because she treats asymmetrical encoding (her CASE DISTINCTNESS) as a ranked constraint, she is able to allow double objects through constraint ranking.

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the ARG-ST representation for symmetric languages to an ORDERED PARTITION (a sequence of disjoint non-empty subsets, i.e. a list with ties) of dependents.[32]

If we take each argument in the ARG-ST as a singleton subset, then the argument structure in (49) is trivially an ordered partition. More interestingly, for a Moro verb like *natʃ* 'give', we can suppose that the first argument (the subject) precedes the two internal arguments, but the remaining arguments are unordered with respect to each other:

(52)
$$\begin{bmatrix} \text{ARG-ST} & \langle \text{NP}_i, \{\text{NP}_j, \text{NP}_k\}\rangle \\ \text{SEM|RESTR} & \left\{ \begin{bmatrix} \textit{natʃ\_rel} & \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{THEME} & j \\ \text{GOAL} & k \end{bmatrix} \right\} \end{bmatrix}$$

This representation directly captures the intuition developed in Section 2: the theme and goal arguments of *natʃ* receive different thematic roles but are morphosyntactically indistinguishable.

The existence of lexical representations like (52) suggests that in a symmetric language, only the first clause of the Argument Selection Principle (51a) is active:

(53) **Moro Argument Selection Principle**

(a) In predicates with grammatical subject and object, the argument for which the predicate entails the greatest number of proto-agent properties will be lexicalized as the first item on the predicate's ARG-ST.

(b) The remaining arguments are unordered in the predicate's ARG-ST.

In a symmetric language like Moro, the proto-agent is the first item in the ARG-ST, but the other arguments are unordered with respect to each other.

In his original presentation of the Argument Selection Principle, Dowty observes that it allows for symmetric encoding under certain circumstances: 'if two nonsubject arguments have approximately equal numbers of entailed P-Patient properties, either or both may be lexicalized as direct object' (1991: 576). As we have seen, however, double objects are possible in Moro regardless of the relative degrees of proto-patientivity. Primus (2002) presents an alternative Optimality Theoretic implementation of the Argument Selection Principle organized

[32] An ORDERED PARTITION of a set S is an ordered list $\langle B_1, \ldots, B_k\rangle$ of subsets $B_i \subseteq S$ such that $B_i \neq \varnothing$, $B_i \cap B_j = \varnothing$ for $i \neq j$, and $B_1 \cup \cdots \cup B_k = S$ (Stanley 2012: 39). Since the B_is are (unordered) subsets of S, we will notate them using set braces $\langle \ldots, \{\,\}, \ldots\rangle$ with, we hope, no ambiguity. Ordered partitions are just a special case of partial orders, but general partial orders are too permissive. For example, take the case where a precedes b and c precedes d but a and b are unordered with respect to c and d. This is a partial ordering of $\{a, b, c, d\}$ but not an ordered partition and also not a valid ARG-ST.

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so that a proto-recipient will be lexicalized as a dative for the majority of German predicates. However, because she treats asymmetrical encoding (her CASE DISTINCTNESS) as a ranked constraint, she is able to allow double objects through constraint ranking. In a similar spirit, our (53) separates argument selection from asymmetric encoding, allowing for symmetric realizations of proto-recipients and proto-patients.

While arguments in Moro are unordered in the ARG-ST, the valence features must be totally ordered – dependents do occur in some order, even in symmetric languages. This requires a slight reformulation of the Argument Realization Principle:

(54) **Argument Realization Principle** (revision 1)

$$\left[\begin{array}{ll} \text{VAL} & \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{array}\right] \\ \text{ARG-ST} & \boxed{3} \end{array}\right] \rightarrow \langle \boxed{1} \rangle \oplus \boxed{2} \text{ is a linear extension of } \boxed{3}$$

where a total order $\prec$ is a LINEAR EXTENSION of a partial order $\prec$ on X if and only if for every x and y in X, if $x \prec y$ then $x \prec y$.

The ARG-ST of the lexical entry for *natʃ* 'give' in (52) has two valid linear extensions: $\langle \text{NP}_i, \text{NP}_j, \text{NP}_k \rangle$ and $\langle \text{NP}_i, \text{NP}_k, \text{NP}_j \rangle$. Thus, the revised Argument Realization Principle licenses two lexical representations corresponding to the alternative orderings of the goal and theme seen in (8):

(55) (a)

$$\left[\begin{array}{ll} \text{VAL} & \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \boxed{3}, \boxed{2} \rangle \end{array}\right] \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}_i, \{\boxed{2}\text{NP}_j, \boxed{3}\text{NP}_k\} \rangle \\ \text{SEM|RESTR} & \left\{\left[\begin{array}{ll} \textit{natʃ\_rel} & \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{THEME} & j \\ \text{GOAL} & k \end{array}\right]\right\} \end{array}\right]$$

(b)

$$\left[\begin{array}{ll} \text{VAL} & \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \boxed{2}, \boxed{3} \rangle \end{array}\right] \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}_i, \{\boxed{2}\text{NP}_j, \boxed{3}\text{NP}_k\} \rangle \\ \text{SEM|RESTR} & \left\{\left[\begin{array}{ll} \textit{natʃ\_rel} & \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{THEME} & j \\ \text{GOAL} & k \end{array}\right]\right\} \end{array}\right]$$

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These lexical representations yield the AGENT–GOAL–THEME ordering and the AGENT–THEME–GOAL ordering respectively.

Direct objects in Moro have four distinctive properties: (i) if a lexical NP, they occur after the verb; (ii) if a proper name, they bear accusative case marking; (iii) if pronominal, they may be realized by an object marker; and (iv) they are able to undergo passivization. The first of these properties follows directly from these lexical representations: the non-initial elements in ARG-ST are realized as COMPS, and the head-initial Head/Complement Construction combines a head with its selected-for COMPS. Similarly, the accusative case suffix *-ŋ* appears on proper names if and only if that name is a non-initial argument.

Pronominal object marking in Moro can be analyzed using a lexical process similar to ones that have been proposed for Romance clitics (e.g., Miller 1992; Miller & Sag 1997; Monachesi 1999, 2005). While this intuition has been implemented a number of ways in the HPSG literature, the basic idea is that arguments are canonically realized as syntactic dependents (either SUBJ or COMPS), but they may also be realized by various non-canonical means, including as an affix on the verb.

We will use an inflectional feature OBJ-AGR to identify the arguments that are expressed via object agreement markers (Crysmann & Bonami 2012, Bonami & Webelhuth 2012). Consider examples (2) and (4), repeated here:

(2) kúku g-a-ləvətʃ-ó ɲogopájá
CLg.Kuku CLg.SM-MAIN-hide-PFV CLɲ.cup
'Kuku hid the cups.'

(4) kúku g-a-ləvətʃ-ó-lo
CLg.Kuku CLg.SM-MAIN-hide-PFV-3PL.OM
'Kuku hid them.'

In the lexical representation for a verb with no object markers, like *galəvətʃó* in (2), OBJ-AGR is empty and the single object is realized as a complement:

(56)
$$\begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{OBJ-AGR} & \langle\,\rangle \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle \boxed{2} \rangle \end{bmatrix} \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}, \boxed{2}\text{NP} \rangle \end{bmatrix}$$

For a verb like *galəvətʃólo* in (4), on the other hand, the single object is realized as a pronominal affix and there is no complement:

(57)
$$\begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{OBJ-AGR} & \langle \boxed{2} \rangle \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \langle\,\rangle \end{bmatrix} \\ \text{ARG-ST} & \langle \boxed{1}\text{NP}, \boxed{2}\text{NP} \rangle \end{bmatrix}$$

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We can allow for this alternation through a further modification of the Argument Realization Principle:

(58) **Argument Realization Principle** (revision 2)

$$\begin{bmatrix} \text{INFL} & \begin{bmatrix} \text{OBJ-AGR} & \boxed{4} \end{bmatrix} \\ \text{VAL} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{1} \rangle \\ \text{COMPS} & \boxed{2} \end{bmatrix} \\ \text{ARG-ST} & \boxed{3} \end{bmatrix} \rightarrow \langle \boxed{1} \rangle \oplus \boxed{4} \oplus \boxed{2} \text{ is a linear extension of } \boxed{3}$$

This requires that the first item on the ARG-ST be the subject. The remainder of the ARG-ST is partitioned between two (possibly empty) lists: the pronominal affixes and the complements. To see how this would work, consider a three-place predicate like *natʃ* 'give'. As we saw above, the ARG-ST of *natʃ* has two valid linear extensions: $\langle \text{NP}_i, \text{NP}_j, \text{NP}_k \rangle$ and $\langle \text{NP}_i, \text{NP}_k, \text{NP}_j \rangle$. Each of these linear extensions has three partitions that are consistent with (58):

(59)

$\langle \text{NP}_i, \text{NP}_j, \text{NP}_k \rangle$	$\langle \text{NP}_i, \text{NP}_k, \text{NP}_j \rangle$
$\langle \text{NP}_i \rangle \oplus \langle\ \rangle \oplus \langle \text{NP}_j, \text{NP}_k \rangle$	$\langle \text{NP}_i \rangle \oplus \langle\ \rangle \oplus \langle \text{NP}_k, \text{NP}_j \rangle$
$\langle \text{NP}_i \rangle \oplus \langle \text{NP}_j \rangle \oplus \langle \text{NP}_k \rangle$	$\langle \text{NP}_i \rangle \oplus \langle \text{NP}_k \rangle \oplus \langle \text{NP}_j \rangle$
$\langle \text{NP}_i \rangle \oplus \langle \text{NP}_j, \text{NP}_k \rangle \oplus \langle\ \rangle$	$\langle \text{NP}_i \rangle \oplus \langle \text{NP}_k, \text{NP}_j \rangle \oplus \langle\ \rangle$

This predicts that a three-place predicate should be able to occur with zero, one, or two pronominal object markers, and that any of the markers could be interpreted as either the GOAL or the THEME argument, subject to morphotactic constraints on combinations of object markers (Ackerman 2009, Rose 2013, Jenks & Rose 2015). This prediction is borne out:

(8) é-g-a-natʃ-ó óráŋ ŋerá
1SG.SM-CLg-MAIN-give-PFV CLg.man CLŋ.girl
'I gave the girl to the man.' / 'I gave the man to the girl.'

(9b) é-g-a-natʃ-ɔ́-**lo** ŋerá
1SG.SM-CLg-MAIN-give-PFV-**3PL.OM** CLŋ.girl
'I gave them to the girl' / 'I gave the girl to them.'

(12a) é-g-a-natʃ-ɔ́-**ŋó-lo**
1SG.SM-CLg-MAIN-give-PFV-**3SG.OM-3PL.OM**
'I gave him to them.' / 'I gave them to him.'

Turning to the passive facts, the Passive Lexical Rule of Sag et al. (2003) removes the subject from the ARG-ST:[33]

[33] In what follows, we set aside the morphological effect of lexical rules. See, e.g., Crysmann & Bonami (in press) for an approach to morphophonology that is compatible with the analysis presented here.

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(60) **Passive Lexical Rule**

$$\left[\begin{array}{ll} \textit{word} & \\ \text{ARG-ST} & \langle \boxed{1} \rangle \oplus \boxed{2} \end{array}\right] \Rightarrow \left[\text{ARG-ST} \quad \boxed{2}\right]$$

Lexical rules in HPSG are used to capture predictable lexical alternations: this rule is interpreted to mean that for any lexical entry that satisfies the description on the left-hand side, then there is also an additional lexical entry that is the same as the original with the exception of the changes specified on the right-hand side of the rule. Applying this rule to (52) produces:

(61)
$$\left[\begin{array}{ll} \text{ARG-ST} & \langle \{\boxed{2}\text{NP}_j, \boxed{3}\text{NP}_k\} \rangle \\ \text{SEM|RESTR} & \left\{\left[\begin{array}{ll} \textit{natf\_rel} & \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{THEME} & j \\ \text{GOAL} & k \end{array}\right]\right\} \end{array}\right]$$

Since the Moro Argument Selection Principle (53) is a constraint on lexemes and this rule applies to (uninflected) words, this changes the ARG-ST without changing the mapping between the remaining arguments and their thematic roles as established by (53).[34]

In this representation, both the THEME and the GOAL argument count as 'initial': neither is preceded by any other argument on the ARG-ST. Therefore, by the Argument Realization Principle (58), either can be realized as the SUBJ:

(62) (a)
$$\left[\begin{array}{ll} \text{VALENCE} & \left[\begin{array}{ll} \text{SUBJ} & \langle \boxed{2} \rangle \\ \text{COMPS} & \langle \boxed{3} \rangle \end{array}\right] \\ \text{ARG-ST} & \langle \{\boxed{2}\text{NP}_j, \boxed{3}\text{NP}_k\} \rangle \\ \text{SEM|RESTR} & \left\{\left[\begin{array}{ll} \textit{natf\_rel} & \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{THEME} & j \\ \text{GOAL} & k \end{array}\right]\right\} \end{array}\right]$$

[34] This is a WORD-TO-WORD lexical rule, in the terminology of Sag et al. (2003) and Aranovich & Runner (2001), in contrast to LEXEME-TO-LEXEME rules, the output of which are subject to the Argument Selection Principle. This contrast between lexical rule types parallels Sadler & Spencer's (1998) distinction between MORPHOSYNTACTIC and MORPHOLEXICAL alternations. See also Ackerman (1992), Levin & Rappaport Hovav (1998), and Ackerman & Moore (2001).

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(b)
$$\begin{bmatrix} \text{VALENCE} & \begin{bmatrix} \text{SUBJ} & \langle \boxed{3} \rangle \\ \text{COMPS} & \langle \boxed{2} \rangle \end{bmatrix} \\ \text{ARG-ST} & \langle \{ \boxed{2}\text{NP}_j, \boxed{3}\text{NP}_k \} \rangle \\ \text{SEM|RESTR} & \left\{ \begin{bmatrix} \textit{natʃ\_rel} & \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{THEME} & j \\ \text{GOAL} & k \end{bmatrix} \right\} \end{bmatrix}$$

These representations yield the GOAL-subject and the THEME-subject readings of a passive sentence like (10):

(10) óráŋ g-ʌ-nʌtʃ-ən-ú ów:á
CLg.man CLg.SM-MAIN-give-PASS-PFV CLg.woman
'The man was given a woman.' / 'The woman was given a man.'

We have shown how the HPSG analysis presented above accounts for the symmetry between the GOAL and THEME arguments of a distransitive verb like *natʃ* 'give'. However, as we demonstrated in Section 2, both underived ditransitive verbs and derived causatives and applicative verbs show symmetric object properties. Take example (20b), repeated here:

(20b) k-ʌ-bug-í ŋál:o-ŋ kúku-ŋ
CLg.SM-MAIN-hit-CAUS.PFV CLg.Ngallo-ACC CLg.Kuku-ACC
'He made Ngallo hit Kuku.' / 'He made Kuku hit Ngallo.'

The lexical entry for the verb *bug* 'hit' specifies two arguments, and by the first clause of the Argument Specification Principle, the AGENT is the first argument and the PATIENT is the second:

(63)
$$\begin{bmatrix} \text{ARG-ST} & \langle \text{NP}_i, \text{NP}_j \rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & e_1 \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{bug\_rel} & \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{PATIENT} & j \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

Causative verbs can be derived via a lexical rule that adds an additional CAUSE argument (setting aside morphology):

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(64) **Causative Lexical Rule**

$$\begin{bmatrix} \textit{lexeme} \\ \text{SEM} \begin{bmatrix} \text{INDEX} & e_1 \\ \text{RESTR} & \boxed{1} \end{bmatrix} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{SEM} \begin{bmatrix} \text{INDEX} & e_2 \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{cause\_rel} \\ \text{INST} & e_2 \\ \text{CAUSE} & c \\ \text{EVENT} & e_1 \end{bmatrix} \right\} \cup \boxed{1} \end{bmatrix} \end{bmatrix}$$

This is a lexeme-to-lexeme rule (in contrast to the Passive Lexical Rule above); the output of the rule is subject to the Moro Argument Selection Principle (53). Since the CAUSE argument is the most proto-agentive, it will be realized as the first element on the ARG-ST, but the remaining arguments (the AGENT and the PATIENT) will be unordered with respect to each other:

(65)
$$\begin{bmatrix} \text{ARG-ST} & \langle \text{NP}_c, \{\text{NP}_i, \text{NP}_j\} \rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & e_2 \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{cause\_rel} \\ \text{INST} & e_2 \\ \text{CAUSE} & c \\ \text{EVENT} & e_1 \end{bmatrix}, \begin{bmatrix} \textit{bug\_rel} \\ \text{INST} & e_1 \\ \text{AGENT} & i \\ \text{PATIENT} & j \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

The lexical ARG-ST of a derived causative verb is just like that of an underived ditransitive like (52), and the symmetric properties of the AGENT and PATIENT arguments follow in the same way.

Finally, we have applicatives, like (15):

(15) k-ʌ-wːʌð-iṯ-ú ŋerá umːiə
CLg.SM-MAIN-find-APPL-PFV CLg.girl CLg.boy
'He found the boy for the girl.' / 'He found the girl for the boy.'

The verb *wːʌð-iṯ* 'find-APPL' can be derived by the Benefactive Applicative Lexical Rule, a lexeme-to-lexeme rule:

(66) **Benefactive Applicative Lexical Rule**

$$\begin{bmatrix} \text{SEM} \begin{bmatrix} \text{INDEX} & e_1 \\ \text{RESTR} & \boxed{1} \end{bmatrix} \end{bmatrix} \Rightarrow \begin{bmatrix} \text{SEM} \begin{bmatrix} \text{INDEX} & e_1 \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{ben\_rel} \\ \text{INST} & e_1 \\ \text{BENEFCT} & b \end{bmatrix} \right\} \cup \boxed{1} \end{bmatrix} \end{bmatrix}$$

Like the Causative Lexical Rule, the Benefactive Applicative Lexical Rule adds a new argument to the verb's semantics. However, unlike the CAUSE added by the Causative Lexical Role, the BENEFCT role is not a proto-agent. Therefore,

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the Moro Argument Selection Principle leaves the BENEFCT argument unordered with respect to the other non-proto-agent arguments:

(67)
$$\begin{bmatrix} \text{ARG-ST} & \langle \text{NP}_i, \{\text{NP}_j, \text{NP}_b\}\rangle \\ \text{SEM} & \begin{bmatrix} \text{INDEX} & e_1 \\ \text{RESTR} & \left\{ \begin{bmatrix} \textit{ben\_rel} & \\ \text{INST} & e_1 \\ \text{BENEFCT} & b \end{bmatrix}, \begin{bmatrix} \textit{w:ʌð\_rel} & \\ \text{EVENT} & e_1 \\ \text{AGENT} & i \\ \text{THEME} & j \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix}$$

Again, as in the case of the causative verb in (65), the ARG-ST in (67) looks the same as we would find for an underived ditransitive verb, and we predict the same symmetric behavior.

In this section, we have outlined an HPSG analysis of symmetric objects in Moro. The key to the analysis is the Argument Selection Principles (51) and (53): in asymmetric languages, the Argument Selection Principle creates a totally ordered ARG-ST. The Argument Selection Principle in a symmetric language like Moro, however, creates an ARG-ST that is an ordered partition of the arguments. The symmetries between internal arguments and the ambiguities described in Section 2 follow naturally from this one assumption.

5. ASYMMETRIES

So far we have concentrated on the symmetrical behaviors shown by multiple internal arguments and have argued against an asymmetrical interpretation of them. However, post-verbal nominals in Moro do exhibit some asymmetries. Since these might be taken as reason for an asymmetrical representation, we examine them here. The force of the logic here is clear: a demonstration of certain asymmetric behaviors does not necessarily entail that the analysis of multiple object constructions is based on asymmetric syntactic representation; this hypothesis becomes particularly compelling if such asymmetries can be shown to follow from factors that are independent of multiple object constructions.

5.1 *Word order*

In our description of multiple objects in Section 2, we noted several instances where multiple post-verbal objects had ambiguous interpretations; (8), repeated here, is such an example:

(8) é-ɡ-a-natʃ-ó óráŋ ŋerá
1SG.SM-CLɡ-MAIN-give-PFV CLɡ.man CLŋ.girl
'I gave the girl to the man.' / 'I gave the man to the girl.'

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On the other hand, there is some evidence that the goal–theme interpretation is a default that can be altered when discourse conditions allow it. Evidence for this comes from examples where the theme–goal interpretation is pragmatically unlikely. For example, in (68b), since it is unlikely that a person (Kodja) will be given to a cow, the sentence is dispreferred to the one in (68a) where Kodja is interpreted as the goal; the less likely construal discourages the word order variant in which, e.g., the cow, would be interpreted as a goal by default.

(68) (a) é-g-a-natʃ-ó kóʤa-ŋ díə
1SG.SM-CLg-MAIN-give-PFV CLg.Kodja-ACC CLr.cow
'I gave the cow to Kodja.'

(b) #é-g-a-natʃ-ó díə kóʤa-ŋ
1SG.SM-CLg-MAIN-give-PFV CLr.cow CLg.Kodja-ACC
'I gave Kodja to the cow.'

Further evidence consistent with a default status for goal–theme interpretation comes from the impossibility of an inanimate argument preceding an animate one, as evident in the contrast between (69a) and (69b).

(69) (a) é-g-a-natʃ-ó óráŋ ád̪ámá
1SG.SM-CLg-MAIN-give-PFV CLg.man CLg.book
'I gave the book to the man.'

(b) *é-g-a-natʃ-ó ád̪ámá óráŋ
1SG.SM-CLg-MAIN-give-PFV CLg.book CLg.man

As with ditransitives, there is a preference for the non-theme argument to come immediately after the verb in both applicative and causative constructions. This appears to be the only order possible when the theme is inanimate:

(70) *Applicatives*

(a) í-g-ʌ-rː-ət̪-ú ówːá ŋóréðá
1SG.SM-CLg-MAIN-pound-APPL-PFV CLg.woman $CL_{ŋpl}$.sesame
'I pounded sesame for the woman.'

(b) *í-g-ʌ-rː-ət̪-ú ŋóréðá ówːá
1SG.SM-CLg-MAIN-pound-APPL-PFV $CL_{ŋpl}$.sesame CLg.woman

(71) *Causatives*

(a) í-g-ʌ-kʌd̪-í óráŋ ŋoana
1SG.SM-CLg-MAIN-plant-CAUS.PFV CLg.man CLŋ.grain
'I made the man plant the grain.'

(b) *í-g-ʌ-kʌd̪-í ŋoana óráŋ
1SG.SM-CLg-MAIN-hit-CAUS.PFV CLŋ.grain CLg.man

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There is a tension between any syntactic account of this default word order and the account of the otherwise symmetrical behavior of these constructions. Under an account where the internal objects are distinguished in terms of grammatical relation/function (e.g., primary versus secondary object), one might define a linear precedence rule to derive the default order:

(72) SUBJ ≫ PRED ≫ PRIMARY OBJECT ≫ SECONDARY OBJECT ≫ . . .

Under a configurational account, the non-theme argument could be engineered to check its Case feature in a higher position than the theme. However, both of these approaches have liabilities in accounting for the symmetrical behaviors: both primary and secondary objects (or high and low positions) would need to passivize, etc. Essentially, the asymmetrical encoding becomes a diacritic for default word order.

It should be noted that both of these asymmetrical accounts use syntactic encodings as surrogates for thematic roles: the non-theme roles are encoded as primary objects (or check Case in a relatively high position). This suggests that the real generalization may be in terms of thematic/semantic role, in which case it may be better to state the default order in terms of thematic/semantic role.

In fact, there is an extensive typological literature that notes a strong cross-linguistic tendency for goals and the like to be ordered before themes, particularly when neither is overtly case-marked (see Dryer 1986; Malchukov, Haspelmath & Comrie 2010; Primus 1998, 2004; among others). Duranti (1979) and Hyman & Duranti (1982) use a hierarchy of thematic roles, where beneficiaries and goals outrank patients and themes, to determine aspects of object order in Bantu – Duranti treats this as a part of a 'topicality hierarchy'. Hyman & Duranti (1982) note Sesotho facts very similar to those in Moro: either order is possible as long as the first object is not inanimate.

An account of default word order based on topicality would potentially account for alternative word orders: when the theme is human, it may felicitously appear immediately following the verb to signal increased topicality. While the details of such an analysis require further study, it seems clear at this point that the word order asymmetries do not argue convincingly for a syntactic asymmetry among Moro internal arguments.[35]

[35] A reviewer suggests an alternative analysis, based on Cook's (2006) analysis of alternative word orders in dative constructions. In particular, the reviewer suggests that a thematic hierarchy that includes ben > theme > goal would predict that non-themes differ in their thematic status depending on their position with respect to the theme argument. Under this approach, the oddness of (68b) is due to the fact that a cow makes a poor beneficiary relative to the human Kodja. It is beyond the scope of this paper to pursue this line of analysis further, but we note that similar default word order and interpretations obtain with beneficiary applicatives and causatives (70)–(71), where there is, presumably, no alternation between beneficiaries and goals based on word order.

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5.2 *Bound anaphora*

One of the standard tests for structural asymmetries comes from binding, particularly bound anaphora. It is almost universally assumed among researchers working in configurational frameworks that asymmetrical binding relations are indicative of asymmetrical c-command. The Moro binding facts show systematic asymmetries and, therefore, might be used to motivate structural asymmetry.[36]

As shown in (73a), Moro bound anaphora is indicated with *ej* 'every' + N, followed by N + *é*-CL-*oŋ*=CL-*oŋ* 'own', with noun class concord between the possessed noun and 'own'. As we have seen in (73b), the antecedent 'every boy' must precede the anaphor 'his own'.[37]

(73) (a) ej um:iə g-ʌ-bug-ú ðamala éðoŋ=ðoŋ
every CLg.boy CLg.SM-MAIN-hit-PFV CLð.camel CLð.own
'Every boy$_i$ hit his$_i$ camel.'

(b) ðamala éðoŋ=ðoŋ ð-ʌ-bug-ú ej um:iə
CLð.camel CLð.own CLð.SM-MAIN-hit-PFV every CLg.boy
'His$_i$ camel hit every boy$_{*i}$.'

The examples in (74–76) show that the first object in ditransitive, applicative and causative constructions may bind the second, but not *vice versa*:[38]

(74) (a) é-g-a-natʃ-ó ej um:iə ðamala
1SG.SM-CLg-MAIN-give-PFV every CLg.boy CLð.camel
é-ðoŋ=ðoŋ
CLð.own
'I gave every boy$_i$ his$_i$ camel.'

(b) *é-g-a-natʃ-ó ðamala é-ðoŋ=ðoŋ ej
1SG.SM-CLg-MAIN-give-PFV CLð.camel CLð.own every
um:iə
CLg.boy

(75) (a) í-g-ʌ-d̪uʌð-i̪t̪-ú[39] ej um:iə ðamala
1SG.SM-CLg-MAIN-send-APPL-PFV every CLg.boy CLð.camel
é-ðoŋ=ðoŋ
CLð.own
'I sent every boy$_i$ his$_i$ camel.' / 'I sent every boy$_i$ to his$_i$ camel.'

[36] Indeed, McGinnis & Gerdts (2004) use bound anaphora to motivate asymmetrical c-command between the applicative object and the theme in Kinyarwanda.

[37] Example (73b) is grammatical with a disjoint reference reading: 'His$_j$ camel hit every boy$_i$'.

[38] One should note the expected ambiguity in (75a) and (76a); the lack of ambiguity in (74a) may be due to the implausibility of giving a boy to a camel.

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(b) *í-g-ʌ-d̪uʌð-iṯ-ú ðamala é-ðoŋ=ðoŋ
1SG.SM-CLg-MAIN-send-APPL-PFV CLð.camel CLð.own
ej um:iə
every CLg.boy

(76) (a) í-g-ʌ-bug-í ej um:iə ðamala
1SG.SM-CLg-MAIN-hit-CAUS.PFV every CLg.boy CLð.camel
é-ðóŋ=ðóŋ
CLð.own
'I made every boy$_i$ hit his$_i$ camel.' / 'I made his$_i$ camel hit every boy$_i$.'

(b) *í-g-ʌ-bug-í ðamala é-ðóŋ=ðóŋ ej
1SG.SM-CLg-MAIN-hit-CAUS.PFV CLð.camel CLð.own every
um:iə
CLg.boy

Based on these data, it seems that the antecedent must precede the anaphor. However, (77) shows that an antecedent that is embedded inside the subject may not bind an object anaphor. These are the kinds of familiar data that motivate c-command as a condition on binding.

(77) ej um:iə g-étén g-ʌ-bug-ú ðamala
every CLg.boy CL$_{poss}$g-CLg.father CLg-MAIN-hit-PFV CLð.camel
é-ðóŋ=ðóŋ
CLð.own
'Every boy$_i$'s father$_j$ hit his$_{j/*i}$ camel.'

Given these facts one might conclude that some structural relation like asymmetrical c-command is needed to account for the binding facts, which, in turn, would motivate a syntactic asymmetry between the post-verbal nominals. However, again, this is at odds with the apparent symmetry of passive and object markers. Therefore, again, syntactic asymmetry, while evidently motivated in one domain, creates analytical problems in another. It is also important to note that the c-command account of binding is a theory-internal device, closely tied to other assumptions about phrase structure and, ultimately, binary branching. Indeed, the evidence suggests that Moro anaphors can be most straightforwardly accounted for by a binding principle based on linear order as, e.g., proposed for certain pronominals in Malayalam, Korean, Balinese, Japanese, and other languages (Arka & Wechsler 1996, Bresnan 1995, 2001):

(78) A bound anaphor must be bound by a co-argument that precedes it.

[39] *d̪uʌð-əd̪* 'send-to' is applicative. It can occur without the applicative suffix (*d̪oad̪* 'send'), in which case, the goal is unexpressed.

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While such an account seems to require a disjunction – linear precedence plus some notion of embedding or co-argumenthood – it is not clear that the c-command alternative fares better, if it requires positing binary branching constituent structure for which there is no independent evidence.

5.3 *Causatives and applicatives*

In Section 2.5 we saw ditransitive predicates with applicative and causative morphology, resulting in triple-object constructions. However, we noted a structural gap: it appears to be impossible to add both applicative and causative suffixes to a simple transitive predicate. While the result should be another type of triple-object construction, what we consistently elicited was a simple causative with the beneficiary argument expressed as a *ta*-marked adjunct:

(79) (a) i-g-ʌ-gəɲ-í um:iə ðamala ta
1SG.SM-CLg-MAIN-kill-CAUS.PFV CLg.boy CLð.camel PART
kúku
CLg.Kuku
'I made the boy kill the camel for Kuku.'

(b) *í-g-ʌ-gəɲ-i-n̪-ú um:iə ðamala
1SG.SM-CLg-MAIN-kill-CAUS-APPL-PFV CLg.boy CLð.camel
kúku-ŋ
CLg.Kuku-ACC

While it is not clear how to account for this, it is clear that the explanation cannot be because of a restriction against three objects; we saw that these are possible in other configurations in Section 2.5. Crucially, there is a difference between the goals of basic ditransitives, which allow triple objects in conjunction with the causative construction, and beneficiaries of applicatives, which do not. Hence, if a distinction is to be made in terms of grammatical relations/functions, it would have to distinguish between goals and beneficiaries.

It is also not the case that goals and beneficiaries are incompatible (nor that causative and applicative constructions are incompatible), as the following example shows that the two co-occur when the base predicate is intransitive:

(80) k-ʌ-rətʃ-i-n̪-ú ŋerá um:iə
1SG.SM-CLg-MAIN-dance-CAUS-APPL-PFV CLŋ.girl CLg.boy
'He made the girl dance for the boy.'

At this point all we can say is that there is some restriction that prevents examples like (79b), but it is unclear how making a syntactic distinction between the arguments would help to implement this in an any less ad hoc manner than would an account that allows multiple objects.

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6. Conclusions

As with all efforts to develop theoretical analyses for detailed data sets, an important question arises concerning how well a particular proposal extends to the treatment of other languages. Given the wide variation attested for the cross-linguistic behavior of (a)symmetric object constructions, this is a relevant challenge for our analysis. However, the complexity of behaviors displayed both within a single language and across languages demands that we defer this challenge to another time. On the other hand, there are certain properties of our proposal that recommend it as a viable alternative. In contrast to the Principles and Parameters/Minimalist treatment reviewed in Section 3, we do not rely on universalist claims concerning the substantive architecture of grammar design such as binary branching and movement.[40] These assumptions, as previously mentioned, have the effect of establishing asymmetric encoding as a default. Instead, the present analysis is independent of language-particular phrase structural properties and/or surface encoding requirements. As a consequence, neither language-independent hierarchical representations nor semantic role to syntactic argument configurations are necessary explanatory assumptions for language-particular variants of object constructions. In line with this, our representational assumptions can flexibly address cross-linguistic variation while revealing a generalization that has hitherto been unexpected given asymmetric assumptions: in fully symmetrical languages there is not only simultaneous behavioral identity between objects, but the relevant predicates, barring independent constraints, should permit ambiguity of interpretation. The representational assumptions of our HPSG analysis require minimal modification to address the syntactic and semantic behaviors. The nature of these modifications and their consequent flexibility for handling broad ranges of data distributions, of course, introduce an issue that often arises in theoretical analyses: what are the constraints adopted by a theory to address the data under investigation and what are the ensuing predictions about types of data yet to be encountered? On this matter, our HPSG analysis can be construed as being designed with descriptive coverage most in mind. We regard this as a useful strategy: the adaptations to standard HPSG we have made permit the analysis of asymmetric and symmetric behaviors without hypothesizing a fundamental asymmetrical bias, and they are also transparently applicable to object ambiguity and certain syntactic asymmetries when these occur. Accordingly, our proposal has the potential to extend much more broadly to other languages that also exhibit these properties and, given reasonable assumptions concerning modifiablility of these representational conventions, we can derive expectations about variation. However, one of the reliable experiences associated with detailed language description and typological research is how often grammatical phenomena of

[40] Nor do we rely on similarly substantive assumptions concerning principles of semantic argument to syntactic function alignments characteristic of lexicalist proposals in the LFG tradition as in Bresnan & Moshi (1990) or Alsina (1996).

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interest deviate from theoretical expectation. As a consequence, we see our analysis as demonstrating the value of precise formalization in empirical research, where rigor is independent of reliance on hypothetical universals of structure.

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