Chapter 7

Complex predicates

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This chapter surveys LFG work on a somewhat diverse collection of constructions often called complex predicate constructions, which can be broadly characterized by saying that the number of superficially apparent predicates is arguably different from that of actual predicates, either because two apparent predicates can be argued to have combined into one, or one apparent predicate with an affix is actually two predicates. Some of these constructions are also called Reanalysis, Restructuring, Clause Union or Light Verb Constructions, others are often called Serial Verb Constructions. Here we discuss the main analyses of these that have appeared in LFG, giving an overview of the sorts of criteria and analyses that have appeared in the LFG literature.

1 Introduction

The term SMALL CAPS COMPLEX PREDICATE has been widely and rather loosely applied to a variety of constructions where for some reason it appears that two predicates that might be regarded as independent are behaving as one. This happens in multiple ways, with the result that the term has been applied to constructions which are perhaps not very closely related. The major cases appear to be:

(1)   a.   Two apparent predicates which appear to be syntactically and morphologically autonomous, but are nonetheless closely integrated semantically. Such constructions were called 'composite predicates' in the non-LFG analysis of Cattell (1984), but 'complex predicates' in the LFG analyses of Ishikawa (1985) and Matsumoto (1996). One component, the syntactically higher one, is a verb, often called a 'Light Verb'. The other can be of various categories; Cattell studied

verb-noun complex predicates in English, Ishikawa investigated a few verb-verb complex predicates in Japanese, and Matsumoto investigated both types of complex predicates in Japanese.

b. Two or more apparent predicates that are integrated semantically, and syntactically to a greater degree than in (1a) or (1c), but still morphologically distinct, in particular, the light verb is still a distinct stem rather than an affix. Examples include Noun+Verb combinations in Hindi (Mohanan 1994), and combinations of noun and other hard-to-categorize items with verbs in Jaminjung (Schultze-Berndt 2000).

c. Items that appear to be distinct morphological and syntactic words, but show deeper signs of integration, such as sharing a single argument structure. This is often called Restructuring, Reanalysis, or Clause Union, and is exemplified by a variety of constructions including especially causatives in Romance (Alsina 1996, 1997, Andrews & Manning 1999, Andrews 2018b, Manning 1992, 1996b), and also Urdu (Butt 1995, 1997, Lowe 2016).

d. Two or more items that are integrated morphologically (for example, one is a stem, the other like an affix), but have a considerable degree of semantic and syntactic autonomy (for example, causatives in Japanese (Ishikawa 1985) and Bantu (Alsina 1997)).

e. Serial Verb Constructions (SVCs), where two or more Vs or VPs occur together with some kind of sharing or combination of argument structure (for example, Tariana as described by Aikhenvald 2003 and analysed in LFG by Andrews & Manning 1999, Dagaare and Akan as described and analysed by Bodomo 1996, 1997, and Barayin as described and analysed by Lovestrand 2018).

These divisions cross-classify extensively with the semantic/conceptual categories expressed by the constructions:

(2) a. Desiderative, modal, potential and other concepts, shading in an unclear manner into auxiliaries expressing tense, aspect and mood (in the LFG literature, discussed in connection with Restructuring and SVCs).

b. Causative, applicative and other valence change (restructuring, SVCs and morphology).

    c. Associated motion (restructuring, SVCs, and morphology).[1]

    d. Alternatives to a mono-lexical predicate (SVCs and light verb constructions).

In the following sections, I will consider in turn the construction types of (1), with some discussion of the semantic categories they express, and especially the criteria that have been applied to distinguish the supposed complex predicate constructions from similar ones, such as control constructions.

2 Composite predicates

This term was used in the non-LFG analysis of Cattell (1984) to refer to combinations such as *take a walk* or *have a look*, which appear to involve both a main verb and an apparent full NP object, these semantically interpreted together as at least roughly equivalent to a single lexical verb, in many cases. I am not aware of any attempt to reanalyse Catell's English data in LFG, but similar expressions in Japanese were treated at length (Matsumoto 1996), who however called them 'complex predicates'. He also looked at a variety of verb+verb constructions, such as benefactive *morau*, which had been early called 'complex predicates' by Ishikawa (1985).

Ishikawa and Matsumoto developed similar analyses, the latter considerably more extensive and detailed. In both cases, the constructions were treated as xcomp constructions, with functional control of a subj, motivated by the possiblities for reflexivization for *zibun*, along with a mechanism for allowing arguments to be expressed either in the higher or the lower structure. Ishikawa (1985: 99–100) proposed a principle of 'Object Function Sharing' whereby the equation (↑ obj)=(↑ xcomp obj) can be added to lexical entries under various circumstances. Matsumoto observed that the apparent possibility of expressing arguments at either level applied to adjuncts as well as arguments, and was also found with a wide range of xcomp structures, indeed, all of those in Japanese, and so proposed that the nonconfigurational c-structure rule for S could introduce GF's preceded by any number of xcomps, constituting a use of functional uncertainty (Matsumoto 1996: 87):
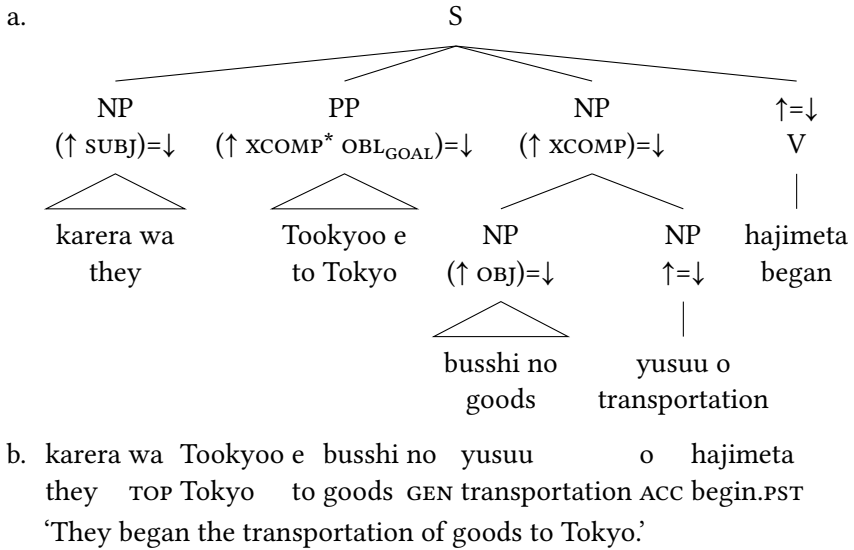
(3)   S   ⟶   NP*   {V,A}
                       (↑ xcomp* GF)=↓   ↑=↓

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[1]A category that might be unfamiliar to some readers, designating patterns of motion associated with an activity, first identified and named by Koch (1984).
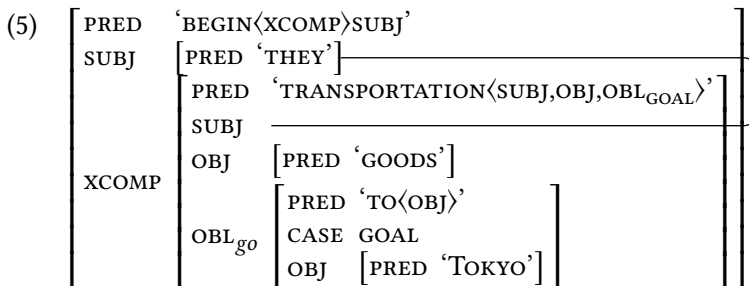
The predicates of these xcomps could be verbs, adjectives or verbal nouns, but are all analysed as having verb-like PRED-features taking sentential grammatical relations. But Matsumoto used the resources of LFG to assure that when an argument was expressed in an NP, it was marked with the nominal dependent marker *no* rather than the sentential object marker *o*.

For example, a sample structure is:

(4) Japanese (Matsumoto 1996: 88)

a.

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                              S
        ┌───────────┬─────────┴──────────┬──────────┐
       NP           PP                   NP        ↑=↓
   (↑ SUBJ)=↓  (↑ XCOMP* OBL_GOAL)=↓  (↑ XCOMP)=↓   V
       △            △           ┌──────┴──────┐     │
   karera wa    Tookyoo e      NP            NP   hajimeta
     they       to Tokyo   (↑ OBJ)=↓         ↑=↓    began
                               △              │
                          busshi no        yusuu o
                            goods        transportation
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b. karera wa Tookyoo e busshi no   yusuu   o   hajimeta
    they   TOP Tokyo   to goods GEN transportation ACC begin.PST
    'They began the transportation of goods to Tokyo.'

The subject is shared between the main clause and the xcomp by means of functional control, while the directional argument is attributed to the complement clause by means of the functional uncertainty expression, and the object is expressed in the complement clause (with different case-marking conventions in both places, as formalized in LFG by Matsumoto). So the resulting f-structure is:

(5)

$$
\begin{bmatrix}
\text{PRED} & \text{`BEGIN}\langle\text{XCOMP}\rangle\text{SUBJ'} \\
\text{SUBJ} & \begin{bmatrix}\text{PRED} & \text{`THEY'}\end{bmatrix} \\
\text{XCOMP} & \begin{bmatrix}
\text{PRED} & \text{`TRANSPORTATION}\langle\text{SUBJ,OBJ,OBL}_{\text{GOAL}}\rangle\text{'} \\
\text{SUBJ} & \\
\text{OBJ} & \begin{bmatrix}\text{PRED} & \text{`GOODS'}\end{bmatrix} \\
\text{OBL}_{go} & \begin{bmatrix}
\text{PRED} & \text{`TO}\langle\text{OBJ}\rangle\text{'} \\
\text{CASE} & \text{GOAL} \\
\text{OBJ} & \begin{bmatrix}\text{PRED} & \text{`TOKYO'}\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
\end{bmatrix}
$$

Variants of this work for a wide range of structures, including the constructions with NP+*suru* (in which the nominal is marked with the accusative marker *o*; there are also incorporational structures without *o*, to be discussed later), in which the xcomp-value presumably supplies the meaning, with *suru* being semantically empty, merely transmitting it up to the top sentence level:

(6) Japanese (Matsumoto 1996: 74)
karera wa soko e   sono busshi no yusoo   o   suru
they   top there GOAL the goods gen transport acc do
'They will transport the goods there.'

On this analysis, these structures do not involve any special combination of predicates, so I think it is reasonable to call them 'composite predicates' on the basis of the resemblance that some of them have to the structures investigated by Cattell. But they do have one feature that relates them to the clearer cases of complex predicates, which is the sharing of nonsubject arguments. The word-order characteristics of Japanese (verb final, variable ordering of arguments and adjuncts) allow a reasonably clean treatment of this with the phrase-structure stipulation of (3), which is also very similar to LFG proposals for the intricacies of West Germanic infinitival complements (Zaenen & Kaplan 1995, Kaplan & Zaenen 2003), which are often treated as a kind of complex predicate in the Minimalist literature (for example, Wurmbrand 2017, where complex/restructuring predicates are analysed in terms of certain verbal projections being absent), but not in LFG, where sharing of grammatical attributes is normally required for the term 'complex predicate' to be used.

3 Light verb + coverb structures

The next structures we consider resemble composite predicates in a number of ways, but the apparent complement of the light verb shows signs of syntactic or morphological reduction. Most of the work in LFG has been on Hindi, starting with Mohanan (1994), followed by Mohanan (1997). Occasional later discussions, such as Andrews & Manning (1999: 34–37), consider Wagiman rather than Hindi.

Mohanan considered examples such as:

(7) Hindi
Mohan ko   kahaanii yaad   aayii
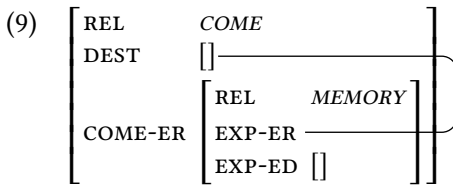Mohan dat story.nom memory.nom come.prf
'Mohan remembered the story.'

Here the combination *yaad aayii* functions equivalently to the English inflected verb 'remembered'. She established a number of facts about these constructions which distinguish them from the composite predicates:

(8) a. The nominal component (here *yaad*) is not head of an NP (cannot be modified by adjectives or coordinated), but an N component of a structure along the lines of $[\text{N } \overline{\text{V}}]_{\overline{\text{V}}}$ (the structures are recursive, and contain various other things beyond the V and the N).

  b. The V component has some mobility (topicalization but not scrambling); the N does not.

  c. The nominal and the verb are jointly responsible for licensing the arguments.

  d. Nevertheless, in the most prevalent subtype, the verb can agree with the nominal, so it would appear to bear a grammatical function in f-structure, under traditional assumptions (proposals for a morphological structure might change this).

  e. The verbs which participate in this construction also have independent verbal functions.

Concomitant with (8a), there is no reason to believe that there is any expression of arguments by any nominal strategy: the arguments are all expressed as if they were arguments of a simple lexical verb.

Mohanan reconciles these somewhat contradictory phenomena by making use of the fact that LFG deploys multiple levels of representation, including originally c-structure and f-structure, but later extended to include some kind of argument structure (ARG STR) and semantic structure (SEM STR) (the details of what is proposed for these and other additional levels are subject to considerable variation in the literature). In her analysis, ARG STR intervenes between f-structure and SEM STR, and permits a semantically complex combination to function in certain respects as a single-level, monoclausal structure.

The SEM STR of the light verb and the noun fit together in a standard predicate-argument combination, where, for example, in the following example meaning 'remember', the upper predicate is a motion verb interpreted metaphorically, while the lower means 'memory', the Destination of the upper predicate being identified with the Experiencer of the lower one, which also has an 'Experienced' argument:

(9)
$$
\begin{bmatrix}
\text{REL} & \textit{COME} \\
\text{DEST} & [\,] \\[4pt]
\text{COME-ER} &
\begin{bmatrix}
\text{REL} & \textit{MEMORY} \\
\text{EXP-ER} & \\
\text{EXP-ED} & [\,]
\end{bmatrix}
\end{bmatrix}
$$

Mohanan argues from reflexivization phenomena that these form a 'monoclausal' pool (Mohanan 1994: 281, 1997: 443–444), but there is a problem with this.

She shows that the complex predicates divide in two types. In the majority type, the light verb agrees in gender with the nominal if the subject is ergative, exactly as would happen if the nominal was an ordinary direct object. Furthermore, a sole argument of this nominal must be in an oblique case, never nominative (lacking any overt case marking) or accusative. In the other type, the verb cannot agree with the nominal, and any sole argument of the nominal is nominative/accusative like an ordinary direct object (Mohanan 1997: 457–469). This indicates that in the first type, there are two levels of f-structure, and the lower level has an effect on the marking of the arguments and perhaps even their grammatical function. It is not clear to me how to integrate the agreement phenomena with the theme of monoclausality (but it is not incompatible with various forms of argument-sharing).

In summary, the first type is similar to the composite predicates as analysed by Matsumoto, but with an apparent difference in reflexivization behavior, while the second seems more like the ones investigated not so much by LFG workers, but more by typologically oriented ones such as Schultze-Berndt (2000) and many others, where there does not appear to be evidence that the non-verbal component (often called a coverb) bears any grammatical function. Neither of these types appear to have attracted much attention in the LFG literature subsequent to the 1990s, a situation that should perhaps be remedied.

4 "Restructuring" complex predicates

These are the constructions that seem to have attracted the most discussion since the 1990s, but without the emergence of a full consensus on how they should be treated. From an LFG perspective, they have the general appearance of control structures, with a subordinate structure that has more apparent syntactic autonomy than the previous type, but the main and subordinate structures also show evidence of being compacted into a single f-structure (monoclausality), with some evidence against an xcomp analysis. Studies of these structures appear to have begun in the late eighties and early nineties, early full publications being

Butt (1993, 1995) investigating Urdu, and Alsina (1996) investigating Catalan.[2] These closely related approaches were then presented in shorter form in Butt (1997) and Alsina (1997). Also, Manning (1992) developed arguments about the constituent structures of Spanish, while Andrews & Manning (1993, 1999) made proposals about how to handle these constructions in a substantially modified version of LFG. Somewhat later, people began working on similar constructions in Mainland Scandinavian languages; a recent summary is provided by Lødrup (2014a), citing especially earlier LFG work by Niño (1997) and Sells (2004). This work raises a considerable number of interesting questions at the descriptive level, which however do not seem to have attracted a large amount of theoretical attention.

The work on these constructions is distinguished from the earlier work of Ishikawa and Matsumoto on Japanese by the existence of evidence for mono-clausality, indicating that in spite of having the superficial appearance of xcomp structures, they have a single level of f-structure, constituting the LFG version of the 'Clause Union' of Aissen & Perlmutter (1983) or the 'Restructuring' of Rizzi (1978). This however creates a tension with the evidence for hierarchical semantic interpretations matching the c-structure, for which various solutions have been proposed. The Urdu-Hindi[3] and Romance streams contribute somewhat different elements to the picture; we begin with Urdu-Hindi, then look at Romance, and finally make some briefer observations about Mainland Scandinavian. We conclude the section with some theoretical discussion.

4.1 Urdu-Hindi

Butt (1993, 1995, 1997) considered two kinds of complex predicate structures, the 'permissive', which contrasts in interesting ways with an 'instructive' construction that appears to be an ordinary xcomp structure, and 'aspectual' complex predicates. The former have assumed a prominent position in subsequent discussion, whereas the latter so far appear to have been of more limited interest.

4.1.1 Permissives

Butt's treatment of permissive constructions has made fundamental contributions to the subsequent discussion in at least two ways. First, she showed that there was a distinction between 'complex predicates' (the permissive) and 'complement structures' (the instructive), each appearing with the same two different constituent structures, one where the subordinate verb is head of its own

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[2]This was a reworking of the Romance language portion of Alsina (1993).

[3]Urdu put first in this combination, since the actual work is largely directed at Urdu, but with high applicability and close relationship to work on Hindi.

VP, another where it forms a complex verb with a light verb. Since both kinds of structures have been argued for in Romance, it is very significant that they can both be found in a single language. Second, she applied a number of tests originally developed by Mohanan (1994) to show that the permissives were monoclausal. These tests involved phenomena of agreement (with objects), control, and anaphora.

The tests involving anaphora are especially important because they refute the possibility of analysing the permissive as an XCOMP in the manner of Ishikawa or Matsumoto. There are two relevant phenomena, bound anaphora with *apnaa*, and obviation with *uskaa*, as illustrated by this selection of examples from Andrews & Manning (1999):

(10) Urdu

    a. Anjum$_i$ ne Saddaf$_j$ ko apnaa$_{i/*j}$ xat   lik^h-ne
        Anjum$_i$ ERG Saddaf$_j$ DAT self's$_{i/*j}$ letter.M.NOM write-INF
        di-yaa
        give-PRF.M.SG
        'Anjum$_i$ let Saddaf$_j$ write her$_{i/*j}$ letter.'

    b. Anjum$_i$ ne Saddaf$_j$ ko us-kaa$_{*i/j}$ xat   lik^h-ne
        Anjum$_i$ ERG Saddaf$_j$ DAT her$_{*i/j}$ letter.M.NOM write-INF
        di-yaa
        give−PRF.M.SG
        'Anjum$_i$ let Saddaf$_j$ write her$_{*i/j}$ letter.'

    c. Anjum$_i$ ne Saddaf$_j$ ko apnaa$_{i/j}$ xat   lik^h-ne ko
        Anjum$_i$ ERG Saddaf$_j$ DAT self's$_{i/j}$ letter.M.NOM write-INF ACC
        kah-aa
        say−PRF.M.SG
        'Anjum$_i$ told Saddaf$_j$ to write her$_{i/j}$ letter.'

    d. Anjum$_i$ ne Saddaf$_j$ ko us-kaa$_{i/*j}$ xat   lik^h-ne ko
        Anjum$_i$ ERG Saddaf$_j$ DAT her$_{i/*j}$ letter.M.NOM write-INF ACC
        kah-aa
        say-PRF.M.SG
        'Anjum$_i$ told Saddaf$_j$ to write her$_{i/*j}$ letter.'

(10a) and (10b) are permissives, and we see in (10a) that the bound pronominal *apnaa* can be anteceded by the overt syntactic subject *Anjum* but not the overt object functioning as the so-called 'causee agent'[4] *Saddaf*. But the facts are reversed

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[4]The causee agent is the agent of the embedded verb in a causative/permissive construction.

in (10b) with the free pronominal *uskaa*. Here, coreference with the causee agent is good, with the overt subject bad. In both cases, the facts are as they would be in a simple clause. See Butt (2014) for an updated version of this and other arguments for monoclausality, which includes a discussion of the observation by Davison (2013) that the coindexing in (10a) is an oversimplification of the facts: some speakers do accept coreference with either the overt subject or the causee agent. Butt explains this as a consequence of the fact that cross-linguistically, it is often possible for bound pronouns to accept a 'logical subject' (highest-ranked argument of a predicate) as their antecedent, regardless of whether or not this is a syntactic subject. Intra-speaker variation with respect to examples like (10a) is therefore not a critical problem.

Another important property of the permissive is that it seems to have the same c-structure configurations as the instructive. Either the embedded verb and its complements can appear as a VP, which can scramble as a unit to the front of the sentence, but not be interrupted, or, both verbs can appear as a complex verb with the nominal complements able to be scrambled, in which case the two verbs only move as a unit (Butt 1995: 43–47, 1997: 113–115). A selection of examples illustrating VP scrambling and non-interruptibility is (11–12) below, from Andrews & Manning (1999: 23):

(11) Urdu Instructive (Biclausal)

  a. Anjum ne **[ciṭṭʰii likʰ-ne]** ko Saddaf ko kah-aa
      Anjum ERG letter(NOM) write-INF ACC Saddaf DAT say-PRF.M.SG
      'Anjum told Saddaf to write a letter.'

  b. Anjum ne kah-aa Saddaf ko **[ciṭṭʰii likʰ-ne]** ko
      Anjum ERG say-PRF.M.SG Saddaf DAT letter.NOM write-INF ACC
      'Anjum told Saddaf to write a letter.'

  c. *Anjum ne kah-aa **ciṭṭʰ ii** Saddaf ko **likʰ-ne** ko

(12) Urdu Permissive (Monoclausal)

  a. Anjum ne **[ciṭṭʰii likʰ-ne]** Saddaf ko d-ii
      Anjum ERG letter(NOM) write-INF Saddaf DAT give-PRF.F.SG
      'Anjum let Saddaf write a letter.'

  b. Anjum ne d-ii Saddaf ko **[ciṭṭʰii likʰ-ne]**
      Anjum ERG give-PRF.F.SG Saddaf DAT letter(NOM) write-INF
      'Anjum let Saddaf write a letter.'

  c. *Anjum ne d-ii **ciṭṭʰii** Saddaf ko **likʰ-ne**

The (b) examples are somewhat degraded for pragmatic reasons,[5] while (c) are ungrammatical.

But there are apparent exceptions to non-interruptibility, which arise exactly when the two Vs are adjacent, motivating a surface complex verb construction, similar to the N+V structures investigated by Mohanan:

(13) Urdu

  a. Anjum ne Saddaf ko **likʰ-ne ko kah-aa** ciṭṭʰ ii.

  b. Anjum ne **likʰ-ne ko kah-aa** Saddaf ko ciṭṭʰ ii.

(14) Urdu

  a. Anjum ne Saddaf ko **likʰ-ne d-ii** ciṭṭʰii.

  b. Anjum ne **likʰ-ne d-ii** Saddaf ko ciṭṭʰii.

This is significant for at least two reasons. First, as emphasized by Butt, it corroborates the thesis of LFG that there are (at least) two distinct levels, c-structure and f-structure, with a substantial degree of independence, since each of the two c-structures can occur with both of the f-structures. Second, both of these c-structures have been proposed for the complex predicates of Romance, with, for example. Manning (1992) arguing for a VP complement of complex predicates in Spanish, similarly to Alsina (1996) for Chicheŵa, while Kayne (1975) and subsequent work arguing for a complex verb treatment of causatives in French. Note that the examples in (13) require that it be possible to annotate an NP in the matrix with XCOMP OBJ (Butt 1997: 117, ex (19a)), as also required for the analyses of Japanese by Ishikawa and Matsumoto.

4.1.2 Aspectuals

The permissive complex predicates appear to have the same semantic structure as many complement structures, for example *let* or *allow* in English, with different c- and f-structural packaging, but the semantics of the aspectual complex predicates is harder to explain. They focus on properties of an action such as completion, initiation and volitionality, without giving an impression of taking the main verb as an argument (as is usually the case with the Romance complex predicates considered below). Rather, Butt uses the general framework of Jackendoff (1990) to endow them with a kind of enriched argument structure that combines with that of the main verb.

Some examples are:

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[5]P.c. from Miriam Butt to Christopher Manning, 1997.

(15)   Urdu

    a.   Anjum ne   ciṭṭi   likʰ   l-ii
        Anjum ERG note.F.NOM write take-PRF.F.SG
        'Anjum wrote a note (completely).' (Butt 1995: 93)

    b.   vo   ro   paṛ-aa
        he.NOM cry fall-PRF.M.SG
        'He fell to weeping (involuntarily).' (Butt 1995: 109)

    c.   us ne   ro   ḍaal-aa
        he ERG cry put-PRF.M.SG
        'He wept heavily (on purpose).' (Butt 1995: 109)

Butt shows that these pass the tests for monoclausality, but the only one that is really significant is the obligatory agreement with the object as illustrated in (15a),[6] since, if they were XCOMPs, the complement and matrix subjects would be the same, so the anaphora and control tests would give the same outcomes. She also shows that the c-structures are somewhat different: since the VP structure is unavailable, only the one with a complex verb is possible.

    These constructions seem rather different from the intransitive complex predicates in Romance, which from a semantic point of view appear to be syntactic alternatives to ordinary XCOMPs. Perhaps for this reason, there seems to have been relatively little further work on them, but see Butt (2010).

4.2 Romance

LFG treatments of complex predicates in Romance languages were developed at about the same time and in close communication with the work on Hindi and Urdu, largely by Alex Alsina and Christopher Manning, as presented in Alsina (1993, 1996, 1997), Manning (1992, 1996b), and Andrews & Manning (1993, 1999), building on earlier work mostly in the frameworks of Relational Grammar and Government-Binding Theory.

    Although there are many similarities between the Urdu-Hindi permissive complex predicates and the complex predicates of Romance languages, there are significant differences in some of the more empirically striking phenomena. In the Urdu-Hindi permissives, there is clear evidence for two different constituent structures, one a complex verb, the other a VP complement, both also used by the instructive, which is clearly a control structure, bearing the XCOMP GF in

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[6]Although the agent is semantically feminine, it is also ergative, so the verb cannot be agreeing with it.

f-structure. In Romance, however, although there are also xcomps that are morphologically similar to the complex predicates, they have different word-order properties, suggesting a different c-structure. Many verbs can furthermore appear in either construction, with different verbs having different preferences.

The word-order correlations of xcomp vs complex predicate constructions in Romance do not seem to have been much discussed in the LFG literature, but are considered in Sheehan (2016: 982), who illustrates both constructions being possible for perception verbs in French, where the xcomp structure, Exceptional Case Marking (ECM) in the Minimalist Framework, is preferred:

(16)   French

    a. Jean voir Marie manger le   gâteau.
       Jean sees Marie eat.ɪɴғ the cake

       'Jean sees Marie eating the cake.' (Sheehan (2016: 982, ex. 8b),
       ECM/xcomp)

    b. Jean voit manger le   gâteau à Marie.
       Jean sees eat   the cake   to Mary

       'John sees Mary eating the cake.' (ex 15a, p983; Sheehan (2016: 983, ex.
       15a), Restructuring/complex predicate)

The literature agrees that none of the evidence for being a complex predicate construction can appear with the ECM/control structure word order.

Superficially, for the complex predicates, a complex verb structure similar to that of Hindi seems plausible, but, as we will discuss, the LFG literature provides a number of arguments against this. Another difference is that Romance languages have extensive evidence for different orderings of the light verbs producing different interpretations, as well as a considerably richer system of morphological marking of the semantically subordinate verbs by the light verbs. These phenomena create difficulties for a proposal where the f-structure is flat.

The constructions furthermore have a more diverse semantic range that those in Urdu-Hindi, comprising

(17)   a. Causative, including extensions including permission, ordering and
       persuasion

    b. 'Modal' (ability, possibility, desire)

    c. Aspectual (starting and finishing, as well as Perfect and Progressive)

    d. Associated Motion

Another difference is that while in Urdu-Hindi the list of light verbs appears to be limited and closed, in some of the Romance languages it seems to be larger and

hazier; for example Solà (2002: 226–228) lists 31 predicates in Catalan excluding the traditional aspectual auxiliaries, which have clitic climbing for arguments, and he indicates that there are more.[7]

The most widely used argument for clause union is the phenomenon of 'clitic climbing', whereby a preverbal clitic appears in front of the light verb rather than next to the verb it is an argument of:

(18)   Spanish
       Lo quiero   ver.
       it want.1.SG see.INF
       'I want to see it.'

In principle, this argument can be circumvented by allowing the clitics to carry annotations such as '(↑ XCOMP* OBJ)=↓', but there are some issues with this, such as the fact noted originally by Rizzi (1978: 120) that in Italian, the capacity for clitics to climb disappears when the putative XCOMP is preposed by *wh*-movement (and in various other situations):

(19)   Italian
       a. questi argomenti, dei   quali ti   verrò   a parlare
          these arguments of.the which you.DAT come.FUT.1SG to talk.INF
          al più presto,   …
          as soon as possible
          'these arguments, about which I will begin to talk as soon as possible,
          …'
       b. *questi argomenti, a parlare dei   quali ti   verrò
          these   arguments, to talk.INF of.the which you.DAT come.FUT.1SG
          a più presto   …'
          as soon as possible
          'these arguments, about which I will begin to talk as soon as possible,
          …'

In LFG, this would minimally indicate that there were two possible annotations for these apparent VPs, one allowing (pied-piped) *wh*-movement, the other not. An important characteristic of clitic climbing, discussed by Sheehan (2016) and also by Andrews & Manning (1993) is that it is not in general obligatory, but

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[7]Note also the relevant observation of García (2009: 185), working in a strongly functionalist approach, that constructions that normally reject indications of being a complex predicate, such as clitic climbing (see below) may accept it under certain pragmatic conditions.

optional, subject to complex preferences and conditions, discussed extensively from a functional perspective by García (2009).

Various further arguments from the literature are reviewed from an LFG perspective in Andrews & Manning (1999: 47–59) of which we will specifically mention one for Catalan from Alsina (1996: 217), which shows that the apparent complement in a restructuring construction does not have a subject, unlike an xcomp. The argument is that causee agents can't host bare floated quantifiers, although non-overt equi-infinitive subjects can:

(20) Catalan (Alsina, p.c.)

    a. Els metges$_i$ ens$_j$ deixen beure una cervesa cadascun$_{i/*j}$.
       the doctors us   let   drink a   beer   each
       'Each of the doctors let us drink a beer.'
       *'The doctors let each of us drink a beer.'

    b. Els metges$_i$ ens$_j$ han   convençut beure una cervesa cadascun$_{i/*j}$.
       the doctors us   have convinced drink a   beer   each
       'Each of the doctors has convinced us to drink a beer.'
       *'The doctors have convinced each of us to drink a beer.'

This is the same kind of argument for clause union as the ones from anaphora for Hindi and Urdu by Mohanan and Butt.

The arguments for clause-union in Romance are similar to those from Urdu-Hindi, but the situation with c-structure is somewhat less clear, in that there is nothing comparable to Butt's argument that both a VP and a complex V structure are available. Rather, both have been argued for, complex Vs mostly in HPSG (Abeillé & Godard 1994, 1996) and VP complements in LFG. Manning (1992, 1996b) presenting arguments drawing heavily on previous work by Kayne and others on French, observes that clitics can climb out of coordinated VPs each with their own causee agent in Spanish as well as French:

(21) a. French
      Marie le ferait   lire   à Jean et dechirer   à Paul.
      Marie it will.make read.INF to Jean and tear up.INF to Paul
      'Marie will make Jean read it and Paul tear it up.'

    b. Spanish
      Carlos me estaba tratando de topar   y   de empujar contra
      Carlos me was   trying   of bump.INF and of push.INF against
      María.
      Maria
      'Carlos was trying to bump into me and push me against Maria.'

He counters proposals to use coordination reduction to explain this away.

Alsina (1997: 226) gives an argument from coordination and provides additional ones from nominalization and from the fact that various elements, such as sentence adverbials set off by comma-pauses, can be inserted between the main and light verbs:

(22)   Catalan

    a. La Maria ha fet   de debó riure   el nen.
        the Mary has made truly   laugh.ɪɴf the boy
        'Mary has truly made the boy laugh.'

    b. La Maria ha fet,   em penso, riure   el nen.
        the Mary has made I   think laugh.ɪɴf the boy
        'Mary has made the boy laugh, I think.'

Although it is often possible for certain kinds of particles to be inserted into complex verb structures,[8] this seems to be more than is generally allowed, vindicating the argument.

Although the LFG literature does not have much to say about the c-structure of the complex predicates, I suggest that it is reasonable to propose that they are expansions of an 'inner VP', or $\overline{V}$, to V and VP, as in (23a), whereas the xcomp/ control/ECM constructions are expansions of VP, as in (23b):

(23)   a.

    b.
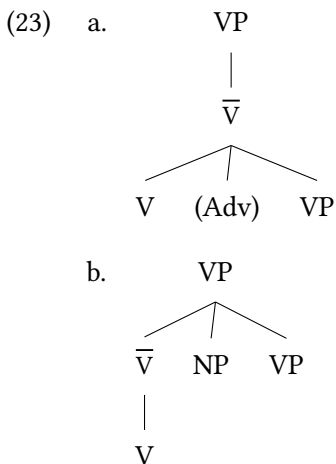
The nature of the c-structure difference remains to be fully elucidated.

---

[8]As discussed for Tariana by Aikhenvald (2003) and Jaminjung by Schultze-Berndt (2000).

Although the nature of the constituent structure of Romance complex predi-
cates is not entirely clear, something that is clear is the effect of the c-structure
on semantic interpretation. Alsina (1997: 238) provides examples that show the
same light verbs appearing in different arrangements in Catalan clause union
constructions, and Solà (2002: 239) provides a few more:

(24)   Catalan

    a. Li   acabo   de fer   llegir   la   carta.
        him.DAT finish.1SG of make.INF read.INF the letter
        'I finish making him read the letter.' (Alsina 1997: 238)

    b. Li   faig   acabar   de llegir   la   carta.
        him.DAT make.1SG finish.INF of read.INF the letter
        'I make him finish reading the letter.' (Alsina 1997: 238)

    c. Les   pot   aver   vistes.
        them.F.PL can.SG have.INF seen.PST.PTCP.F.PL
        'He/She can have seen them.' (Solà 2002: 239)

    d. Les   ha   pogudes   veure.
        them.F.PL have.3SG been able.PST.PTCP.F.PL see.INF
        'He/she has been able to see them.' (Solà 2002: 239)

In Urdu, on the other hand, multiple light verbs occur in an order consistent with
semantic interpretation, assuming head-final ordering, but no cases of multiple
possible orderings have been produced. The issue of how to control the seman-
tic interpretation in Romance languages is therefore more acute, and there is
disagreement about how to do it, as we discuss below.

A final characteristic of Romance is a substantially greater variety of subordi-
nate verb forms. There are three inflectional categories, infinitive, active (present)
participle, and passive (past) participle, the latter occurring in both agreeing and
non-agreeing forms, with the further problem of specifying the verb-markers as
such *a* 'to/at', *de* 'of' and others, mostly historically prepositions. This means that
the question of how the marking of the subordinate verb is to be accomplished
is more acute. However, the theoretical treatment is not as troublesome as the
semantics, as we shall see.

4.3 Mainland Scandinavian

The most striking feature of the Scandinavian constructions is that their most ob-
vious evidence for monoclausality is apparent verbal feature agreement between

the light verb and its semantic complement, as illustrated in these examples from Norwegian:

(25) Norwegian (Lødrup 2014a: 4)

    a. Forsøk å les!
       try.IMP to read.IMP
       'Try to read!'

    b. Det har   jeg glemt   å fortalt.
       that have.PRS I   forget.PTCP to tell.PTCP
       'I forgot to say that.'

    c. Jeg prøvde å leste   det lure smilet hennes.
       I   try.PST to read.PST the sly grin.DEF her
       'I tried to read her sly grin.'

The inflectional agreement in the above examples is optional, most common with imperative forms (25a), less common with participles (25b), and possible for only some speakers with the finite past (25c).

    The most-discussed evidence for reanalysis is 'long passives', which are arguably produced by morphological features associated with passive voice being shared across the two levels, as analysed by Lødrup (2014b). An example is:

(26) Norwegian (Lødrup 2014b: 388)
    at vaskemaskin-en   må huskes   å slås   på
    that washing machine-the must remember.INF.PASS 'to' turn.INF.PASS on
    'that you must remember to turn on the washing machine'

While the tense-mood features of (25) appear to percolate down from the upper to the lower verb, the voice feature of (26) percolates in the opposite direction, in a manner somewhat reminiscent of the analysis of auxiliary selection in Italian in Andrews & Manning (1999: 56–60).[9] This suggests that this is a complex predicate structure where both verbs are associated with the same f-structure. Lødrup discusses further verbal constructions similar to these that do not appear to be complex predicate constructions; space precludes discussing them here. Similar phenomena appear to be found in Swedish and Danish, but have not been reported for Icelandic.

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[9]Due to Manning, according to my recollections.

4.4 Theoretical approaches

A central conclusion from the data of these languages is that the apparent multiple levels of c-structure correspond to one level of f-structure. For example, according to both Butt's and Alsina's analyses, the f-structure of (24a) would be:

(27)

$$
\begin{bmatrix}
\text{SUBJ} & \begin{bmatrix} \text{PRED 'PRO'} \\ \text{PERS 1} \\ \text{NUM SG} \end{bmatrix} \\
\text{PRED 'FINISH-MAKE-READ'} \\
\text{OBJ} & \begin{bmatrix} \text{SPEC DEF} \\ \text{GEND FEM} \\ \text{NUM SG} \\ \text{PRED 'LETTER'} \end{bmatrix} \\
\text{OBJ}_\theta & \begin{bmatrix} \text{CASE DAT} \\ \text{NUM SG} \\ \text{PERS 3} \end{bmatrix}
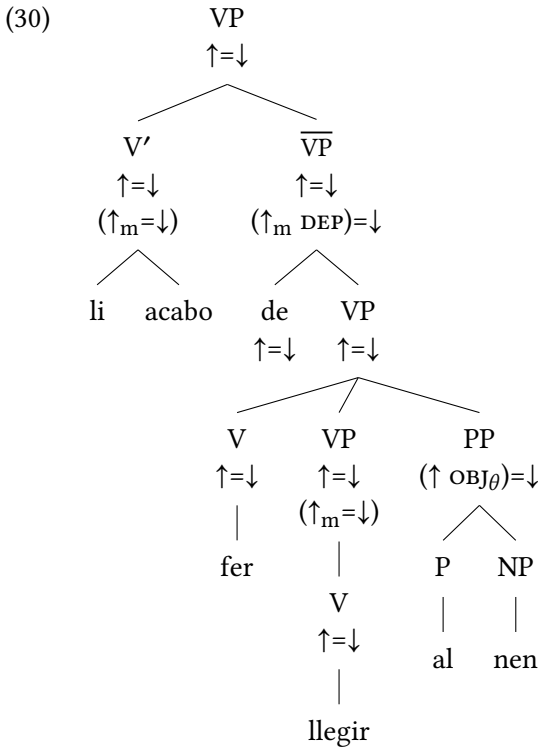\end{bmatrix}
$$

There are three problems that arise:

(28)   a.   The morphological marking

     b.   The combination of multiple PRED-values into one

     c.   The effect of arrangement on semantic interpretation

(28a) is the easiest to deal with, because, as discussed in Butt et al. (1999) it can be managed by proposing a morphological projection (m-structure), that comes directly off c-structure, where the relevant featural information can be stored. The m-structure attributes normally proposed are VMARK with values DE, A, etc, for the apparently prepositional marking, and VFORM for the inflectional categories, with values FIN, INF, PRS.PTCP and PST.PTCP. The relevant parts of the lexical entries for the light verbs in (24) will then be:

(29)   a.   *acabo*: $(\uparrow_m$ DEP VMARK$)=$ DE, $(\uparrow_m$ DEP VFORM$)=$INF, $(\uparrow_m$ VFORM$)=$FIN

     b.   *fer*: $\neg(\uparrow_m$ DEP VMARK$)$, $(\uparrow_m$ DEP VFORM$)=$INF, $(\uparrow_m$ VFORM$)=$INF

The c-structure will annotate all of the VPs with ↑=↓ for f-structure, but will assign to them a DEP-value in m-structure:

(30)

```
                        VP
                        ↑=↓
             ┌──────────┴──────────┐
            V′                     ‾VP‾
            ↑=↓                    ↑=↓
          (↑ₘ=↓)              (↑ₘ DEP)=↓
          ┌──┴──┐              ┌──┴──┐
         li  acabo            de    VP
                              ↑=↓   ↑=↓
                        ┌──────────┼──────────┐
                        V         VP          PP
                       ↑=↓        ↑=↓      (↑ OBJ_θ)=↓
                        |       (↑ₘ=↓)      ┌──┴──┐
                       fer        |         P    NP
                                  V         |    |
                                 ↑=↓        al   nen
                                  |
                               llegir
```

The forms can then be managed, and this solution will clearly also work for Hindi.

There is however a potential problem, which is that it was later argued by Frank & Zaenen (2002) that m-structure ought to come off f-structure rather than c-structure directly. With this change, form-determination becomes more complicated. Their solution, which involves rather complex stipulation, works for French auxiliaries, but as discussed by Andrews (2018b), it does not seem very plausible for the richer system of light verbs found in some of the other Romance languages such as Catalan. But we will not pursue this further here, and consider instead the next problem.

This is that if both the main verbs and the light verbs are construed as having PRED-features, the f-structure annotations will produce a PRED-value clash. Within mainstream LFG there have been three proposed solutions. The first was proposed in an earlier form by Alsina (1996: 189), and then in a later, more formal form by Alsina (1997: 235–237). Although it was criticized extensively by Andrews & Manning (1999: 28–34), I think it can be further revised to reduce the force of some of their criticisms.

The core of Alsina's proposal is the idea that light verbs have an empty argument position into which the PRED-value of their semantic complement is substituted. A schematic illustration is:

(31) 'CAUSE⟨[P-A] [P-P] P*⟨...[ ]...⟩⟩'

'[P-A]' and '[P-P]' represent the proto-agent and proto-patient roles of Dowty (1991), 'P*' the unspecified predicate that is to be plugged in, and the underbar the fact that in the 'direct causative' construction, the patient of the causative verb is to be identified with some argument of the caused verb. Given (32a) as the subordinate verb to be plugged in, a possible result is (32b):

(32) a. 'READ⟨[P-A] [P-P]⟩'
      b. 'CAUSE⟨[P-A] [P-P] READ⟨[P-A] [P-P]⟩⟩'

Alsina does not present this in an attribute-value notation where the usual methods for unification in LFG apply, but this is clearly a triviality. In what follows, it will be useful to assume that the empty predicate slot in the light verb is the value of an attribute such as PARG, in order to formalize the construction of a complex predicate such as (32b) in a more conventional notation.

The next component is the idea that the '↑=↓' annotation on the VP complement of a light verb is either interpreted in a special way (Alsina 1996) or replaced by something a bit different (Alsina 1997). We take the second approach. Here, these VPs are annotated with the novel annotation $\uparrow_H{=}\downarrow$, which is interpreted as follows. The two most important provisions are that the PRED-values are not shared between the levels, which can be accomplished with the LFG device of 'restriction', and second, the PRED-value of the VP is plugged into to PARG-value of the light verb's PRED. This can be formalized as follows:

(33) $\uparrow_H{=}\downarrow$ = $\uparrow\backslash_{\text{PRED}} = \downarrow\backslash_{\text{PRED}}$
                    (↑ PRED PARG) = (↓ PRED)

This treatment is close to that proposed later for Urdu by Butt & King (2006), the difference being that they also propose a different approach to argument structure and linking.

Alsina's treatment as exposited is a bit less clear than it could have been, because he attaches $\uparrow_H$ to both the light V and its semantic complement VP, which isn't necessary, as noticed implicitly by Butt & King (2006: 241). Manipulating argument-structure in c-structure rules might seem somewhat odd, but these constructions are difficult and seem to resist fully conventional treatments.

The final ingredient is a linking theory. Alsina's and Butt's analyses both require a linking theory that will apply to assembled syntactic structures rather

than individual lexical entries. This is a substantial change from the original conception of Lexical Mapping Theory, which was supposed to apply to items listed in the lexicon. Alsina's and Butt's approaches differ in detail, but the basic idea is that the argument structure positions are assigned grammatical relations in accordance with prominence hierarchies, so that the most prominent will be expressed as SUBJ unless the verb is passive, in which case it is expressed as an oblique. The linking theories for complex predicates, including that of Andrews & Manning (1999) furthermore remained somewhat informal until recently, with the proposals of Lowe (2016) to use glue semantics, and Andrews (2018b) to use the 'Kibort-Findlay Mapping Theory' as developed in Asudeh et al. (2014) and Findlay (2016). We will however not pursue linking theory here, but rather review some follow-up proposals to the original analyses.

Andrews & Manning (1999) proposed to reanalyze the material in a way that was in some respects not so different from the original analyses, but set within a rather substantial reorganization of LFG. Rather than there being the two central levels of c-structure and f-structure, it was proposed that all attributes are in the first instance assigned to c-structure, nodes, and then differentially shared by annotations stated in terms of classes of attributes that share in different ways, some more aggressively than others. The bar-features of $\overline{\text{N}}$ theory, for example, would be shared between mother and daughter in only certain coordinate structure and modificational configurations. category features more widely (between N ($=N^0$) and NP ($=N^2$), for example). Clause union complex predicates would then have sharing of the grammatical functions SUBJ, OBJ and OBJ$_\theta$ and others (which were called the ρ-projection) between the upper and lower VPs, while XCOMPs would not. The morphological features would however not be shared, effectively including in the analysis a kind of morphological projection, of the original kind, coming off of c-structure, rather than f-structure.

This approach reflects a difference in philosophy from Alsina's: he proposes that light verbs and the predicates of their semantic complements combine in a fundamentally different way from ordinary complementation, producing a genuine 'complex predicate', from which follow the peculiarities of linking and the evidence for clause union. Andrews and Manning did not share this intuition. In their account, the light verb constructions appear in very similar configurations to those of the complement structures, the main difference being that the former share grammatical relations while the latter do not,[10] but have their se-

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[10]The VP complements of the light verbs are introduced as values of an attribute ARG, which might in principle be the same as XCOMP, as long as the latter is not in the ρ projection. This issue is not discussed in the text. In the earlier version of this approach presented in Andrews & Manning (1993), ARG had to be a different attribute than XCOMP.

mantic complements introduced by a different attribute, ARG, that is on a different projection than the f-structural attribute XCOMP, but the mode of semantic composition is fundamentally the same.

This could be defended on the basis that there do not appear to be major semantic differences between the structures where ARG is motivated versus the ones without clitic climbing that call for XCOMP. By contrast, many of the complex predicates investigated by Butt and Mohanan really do seem to involve closer combination between the light verb and the heavy verb, as indicated by Butt's introduction of aspects of Jackendoff's conceptual structures. This leads to a further issue, the treatment of auxiliaries. Butt (2010) argues strongly that auxiliaries are not light verbs, on the basis of having different general behavior and historical trajectories. But in Romance languages, they tend to show the typical behavior of the light verbs, including clitic climbing, and the capacity to condition the form of their apparent complements, and the non-auxiliary light verbs seem to have the semantics of ordinary complement structures in other languages. Catalan *voler*, for example, with restructuring, seems to have essentially the same meaning as English *want*, which does not show clear evidence of restructuring from the perspective of LFG.[11] By contrast, the Urdu light verb contrast between *paṛ* 'fall' and *ḍaal* 'put' signifies contrast between accidental and volitional action, respectively (Butt 1995: 108–109), in a way that is not well captured by the usual kind of semantic composition proposed for complements.

There are three further analyses to consider, Butt and King's 2006 analysis of Urdu, Lowe's (2016) rather different analysis of the same language, and Andrews' (2018b) analysis of Romance. Butt and King's treatment is very similar to the modified version of Alsina's analysis proposed here, but differs in one important respect: it does not use linking theory, but rather uses restriction to prevent the SUBJ and OBJ$_{GOAL}$ (grammatical function of the causee agent) from being shared between the two levels, but uses an equation to identify their value (Butt & King 2006: 241, ex. 8). This might generalize to Romance, but faces a problem in both Romance and Hindi (also, presumably, Urdu), which is that it does not explain the evidence (from anaphora in Urdu, and subject-oriented adverbs in Catalan) that the causee agent is not a subject. In a sentence such as (10a), for example, the subject-bound anaphor *apnaa* is sitting in a clause nucleus whose SUBJ-value is *Saddaf ko*, so it is not clear why it cannot be bound by it, even though the

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[11]However Grano (2015) argues within Minimalism that English *want* does have restructuring (and similarly for even more superficially biclausal constructions in Modern Greek). But his arguments are based mainly on the inability of various modifiers to appear, as can be explained by the absence of certain functional projections (or perhaps semantic operators), rather than shared f-structures, which is the basis for clause-union in LFG.

f-structure in which this happens is not actually part of the f-structure of the matrix S, due to the operation of restriction.

The 1999 analysis of Andrews and Manning and the 2006 analysis of Butt and King lack a feature that is relatively typical for LFG, which is that the f-structure of a c-structure constituent contains the f-structures of all of that constituent's subconstituents. We might call this property 'monotonicity of f-structure (with respect to c-structure)'. When this property is discarded, analyses involving functional uncertainty can fail in ways that are difficult to predict, which might provide a reason for preferring other kinds of analyses if they are available. A further, related point is that 'forgetting' much of the abstract structure of subconstituents is an essential characteristic of HPSG with its head-feature constraint. It is plausibly a good idea to develop LFG in ways that are clearly distinct from HPSG. The next two analyses retain f-structure monotonicity.

The second one is that of Lowe (2016) of Urdu, which neither uses restriction nor proposes any changes to the LFG framework, but makes use of two different ideas. The first is to treat the light verbs as not having PRED-features, but introducing grammatical features such as [PERMISSIVE +]. This is workable for Urdu-Hindi, because the inventory of light verbs is clearly closed, and they are semantically bleached, but less plausible for Romance, because the inventory is larger, and, as we have previously discussed, not so sharply delimited, and many of the verbs have considerable lexical content, as discussed in the previously mentioned Solà (2002). On the other hand, given glue semantics, it is not clear exactly what the PRED-features are accomplishing, so this might not really be a problem. Given that there is no problem of conflicting PRED-features, a rather clever glue semantics trick is used to get the right interpretation, which cannot be explained properly in the limited space available here. Given the use of a morphological projection or similar device, the analysis solves all problems except for the dependence on the c-structure for scopal interpretation in Romance. In particular, since the causee agent NP is in no way at any level a value of SUBJ, there is no problem with either the phenomena of anaphora in Urdu-Hindi or the floating quantifiers in Catalan. Lowe (2016) also provides an extremely thorough discussion and critique of all previous analyses of complex predicates in LFG.

The final analysis, that of Andrews (2018b), solves the problem of hierarchical interpretation without using a distinct morphological projection, but also obeys f-structure monotonicity. It has significant similarities to the analyses of both Andrews & Manning (1999) and Butt & King (2006). It require some modification to the LFG framework, although a considerably less extensive one than Andrews and Manning's approach. The basic idea is to apply the concept of 'distributive attribute' and 'hybrid object' from Dalrymple & Kaplan (2000) to sets with a

single member, so that a complex predicate structure is taken to be a hybrid object with the semantic complement as a set-member:

(34)
$$
\begin{bmatrix}
\text{PRED 'LET'} \\
\ldots \\
\left\{\begin{bmatrix} \text{PRED 'WRITE'} \\ \ldots \end{bmatrix}\right\}
\end{bmatrix}
$$

This provides appropriate places to locate the morphologically required features, without requiring a new projection, and also a structure to determine the semantic interpretation, at the cost of requiring a certain amount of stipulation to distinguish the features that need to be shared versus those that cannot be. The Kibort-Findlay Mapping Theory is used to get appropriate interpretation of the arguments of the verb without having to treat the causee agent as a SUBJ-value.

5 Morphologically integrated complex predicates

These are constructions which might be analysed as derivational morphology, but for various reasons have invited analysis as morphologically compacted versions of the previous constructions. The two main examples are Ishikawa (1985) for Japanese, and Alsina (1997) for Chicheŵa, extending their analyses for the previously discussed complex predicate constructions (in the authors' terminology) to the current ones.
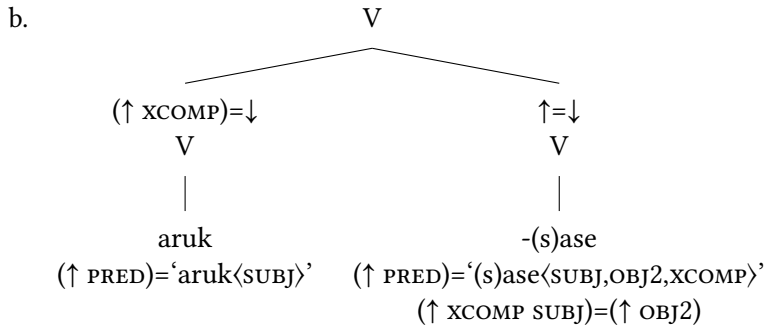
5.1 Ishikawa and Matsumoto on Japanese

To analyse Japanese *-(s)ase-* causatives,[12] Ishikawa uses the technique from earlier LFG work such as Simpson (1983) of allowing word-level phrase-structure rules to introduce stems or affixes with a grammatical function. For example, the verb stem *aruk-ase* in example (35a) below is given the tree structure (35b):

(35) Japanese (Ishikawa 1985: 98)

    a. John ga   Mari ni/o   aruk-ase-ta
        John NOM Mary DAT/ACC walk-cause-PST
        'John caused Mary to walk.'

---

[12]The initial *s* appears after stems ending in a vowel, but is absent after a consonant.

b.

$$
\begin{array}{ccc}
& V & \\
(\uparrow \text{XCOMP})=\downarrow & & \uparrow=\downarrow \\
V & & V \\
| & & | \\
\text{aruk} & & \text{-(s)ase} \\
(\uparrow \text{PRED})=\text{'aruk}\langle\text{SUBJ}\rangle\text{'} & & (\uparrow \text{PRED})=\text{'(s)ase}\langle\text{SUBJ,OBJ2,XCOMP}\rangle\text{'} \\
& & (\uparrow \text{XCOMP SUBJ})=(\uparrow \text{OBJ2})
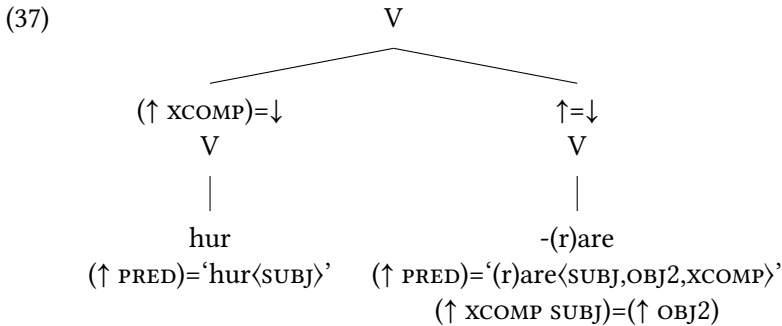\end{array}
$$

The difference between dative and accusative on the causee agent is semantically significant, treated as whether the grammatical function is IOBJ2 (currently designated as OBJ_θ) for the dative or OBJ for the accusative.

Ishikawa extends this analysis to the 'indirect' or 'adversative' passive, in which the subject is characterized as suffering the effect of the action (Kuno 1973: 303):

(36) Japanese (Ishikawa 1985: 106)
John ga   ame ni   hur-are-ta
John NOM rain DAT fall-PASS-DAT
'John suffered from rain falling.'

The annotated c-structure for this is:

(37)

$$
\begin{array}{ccc}
& V & \\
(\uparrow \text{XCOMP})=\downarrow & & \uparrow=\downarrow \\
V & & V \\
| & & | \\
\text{hur} & & \text{-(r)are} \\
(\uparrow \text{PRED})=\text{'hur}\langle\text{SUBJ}\rangle\text{'} & & (\uparrow \text{PRED})=\text{'(r)are}\langle\text{SUBJ,OBJ2,XCOMP}\rangle\text{'} \\
& & (\uparrow \text{XCOMP SUBJ})=(\uparrow \text{OBJ2})
\end{array}
$$

There has been a dispute as to whether the adversative passive must always add a new argument, or can be similar in appearance to the regular passive, but expressing adversity to the overt (promoted) subject. Kuno says no, while Ishikawa (1985: 114–124) says yes, although the arguments are complex, and depend on too many details of Japanese for further discussion here.

Matsumoto (1996) provides a similar analysis, but implemented somewhat differently, for causatives, and also certain desideratives. For the latter, he argues

that desideratives which take the desired event object as an accusative have a biclausal structure, while the ones where this object is nominative are mono-clausal:

(38)   Japanese (Matsumoto 1996: 103)

    a. boku wa hon o   yomi-tai
        I   TOP book ACC read-want
        'I want to read the book.'

    b. boku wa hon ga   yomi-tai
        I   TOP book NOM read-want
        'I want to read the book.'

The argument that Matsumoto makes is complex, and depends on the possibilities for passivization. One point is that the desiderative forms an adjective rather than a verb, and adjectives as such cannot be passivized. However there is a way out: adjectives of subjective state can be verbalized by adding the suffix *-gar*, meaning 'to show signs of being in the state'. These derived verbs are natural with non-first person subjects, which the original adjectives are not. Although these derived verbs take accusative objects, there is a difference in passivization: the ones whose base forms reject *ga*-marked objects are also the ones that are acceptable in the passive. These are the ones where the subject in some sense wants to 'have' the object:

(39)   Japanese (Matsumoto 1996: 107)

    a. boku wa sono hon o/ga   yomi-tai
        I   TOP the book ACC/NOM read-want
        'I want to read the book.'

    b. boku wa kare o/*ga   machi-tai
        I   TOP him ACC/NOM wait-want
        'I want to wait for him.'

It is the verbal forms derived from the desideratives that accept *ga* on their patients that can be passivized:

(40)   Japanese

    a. sono hon wa minna ni   yomi-ta-gar-arete-iru
        the book TOP all   DAT read-want-VBLZ-PASS-ASP
        'The book is in such a state that everybody wants to read it.'

b. *kare wa minna ni machi-ta-gar-arete-iru
   He   TOP all   DAT wait-want-VBLZ-PASS-ASP
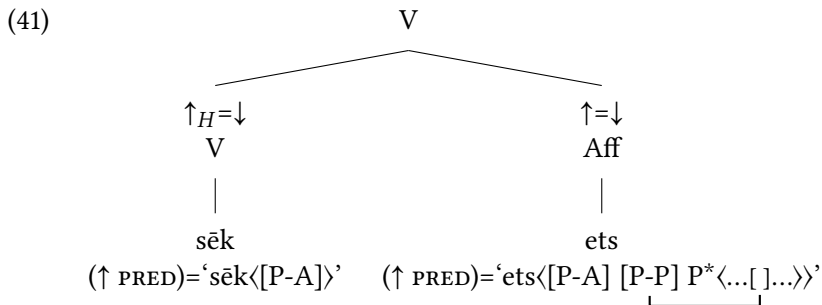   'He is in such a state that everybody wants to wait for him.'

'Long passives' are possible in some but not all of the languages with the complex predicate constructions discussed in the previous section (present in Italian and Catalan, but not in Spanish), but the contrast between these examples does indicate that there are two different constructions. Matsumoto also discusses differences in adjunct interpretation and verbal anaphora to justify the proposed distinction between biclausal and monoclausal.

Unfortunately, there does not appear to have been much follow-up to compare Ishikawa's and Matsumoto's analyses with the later ones of Bantu and Hindi-Urdu, to which we turn next.

5.2 Alsina on Bantu, and similar constructions

Alsina (1997) presents an analysis of causatives in Chicheŵa, based on the same account of argument structure and predicate-composition as presented in Alsina (1996). The difference from the treatment of Catalan is in the c-structure: in both cases, the c-structures are monoclausal, but in Chicheŵa, the causative element is treated as an affix to the Caused verb stem, rather than an independent morphological stem, as in Catalan. Alsina provides convincing evidence for this difference.

The c-structures are identical to those proposed by Ishikawa and Matsumoto for Japanese, but the annotations are different: they are the same as they would be for Catalan (assuming my claim that we only need the special annotation for the semantic complement, not the head, and adjusting the lexical entries to fit Alsina's linking theory):

(41)

$$\begin{array}{ccc}
& \text{V} & \\
\diagup & & \diagdown \\
\uparrow_H{=}\downarrow & & \uparrow{=}\downarrow \\
\text{V} & & \text{Aff} \\
| & & | \\
\text{sēk} & & \text{ets} \\
(\uparrow \text{PRED}){=}\text{'sēk}\langle[\text{P-A}]\rangle\text{'} & & (\uparrow \text{PRED}){=}\text{'ets}\langle[\text{P-A}]\ [\text{P-P}]\ \text{P}^*\langle...[\ ]...\rangle\rangle\text{'}
\end{array}$$

The analysis actually works a bit better for this construction than the Romance one, because we do not have to worry about conditioning the subordinate verb

form, and the problem of different orderings having different semantic interpretations does not arise.

This form of analysis has been extended more widely to other 'valence change' constructions, including reciprocals in Chicheŵa (Alsina 1997), passives and antipassives in a variety of languages (Manning 1994, 1996a), and causatives and applicatives in Australian languages (Austin 2005). Complex-predicate-based analyses of morphologically based valence change do not however appear to have been much pursued in recent years. The most recent LFG analysis of passives is, for example, within the Kibort-Findlay Mapping Theory (Findlay 2016), and does not use a complex predicate analysis.

Typology seems to provide some warrant for questioning these analyses. Passive constructions (or, more precisely, constructions in various languages that are often called 'passive') do often involve auxiliary verbs in what might plausibly be complex predicate constructions, but those normally called antipassives are to the best of my knowledge always morphological, and apparent complement structures that are actually complex predicates seem likewise to be nonexistent for reflexives and reciprocals. Another intriguing asymmetry arises with causatives and applicatives. As discussed by Austin (2005), it is not unusual for morphological causatives and applicatives to use the same formative.

Austin analyses these in various Australian languages as having the applicative/causative morpheme introduce a light verb AFFECT, with the difference between causative and applicative senses being based on different patterns of argument identification. Sample causative and applicative combinations are (Austin 2005: 32–33):

(42)   a. Causative:
           AFFECT   < Ext Arg   Int Arg   PRED   < Arg >>
                      +vol   −vol   −vol

       e.g. 'The man turned the child.'

   b. Applicative:
           AFFECT   < Ext Arg   Int Arg   PRED < Ext Arg   Goal/Loc >>
                      +vol   −vol   +vol   −vol

       e.g. 'The man laughed at the child.'

In the causative, the agentive argument of the AFFECT predicate is identified with the unaccusative argument of the embedded predicate, while in the applicative, the agentive arguments of the two predicates are identified, and also the second argument of AFFECT and a locative/directional argument of the embedded verb.

This captures the idea that applicatives of such verbs often express a meaning to the effect that the locative/directional is affected by the action.

There is however perhaps a typological issue with the analysis: the causative is often expressed by constructions that look like and often seem to actually be complement constructions, but this is not the case for applicatives, whose sense is however sometimes expressed by serial verb constructions, as we consider in the next section. This typological difference suggests a fundamental structural one, but there is also evidence for a relationship, in that the same formative is sometimes used for both. What I suggest is that the AFFECT concept is common to both, with argument sharing as proposed by Austin, but that the structural relations are different. We can partially express them using the 'Natural Semantic Metalanguage' (NSM) approach of Anna Wierzbicka and her colleagues (Wierzbicka 2006, Goddard 2011), which can be regarded as being a technique for expressing meanings in simple terms that are found to be highly translatable.[13] In the case of causatives, the sense is:[14]

(43)   X does something to Y
        Because of this, <Caused Event>

In the case of applicatives, there does not seem to be any caused event distinct from what X does to Y, rather what X does *constitutes* X doing something to Y. For this I suggest the following:

(44)   <Applied event, performed by X involving Y>
        This is X doing something to Y.

This is not of course anywhere near a full explanation of the differences between the constructions, but it is perhaps a start. In particular, it seems plausible that the identity relationship expressed in (44) is not something that is normally expressed by complement structures.

Neither these contemporary analyses of morphological causatives and valence change operations, nor the earlier ones by Ishikawa and Matsumoto, in which they are morphologically expressed XCOMP structures, have received much discussion in recent years.

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[13]Andrews (2016) is an attempt to express the basic ideas of NSM in a form that might make some sense to people trained in formal semantics.

[14]NSM accounts (called 'explications') of the causative tend to include 'after this' after 'because of this', but I suggest that this is better treated as an inference licensed by a law that effects come after their causes (at least in the local timeline of an individual, ignoring scenarios from science fiction).

6 Serial Verb Constructions

Our last type is SERIAL VERB CONSTRUCTIONS (SVCs). Perhaps the first issue that arises with these is the rather controversial one of defining them. I will here roughly follow Aikhenvald (2006b) in defining them as structures where:

(45) a. There is some evidence of at least partial clause union.

  b. There is no explicit marking of subordination or coordination.

(45a) is an indication that SVCs are complex predicates or at least control structures, while (45b) has no clear status in a formal syntactic analysis of these constructions, but is plausibly very important for their functional characteristics and tendencies in diachronic development, since they do not provide much in the way of overt cues as to what their syntactic structure is.

   SVCs have not received much attention in the LFG literature, the main exceptions being the treatment of Tariana in Andrews & Manning (1999),[15] the treatment of Dagaare and Akan (with observations about other languages) in Bodomo (1997), and the recent analysis of Barayin in Lovestrand (2018). In this section, I will consider these three languages, and then take a brief look at Misumalpan causatives, treated as complex predicates by Andrews & Manning (1999), but argued to be something different in Andrews (2018a).

6.1 Tariana

Tariana SVCs[16] consist of a sequence of verbs inflected identically for person, with some further grammatical markers appearing once, in a number of positions. A fundamental division in these constructions is between the 'symmetric' SVCs, which look and act like coordinated verbs (but without any overt coordinator), and the 'asymmetric' ones, which are diverse, but many of them are semantically similar to Romance complex predicate structures, and have some capacity to occur embedded in each other. Andrews & Manning (1999) took this as a basis for analysing the two with similar feature-structures, but differing in the c-structures. A particularly striking piece of evidence for the monoclausality of these constructions is the phenomenon of 'concordant dependent inflection', whereby the caused verb shows subject agreement with the causer, presumably on the basis that this is the subject of the entire construction, rather than the causee agent, its own agent. This is illustrated in the following example:

---

[15]With an update to the framework of Andrews (2018b) in Andrews (2018a).
[16]For a descriptive account see Aikhenvald (2003, 2006a).

(46)   Tariana (elicited, Aikhenvald p.c.)
       nu-na=tha   nu-ra   nu-sata dineiru
       1SG-want=FRUSTR 1SG-order 1SG-ask money
       'I want to order (him) to ask for money.'
       (Modal on causative)

In the Andrews and Manning analysis, the light verb shares both the f-projection and the a-projection (roughly equivalent to f-structure and argument structure) with the c-structure mother, while its semantic complement shares only the f-structure, and is introduced into the a-structure as the value of an attribute ARG. In the later version of Andrews (2018a), the light verb has ↑=↓, while the main verb is introduced as a set member.

The various other kinds of analyses we considered would work for Tariana as well as they do for their original subject material, and there would be no need to involve a morphological projection to control the government of the forms of the semantic complement verbs by the light verbs.

6.2 Dagaare and Akan

Most Tariana SVCs can be treated as either syntactically coordinate structures (symmetric SVCs) or as an expression of Romance-type restructuring predicates (asymmetric SVCs), with a different technique of morphological expression. But Dagaare and Akan, two major languages of Ghana discussed by Bodomo (1996, 1997), have additional SVC constructions that do not submit to such analyses, and require something different. These are also considerably more similar than Tariana SVCs to the constructions commonly called SVCs in many other languages.

Bodomo (1997: 80–84) discusses a number of types. One of their characteristics is that in some of the cases, such as action-causation, no plausible suspect for being the 'light verb' can be identified:[17]

(47)   Dagaare
       a. Benefactive:
           o   da tong   la   toma   ko ma
           3SG PST work(V) FACT work(M) give me
           'S/he worked for me.'
       b. Action-Causation ('Causative'):
           o   da daa ma la   lɔɔ
           3SG PST push me FACT cause-fall
           'S/he pushed me down.'

---

[17] *la* is the 'Factive' particle in Dagaare, marking positive affirmations (Bodomo 1997: 65–69).

c. Inceptive *take* serialization:

o de la gan ko ma

3sg take fact book give me

'S/he gave me a book.'

d. Instrumental *take* serialization:

o da de la sɔɔ ngmaa a nɛb ɔɔ

3sg pst take fact knife cut def meat chew

'S/he cut the meat with a knife and ate it.'

e. Deictic (Directional/Associated Motion)

o da zo wa-ɛ la

3sg pst run come.prf fact

'S/he ran here/S/he came by running.'

At the level of c-structure, Bodomo proposes flat binary VP structures without specifying what would happen in examples such as (47d) above that might involve nesting, as I suggest below:

(48)
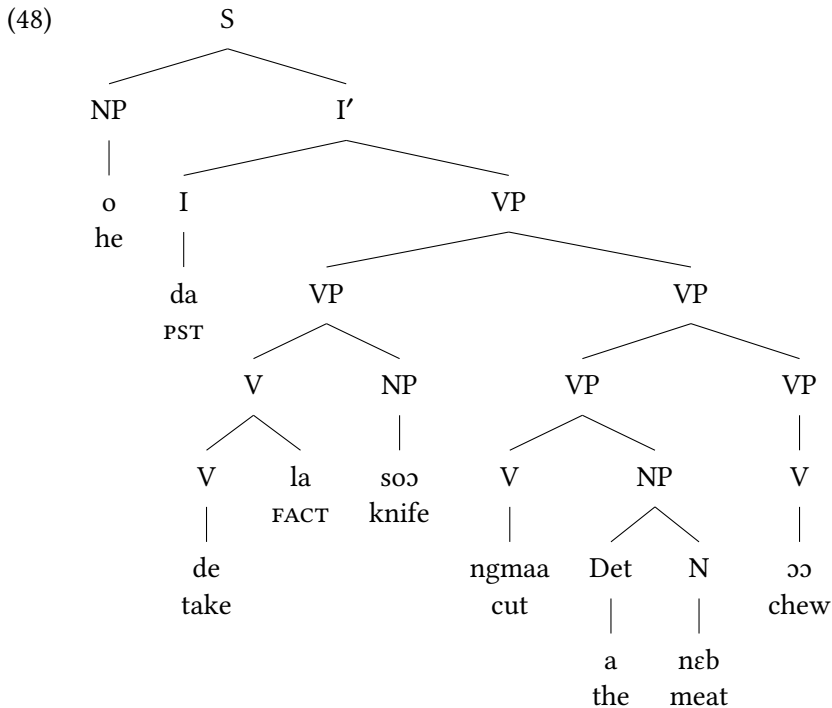
My proposed account is that the upper pair of VP's constitute instrumental serialization, while the pair embedded under the rightmost member of the upper

are a collocation (a type not listed in (47) meaning 'eat'). Bodomo is however not clear about this, and a flat structure of three VPs sitting under one would be consistent with the text.

For the f-structure analysis, he follows Alsina, with the modification that since it is frequently impossible to regard one of the verbs as light and another as heavy, the two PRED-values are integrated into a 'PREDCHAIN' value in a manner that can be formalized in various ways (no specific one is chosen).

The semantics is treated with a 'cell theory' that is part of the 'Sign Model' of Hellan & Dimitrova-Vulchanova (1996), which does not appear to have ever been published, but seems broadly compatible with many recent ideas about the aspectual constitution of verb meanings. Events have a variety of properties, including an obligatory Core component, and optional Initiation and Termination components. Although there is no published account of the entire theory, the approach seems broadly consistent with that taken by Butt, and could plausibly be implemented by unification, or in the Davidsonian Event semantics used in the Kibort-Findlay Mapping theory (Asudeh et al. 2014, Findlay 2016).

In the causation-action construction, for example, the first verb specifies a 'action' component (what is done), the second a 'causation' component (what happens because of what is done). If we take the general approach to complex predicates proposed in Andrews (2018b), we could have a VP expanding to two VPs, each producing an element of a set, with a 'syncategoremantic' meaning constructor (one introduced by the c-structure rules) setting these up as the action and causation subevents of the main event:

(49) VP $\longrightarrow$ VP   VP
$\qquad\qquad\qquad\quad$ ↓∈↑   ↓∈↑
$\qquad\qquad\qquad\quad$ ↓=%F   ↓=%G

$\lambda e.\exists e_1(Action(e, e_1)) \wedge \exists e_2(Result(e, e_2)) :$
$((\%F_\sigma \text{ EV}) \multimap \%F_\sigma) \multimap ((\%G_\sigma \text{ EV}) \multimap \%G_\sigma) \multimap (\uparrow_\sigma \text{ EV}) \multimap \uparrow_\sigma$

This takes two predicates over events, and creates a single predicate that is true of an event if it contains action and result subevents. This is only an initial suggestion of how a worked out analysis might proceed, but I think it demonstrates that Bodomo's work provides an excellent basis to start out from.
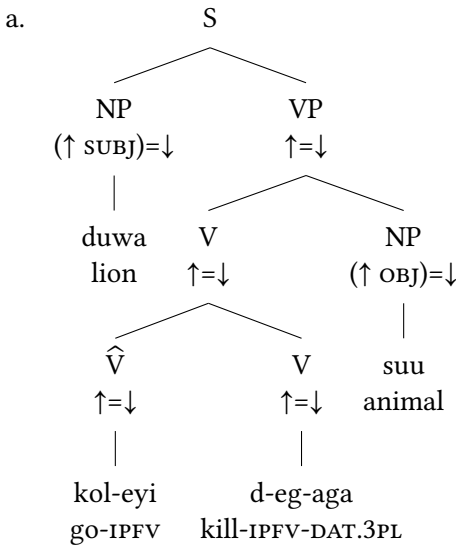
6.3 Barayin

Barayin SVCs are analysed in considerable detail by Lovestrand (2018), using a combination of a very carefully worked out major revision of the LFG version of X-bar theory from Bresnan et al. (2016), and a development of the 'connected

s-structure' (semantic structures) pioneered in Asudeh et al. (2014) and Findlay (2016). The latter allows serial verbs to make various contributions to meaning, sufficient for the range of these structures in Barayin, without needing to build apparent complement structures as appears to happen in Romance, and, to a lesser extent, Tariana.
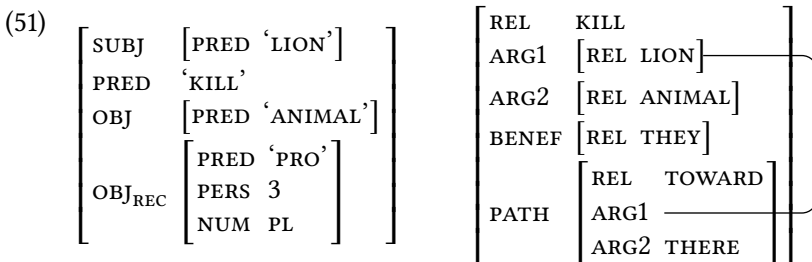
The apparent syntactic form of the constructions is argued to be a 'nonprojecting word' (Toivonen 2001) left-adjoined to the V, a typical example being:

(50) Barayin

a.

```
                      S
            ┌─────────┴─────────┐
           NP                  VP
      (↑ SUBJ)=↓              ↑=↓
           │            ┌──────┴──────┐
         duwa           V            NP
         lion          ↑=↓        (↑ OBJ)=↓
                 ┌──────┴──────┐       │
                 V̂            V       suu
                ↑=↓          ↑=↓      animal
                 │            │
              kol-eyi      d-eg-aga
              go-IPFV    kill-IPFV-DAT.3PL
```

b. duwa kol-eyi   d-eg-aga   suu
   lion go-IPFV kill-IPFV-DAT.3PL animal

   'The lion went and killed an animal for them.'

The f- and s-structures of this example would be (not explicitly provided by Lovestrand, but evident from other examples and the annotations for SV *kol-o* (Lovestrand 2018: 221):

(51)
$$
\begin{bmatrix}
\text{SUBJ} & \begin{bmatrix}\text{PRED 'LION'}\end{bmatrix} \\
\text{PRED} & \text{'KILL'} \\
\text{OBJ} & \begin{bmatrix}\text{PRED 'ANIMAL'}\end{bmatrix} \\
\text{OBJ}_{\text{REC}} & \begin{bmatrix}\text{PRED 'PRO'} \\ \text{PERS 3} \\ \text{NUM PL}\end{bmatrix}
\end{bmatrix}
\qquad
\begin{bmatrix}
\text{REL} & \text{KILL} \\
\text{ARG1} & \begin{bmatrix}\text{REL LION}\end{bmatrix} \\
\text{ARG2} & \begin{bmatrix}\text{REL ANIMAL}\end{bmatrix} \\
\text{BENEF} & \begin{bmatrix}\text{REL THEY}\end{bmatrix} \\
\text{PATH} & \begin{bmatrix}\text{REL TOWARD} \\ \text{ARG1} \\ \text{ARG2 THERE}\end{bmatrix}
\end{bmatrix}
$$

In the semantics of the SV (first member of the SVC construction), there is also a not-fully-formalized provision that the motion along the path can either be simultaneous with or previous to the action of the main verb.

The potential problem of PRED-clash is averted by the proposal that the SVs have no PRED-feature, which is workable because there are only a limited number of SVs, producing the following kinds of constructions, each discussed by Lovestrand:

(52)   a. Deictic (Associated Motion with deictic motion verbs such as *kol-o* 'go' as in the examples above).
     b. Manner (*gor-o* 'run' or another manner of motion verb).
     c. Stand (*juk-o* 'stand', incohative or indicating change in the narrative).
     d. Take (*pid-o* 'take', indicating the agent grasping the patient).

Even if the inventory of possible SVs turned out to be at least somewhat open, that fact that there does not appear to be any recursion in the construction means that the extra PRED could be managed somehow, perhaps by a variant of the 'EP' proposal of Lovestrand (2020). A further unique and interesting feature of this analysis is that it has been fully implemented in the XLE system. The use of the connected s-structures has significant resemblances to both Butt's use of Jackendoff's Lexical-Conceptual Structures, and Bodomo's use of the unfinished Cell Theory. This is clearly a promising area for future work.

6.4 Misumalpan

The last case I will consider is some so-called serial verb constructions in the Misumalpan languages Miskitu and Sumu, presented as a kind of complex predicate in Andrews & Manning (1999). The constructions at issue have the form of consecutive clauses, expressing a chain of events, but they are interpreted in a range of ways similar to more standard SVC structures with no marking of the verbs (Salamanca 1988). This range of interpretations can be said to justify considering them as SVC constructions regardless of whether we consider their marking pattern to be in accord with (45) or not.

A fairly typical example is:

(53)   Misumalpan (Hale 1991: 26, Andrews & Manning 1999: 93)
witin ai   pruk-an   kahw-ras
he   me hit-OBV.ACTUAL.3 fall-NEG
'He hit me and I did not fall down.' (Consecutive Reading)
'He didn't knock me down.' (Causative SVC reading)

The suffix *-an* above is the 'obviative actual', obviative indicating that the subject of the clause whose verb has the marking is different from that of the next, 'actual' being a tense. In the consecutive reading, the clauses indicate different events that apply in sequence, and the negative affix applies to the second event. In the causative SVC reading, the first clause is the event that causes the second to happen, and the negative affix applies to the entire, complex event.

Andrews & Manning (1999) analyse these constructions as involving a rather unusual pattern of attribute sharing, while Andrews (2018a) argues that no unusual syntactic structures are required, and that the interpretations can be obtained by the use of glue semantics.

7 Conclusion

LFG analyses of complex predicates have been concerned primarily with the symmetrical sharing of attributes between different levels, and with the issues of combining the argument structures of multiple verbs into a single one that is associated with one set of grammatical relations. A remaining challenge is a theme that is more dominant in Minimalist analyses, which is the involvement of 'reduced projections', where some of the verbs do not appear to have all of the functional projections that an independent main verb would have (Grano 2015, Wurmbrand 2017). Negation, for example, is frequently impossible for the lower component of a complex predicate (as in Romance), but this is not the case in Urdu (Butt 1995: 49). There is clearly more to be done in this area, perhaps by an elaboration of functional projections in c-structure, of types in glue semantics, or a combination of both.

Acknowledgements

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