

Abstract

This paper discusses ergative case assignment in Hindi and its interaction with aspectual verb complexes or complex predicate constructions. It is shown that ergative case is assigned by the last head in the aspectual verb complex and that ergative case on the subject of intransitive verbs denoting bodily-functions is associated with a counter-to-expectation meaning. It is then shown that aspect complex predicates in Hindi involve two distinct syntactic structures, which have similar semantics. While one syntactic structure involves argument composition, the other involves a head-modifier structure. It is argued that the existence of two structures favor approaches to the interface between syntax and semantics which do not require a uniform isomorphism between the semantics and syntax of aspect.

1 Introduction

Determining variation between languages allows linguists to hypothesize about how much natural languages can actually vary. The syntax of aspect is a fertile ground for comparing approaches that explain variation in the interface between syntax and semantics, given the varied surface realization of aspectual functors (e.g., verbal affixes, auxiliaries, ordinary verbs, see Bybee et al. (1994) for details). Koenig and Muansuwan (2005) compared two class of hypotheses regarding the mapping between aspectual functors and syntactic structure. One class of hypotheses, dubbed the UNIFORMITY HYPOTHESIS, holds that at a particular level of representation, one can establish an almost isomorphic, cross-linguistically uniform, correspondence between the syntax and semantics of aspect. This is best exemplified by Cinque (1999), who posits that the geometry of verbal functional projections (head-complement relations, in particular) corresponds for the most part to the geometry of semantic functor-argument relations. Another class of hypotheses, dubbed REPRESENTATIONAL MODULARITY, holds that syntactic and semantic structures are independent levels of representations related by correspondence rules and constraints which do not require a one-to-one relation either within or across languages. As a consequence, Koenig and Muansuwan (2005) argue, the correspondence between the syntax and semantics of aspect is weaker and cross-linguistic variation in the surface expression of aspectual distinctions might reflect the true extent of the non-correspondence between syntactic and semantic structure. Koenig and Muansuwan present data from Thai that support the Representational Modularity hypotheses. In this paper, we present corroborating data from Hindi which show that the same (or, at least, identical in all relevant respects) aspectual notions can be expressed in Hindi in two distinct ways. Aspect markers can be verbs that take main verbs as complements to form complex predicates or they can be verbs that modify main verbs. Although Hindi aspect markers have been described in the previous literature (see (Hook, 1975; Kachru, 1980; Butt, 1994)), a critical interaction between the order of verbs in the complex predicate structure and case assignment and verb-subject agreement has not. This interaction

provides compelling evidence, we suggest, that the syntactic structures involved in these two kinds of aspectual complex predicates are truly distinct and cannot be reduced to the same syntactic structure “deep down”. Hindi thus parallels the split in the syntax of aspect that Koenig and Muansuwan (2005) argue exists in Thai.

2 Hindi Aspectual Complex Predicates

In Hindi, aspectual complex predicates or verb complexes (we will use the two expressions interchangeably) are formed by the combination of a verb that denotes a situation-type (hereafter, the MAIN verb) and a finite LIGHT verb, an aspectual functor which semantically modifies the main verb’s meaning. Light verbs are homophonous with form-identical lexical verbs that do not carry aspectual meanings. We use the term *light* to suggest that their meaning is more abstract than their non-aspectual counterpart meanings. A list of the most common Hindi light verbs is presented in Table 1. The combination of the main verb and light verb involve two types of structures. In what is standard for a head-final language, the non-finite main verb can be followed by a finite light verb (1) to form a *standard aspectual complex predicate construction*. The order of the main and light verbs can also be reversed to form a *reverse aspectual complex predicate construction*, where the finite light verb precedes the non-finite main verb (2).¹

- (1) *Ram=ne Leela=ko tamaachaa maar di-yaa*
 Ram=Erg Leela=Dat slap.M.Sg hit:MV give-M.Sg:LV
 ‘Ram slapped Leela (hit Leela with a slap).’
- (2) *Ram=ne Leela=ko tamaachaa de maar-aa*
 Ram=Erg Leela slap.M.Sg give:LV hit-M.Sg:MV
 ‘Ram slapped Leela (hit Leela with a slap).’

Note that the inflection is carried by the light verb in the *standard*, but by the main verb in the *reverse* aspectual complex predicate construction (hereafter standard and reverse CP construction). As we will show in more detail below, the two constructions differ in more than just linear ordering. More generally, we will argue that the two constructions differ in terms of which verb is the construction’s head: the light verb in the standard CP construction, and the main verb in the reverse CP construction.

¹The gloss used for a light verb refers to its meaning as a full verb. Abbreviations are as follows: MV = main verb, LV = light verb, F = feminine, M = masculine; Erg = ergative, Nom = nominative, Gen = genitive, Dat = dative, Acc = accusative, Inst = instrumental, Loc = locative; Inf = infinitive; Pfv = perfective, Impfv = imperfective; Pres = present; Pron = pronoun; Sg = singular, Pl = plural. The marker ‘-’ indicates a morpheme boundary, ‘=’ separates a clitic from a lexical item. Following ‘:’ we indicate whether the verb is a main verb or a light verb. Most examples in this paper were created by the author and cross-verified by 3 native speakers from northern India.

Transitive light verbs	Intransitive light verbs
<i>baith</i> (sit)	<i>aa</i> (come)
<i>Daal</i> (put)	<i>jaa</i> (go)
<i>de</i> (give)	<i>paD</i> (fall)
<i>le</i> (take)	<i>nikal</i> (leave)
<i>maar</i> (hit)	<i>uth</i> (rise)
<i>nikaal</i> (remove)	

Table 1: Aspectual Light Verbs

3 Constituent Structure of Aspectual Complex Predicates

This section analyzes the constituent structure of the standard and reverse CP constructions. We show that the two verbs form a constituent in both constructions. They differ in that only the standard CP construction allows certain particles to intervene between the two verbs and that the range of auxiliaries that can follow the light verb-main verb combination is more restricted in the reverse CP construction.

Butt (1994) shows that Hindi aspectual complex predicate constructions are monoclausal and that, furthermore, the main and light verbs form a constituent. We briefly summarize Butt’s arguments here (expanding her arguments when needed to the reverse construction, which Butt does not discuss). For instance, although the ordering of subjects and objects is fairly free in Hindi, the main verb and the light verb in an aspectual complex predicate must be reordered with other clausal constituents *as a unit*, as demonstrated for the reverse construction in (3) (see But, op.cit. for similar data on the standard CP construction).

- (3) a. [*Leela=ne*] [*Shyam=ko*] [*ciTThii*] [*maar*
[*Leela.F=Erg*] [*Shyam.M=Dat*] [*letter.F.Sg*] [*hit:LV*
likh-ii]
write-Perfv.F.Sg:MV]
‘Leela wrote a letter to Shyam.’
- b. [*Shyam=ko*] [*Leela=ne*] [*ciTThii*] [*maar likhii*]
c. [*Leela=ne*] [*maar likhii*] [*ciTThii*] [*Shyam=ko*]
d. [*maar likhii*] [*Leela=ne*] [*Shyam=ko*] [*ciTThii*]
e. [*maar likhii*] [*ciTThii*] [*Shyam=ko*] [*Leela=ne*]
f. [*ciTThii*] [*maar likhii*] [*Leela=ne*] [*Shyam=ko*]
g. [*ciTThii*] [*maar likhii*] [*Shyam=ko*] [*Leela=ne*]
h. * [*ciTThii*] [*likhii*] [*Shyam=ko*] [*Leela=ne*] [*maar*]
i. * [*ciTThii*] [*likhii*] [*Shyam=ko*] [*maar*] [*Leela=ne*]

The scrambling possibilities in (3a)-(3g) show that the light verb and the main verb *can* be reordered with other clausal constituents as a unit, and the ungrammaticality of (3h) and (3i) shows that they *must* be re-ordered with other clausal constituents as a unit. The data in (3) indicates that the main verb and the light verb in a Hindi CP construction behave as a constituent with respect to scrambling.

Butt (op.cit.) presents two additional kinds of data that suggest that the combination of a main verb and a light verb behaves a single predicate. First, the complement of the light verb cannot be coordinated with main verbs in the standard CP construction, as shown in (4a). Similarly, coordinated main verbs cannot follow light verbs in the reverse CP construction (see (4b)).

- (4) a. **Leela=ne Shyam=ko ciTThii likh aur de*
 Leela.F=Erg Shyam.M=Dat letter.F.Sg write:MV and give:MV
maar-ii
 hit-Perfv.F.Sg:LV
 ‘Leela wrote and gave a letter to Mohan.’
 b. **Leela=ne Shyam=ko ciTThii maar*
 Leela.F=Erg Shyam.M=Dat letter.F.Sg hit:LV
likh-ii aur di-i
 write.Perfv-F.Sg:MV and give.Perfv.F.Sg:MV
 ‘Leela wrote and gave a letter to Mohan.’

The impossibility of coordinating main verbs is not specific to the aspectual CP construction (standard or reverse). It also applies to main verbs (or light verbs) that are followed by (passive, imperfective, or tense) auxiliaries.²

- (5) a. *nadyaa haar banaa rah-ii*
 Nadya.F=Nom necklace.M=Nom make Stat-Perf.F.Sg
t^h-ii aur us-ii vakt pahin rah-ii
 be.Past.F.Sg and that-Emph time wear Stat-Perf.F.Sg
t_h-ii
 be.Past.F.Sg
 ‘Nadya was making a necklace and wearing it at the same time.’
 b. **nadyaa haar [[banaa aur pahin]*
 Nadya.F=Nom necklace.M=Nom make and wear
rah-ii t^h-ii]
 Stat-Perf.F.Sg be.Past.F.Sg
 ‘Nadya was making a necklace and wearing it at the same time.’
 c. **nadyaa [haar [banaa aur haar*
 Nadya.F=Nom necklace.M=Nom make and necklace.M=Nom
pahin] rah-ii t^h-ii]
 wear Stat-Perf.F.Sg be.Past.F.Sg

²Auxiliaries and light verbs show distinct syntactic behaviors with regard to case marking, word order, reduplication, and topicalization.

‘Nadya was making a necklace and wearing it at the same time.’

Second, temporal adverbial modifiers such as *kal* (yesterday/tomorrow) can appear in various positions to the left of the reverse CP, as indicated in (6a) and (6b), but not between the main verb and the light verb (6c). Butt (1994:99) provides examples that show that the same to be true of the standard CP construction.

- (6) a. *Leela=ne kal saaraa din gappō mein [maar*
 Leela.F=Erg yesterday all day.M chats.M.Pl in hit:LV
 bitaay-aa]
 spend-Perfv.M.Sg:MV
 ‘Leela spent all day yesterday chatting.’
 b. *Leela=ne saaraa din gappō mein kal [maar bitaay-aa]*
 c. **Leela=ne saaraa din gappō mein [maar kal bitaay-aa]*

The fact that main verbs cannot be coordinated when precede or followed by a light verb and no adverbial modifiers can intervene between the light and main verbs is analyzed by Butt (1994) as showing that the two verbs behave as a single predicate. We would rather analyze it as meaning that the combination of a light and main verb is *lite* in the sense of Abeillé and Godard (2002). For reasons of space, we simply outline our analysis of the coordination and adverbial modification data, here:

- Adverbial modifiers like *kal* ‘yesterday/tomorrow’ are non-*lite* and the combination of a *lite* and non-*lite* constituent is non-*lite*;
- Coordination of *lite* constituents is non-*lite* in Hindi;
- Some phrase-structure constructions in Hindi, in particular the two informally stated in (7) and (8) are sensitive to the “liteness” of their daughters.

$$(7) \quad S \rightarrow XP^* \left[\begin{smallmatrix} \text{WEIGHT} & \text{non-lite} \end{smallmatrix} \right] V \left[\begin{smallmatrix} \text{WEIGHT} & \text{lite} \end{smallmatrix} \right]$$

$$(8) \quad V \left[\begin{smallmatrix} \text{WEIGHT} & \text{lite} \\ \text{HEAD} & \boxed{1} \end{smallmatrix} \right] \rightarrow V^* \left[\begin{smallmatrix} \text{WEIGHT} & \text{lite} \end{smallmatrix} \right] V \left[\begin{smallmatrix} \text{WEIGHT} & \text{lite} \\ \text{HEAD} & \boxed{1} \end{smallmatrix} \right]$$

The phrase-structure construction informally stated in (7) is almost identical to the constituency assumed by Butt (op. cit.) for Hindi clauses, namely a string of phrases followed by a verbal constituent that consists of a sequence of verbs (main verb followed, optionally, by a *lite* verb and a sequence of auxiliaries). We merely add constraints that require the XPs to be non-*lite* and verbal constituent to be *lite*. The construction in (8), in turn, licenses a sequence of *lite* verbs construct to consist of a string of *lite* verbs. The phrase-structure constructions in (7) and (8) together with the first two assumptions we listed above explain the restrictions on coordination and temporal modification presented in Butt (op.cit.) which we just

discussed. Coordination and temporal modification make the light verb-main verb combination or the main verb(s) non-*lite*, and therefore unable to participate in the sequence of *lite* verbs licensed by construction (8).

Although the data presented so far suggest that the main and light verb form a *lite* constituent, an alternative hypothesis is that the two verbs combine in the morphology and form some kind of compound. Butt (1994) provides evidence against that hypothesis for the standard CP construction. Discourse clitics such as *hii* (exclusive focus particle ‘only’) and *bhii* (inclusive focus particle ‘also’) can be inserted between the verbs in a standard complex predicate construction (pp. 91-93). In the standard CP, in order to take narrow scope over the verb, the emphatic particle must appear between the main verb and the light verb (9b). It cannot appear after the verbal complex, either before (9c) or after an auxiliary (9d).

- (9) a. *us=ne ciTThii bhii bhej di-yaa*
 Pron.3.Sg=Erg letter.F.Sg also send:MV give-Perfv.M.Sg:LV
 (*t^h-aa*)
 (be.Past.3.Sg)
 ‘He sent a letter also (along with other things).’
 b. *us=ne ciTThii bhej bhii di-yaa*
 Pron.3.Sg=Erg letter.F.Sg send:MV also give-Perfv.M.Sg:LV
 (*t^h-aa*)
 (be.Past.3.Sg)
 ‘He sent a letter (in addition to doing other things).’
 c. **us=ne ciTThii bhej di-yaa bhii* (*t^h-aa*)
 d. **us=ne ciTThii bhej di-yaa* (*t^h-aa*) ***bhii***

The same pattern that Butt observed for the focus particle *bhii* holds true of a particular negative question construction exemplified below. In the standard CP construction, *wh-* + *neg* marker (‘why not’) can appear between the main and light verb (10a) but not at the end of the clause (10b).

- (10) a. *tum apne beimaan naukar=ko nikaal kyō nahii*
 you self rogue servant=Dat remove:MV why neg
de-te?
 give-Impf.M.Sg:LV
 ‘Why don’t you remove your rogue servant?’ (Nespital 1997:2)
 b. **tum apne beimaan naukar=ko nikaal de-te kyō nahii?*

The restriction on focus particles in the reverse CP is different. Here, *bhii* can only precede the complex predicate (11a) but cannot be inserted between the two verbs (11b) or, as indicated previously, appear at the end of the clause.

- (11) a. *us=ne ciTThii bhii de bhej-aa*
 Pron.3.Sg=Erg letter.F.Sg also give:LV send-Perfv.M.Sg:MV
 ‘He also sent off a letter (in addition to doing other things).’
 b. **us=ne ciTThii de bhii bhej-aa*

Since the first predicate in the reverse construction is a light verb, the ungrammaticality of (11) may be semantic, namely the light verb cannot be the scope of the focus particle. Therefore, the fact that *bhii* cannot appear between the two verbs in the reverse construction does not provide evidence for or against the claim that the reverse CP construction involves some kind of compounding.

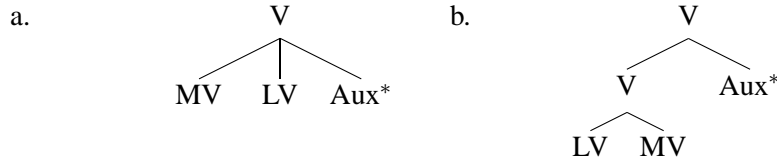
Finally, while the standard construction can appear with the full range of Hindi auxiliaries (12), the reverse construction is more restricted. Neither the progressive nor the passive auxiliary can appear in a reverse construction, as shown in (13a) and (13b) respectively.³

- (12) *Shyam=ka ghar beech di-yaa jaa*
 Shyam.M=Gen house.M.Sg sell:MV give-M.Sg:LV go
rah-aa hai
 stay-Imperf.M.Sg be.Pres.3.Sg
 ‘Shyam’s house is being sold off.’
- (13) a. **Shyam kitaab jor=se de phekh*
 Shyam.M book.M.Sg force=Inst give:LV throw:MV
rah-aa th-aa
stay-Imperf.M.Sg be.Past-M.3.Sg
 *‘Shyam threw the book forcefully.’
 b. **Kitaab jor=se de phekh-aa ga-yaa*
 book.M.Sg force=Inst give:LV throw:MV go-M.Sg
th-aa
 be.Past-M.3.Sg
 ‘The book was thrown forcefully.’

To summarize, constituency tests show that the main and light verbs in the standard and the reverse CP construction form a single V-V constituent (with or without following auxiliaries). The two structures differ in that the reverse construction does not allow the insertion of any element between the two verbs and does not co-occur with the passive or progressive auxiliaries. The two trees below (informally) represent the constituent structure we will hereafter assume for the standard and reverse CP constructs, respectively.

³We currently have no cogent explanation for the fact that the reverse complex predicate construction cannot be followed by the passive or the passive + progressive auxiliaries.

(14)



4 Case-marking and subject-verb agreement

The previous section has shown that both the standard and the reverse complex predicate constructions form a V-V constituent. We now present case assignment and subject-verb agreement data that is critical to comparing the Uniformity and Representation Modularity hypotheses. We suggest, based on the government of subject case assignment, that the light verb is the head of that constituent in the standard CP construction (at least when no auxiliary follows) and the main verb is the head of that constituent in the reverse CP construction. We show that the same case assignment constraints that are operative for simple predicate constructions can model case assignment facts for the standard and the reverse construction as well, *but only if* the light verb is the head of the V-V constituent in the standard CP construction, and the main verb in the reverse CP construction.

In this paper, we focus on the alternation between the unmarked and the ergative case on the subject.⁴ Hindi is generally considered to have a *split-ergative* case system; the ergative case is aspectually driven. Hindi ergative case can also be assigned to the subject of a semantically defined class of intransitive verbs (Butt and King, 2005; De Hoop and Narasimhan, 2008).

Ergative subject case assignment in *transitive* or *ditransitive* verbs is straightforward. When the verb is in the perfective aspect (marked by the suffix *-(y)aa/ii*), their subjects bear ergative case marking, as illustrated in example (15).⁵ In contrast, when the verb is imperfective i.e. either in the habitual aspect (16a) or the future (16b), the subject cannot bear ergative case and is unmarked.

- (15) *Shyam=ne ghar=ko banaa-yaa*
Shyam=Erg house=Dat make-Perfv.M.Sg
'Shyam made the house.'

- (16) a. *Shyam ghar=ko banaa-taa hai*
Shyam house=Dat make-Impfv be
'Shyam makes the house.'

⁴The unmarked case in Hindi is phonologically null and has been labeled as Nominative by some scholars (Kachru, 1980; Butt, 1994; Butt and King, 2005). However, both proto-agent and proto-patient roles can be unmarked for case and we therefore call it *unmarked*.

⁵In infinitive clauses, the subject is typically assigned dative case, but see Butt and King (2005) for data from the Lahori dialect of Urdu where the subject of infinitive clauses alternates between the ergative and dative case.

- b. *Shyam ghar=ko banaa-yeg-aa*
 Shyam house=Dat make-Fut-M.Sg
 ‘Shyam will make the house.’

As Kachru (1980:52) points out, volitionality does not play a role in the assignment of ergative case to the subject of transitive verbs in Hindi. Non-volitional verbs such as *bhool* (forget), *kho* (lose), or *jaan* (know) can also select for ergative subjects. Only the verb’s aspect marking (perfective) matters.

The assignment of ergative case to the subjects of *intransitive* verbs is more complex. The subject of most intransitive verbs are unmarked for case, as shown by the verb *fisal* (slip) (see (17)); even verbs like *bhaag* (run), *uchal* (jump) or *baith* (sit), where the agent must employ some volition, take only an unmarked and not an ergative subject, as (18) shows. But, some intransitive verbs (called intransitive unergative verbs by Butt and King (2005)) can select either an ergative or an unmarked subject, as (19) illustrates.

- (17) *Shyam(*=ne) fisal-aa*
 Shyam.M(=Erg) slip-M.Sg
 ‘Shyam slipped.’
- (18) *Shyam(*=ne) bhaag-aa*
 Shyam.M(=Erg) run-Perfv.M.Sg
 ‘Shyam ran.’
- (19) *Shyam(=ne) khaans-aa*
 Shyam(=Erg) cough-Perfv.M.Sg
 ‘Shyam coughed (without meaning to).’

Intransitive verbs that can optionally select for an ergative subject are primarily bodily function verbs (including sound emission) verbs such as *khaas* (cough), *chiikh* (sneeze), *bhauk* (bark), *ciik* (scream), *cillaa* (yell), *muut* (urinate), and *thuuk* (spit) (De Hoop and Narasimhan, 2008). But the intransitive verb *nahaa* ‘bathe’, one of the few Hindi verbs denoting grooming actions (most other grooming actions are expressed via a N+light verb complex predicate), can also take ergative subjects as the attested examples in (20)-(21) show.

- (20) *kissi=ne nahaa-yaa nahii th-aa*
 any=Erg bathe-M.Sg neg be.Past-3.Sg
 ‘Nobody had bathed.’
- (21) *ghar aa-kar nal=ke niichee saabun=se malmal-kar*
 home come-do tap=Gen below soap=Inst scrub.scrub-do
ek-ek=ne nahaa-yaa
 one-one=Erg bathe-M.Sg
 ‘Upon coming home, each one bathed under the tap by scrubbing (hard) with soap.’

One frequent analysis of ergative case assignment to intransitive verbs is that ergative case indicates conscious control or choice that the subject's referent exerts over the action (see Mohanan, 1994; Butt and King, 2002). Under this analysis, ergative case on the subject of intransitive verbs indicates that the action is within the internal control of the subject's referent. Several attested corpus examples (cross-checked with consultants) suggest that this analysis is incorrect. Consider the following example, where it is very doubtful that the dog made a conscious choice not to bark.

- (22) *court mein bahut log moujuud th-ee phir bhii kiisii par*
 court in many people present be-Past.3.Pl still any on
bhii kuttee=ne bhauunk-aa tak nahii
 also **dog=Erg** bark-M.Sg even neg
 'Many people were present in court but still the dog did not even bark at anyone.'

Example (22) and similar corpus examples suggest an alternative hypothesis, which for lack of space we state here without further justification. Ergative marking on intransitive verbs describing bodily functions (including sound emission verbs) indicates that the property expressed by the sentence minus its subject runs counter to expectations given the subject's denotation. For example, it is unexpected for a dog not to bark in the situational context of (22).

The above facts show that the assignment of ergative case to the subject can be captured by the following constraints:

- (23) *Default Unmarked Constraint*: By default, the subject is unmarked.
 (24) *Transitive Perfective Constraint*: If the verb is transitive and perfective, then the subject is assigned ergative case.
 (25) *Contrary to Expectation Constraint*: If the verb is intransitive and perfective, denotes a bodily function, and the subject is assigned ergative case, then the action is unexpected given the actor.⁶

Let us now turn to case assignment in the CP constructions. As indicated previously, the same case assignment constraints that operate on single predicates can model the case assignment facts in the CP constructions. Previous research on the standard CP construction has argued that the light verb always assigns case to the subject (Butt, 1994): The subject must be ergative if the light verb is transitive, and nominative (unmarked in our terminology) if the light verb is intransitive. For instance, although the main verb *gaa* (sing) is transitive in both (26) and (27), the subject is only assigned ergative case in (26). This is because the light

⁶In Sinhala, another Indo-Aryan language, the selection of ergative case for the subjects of involuntary verbs is correlated with whether or not the event was supposed to be intentional Inman (1994). Also see Malchukov (2008) for similar data from unrelated languages.

verb *Daal* ‘put’ is transitive whereas the light verb *paD* ‘fall’ is intransitive. (The (in)transitivity of the light verb itself is an idiosyncratic property of light verbs that is a carry-over from their main verb usage, as, semantically, both *Daal* ‘put’ and *paD* ‘fall’ are (monadic) aspectual functors.) A similar pattern is illustrated in the contrast between (28) and (29) for the main verb *ciikh* (scream). The subject is unmarked if the light verb is intransitive (28) and is assigned ergative case if the light verb is transitive (29). Finally, note that among intransitive verbs, only verbs denoting bodily function can appear in the standard CP construction (a restriction we explain below). That the assignment of ergative case depends on the transitivity of the light verb in the standard CP construction is explained by the *Transitive Perfective Constraint*, provided the light verb governs case assignment in that construction.

- (26) *Ram=ne gaanaa gaa Daal-aa*
 Ram.M=Erg song sing:MV put-M.Sg:LV
 ‘Ram sang a song (had to).’

- (27) *Ram gaanaa gaa paD-aa*
 Ram.M song sing:MV fall-M.Sg:LV
 ‘Ram sang a song (without wanting to).’

- (28) *Ram ciikh paD-aa*
 Ram.M scream:MV fall-M.Sg:LV
 ‘Ram screamed suddenly.’

- (29) *Ram=ne ciikh Daal-aa*
 Ram=Erg scream:MV put-M.Sg:LV
 ‘Ram screamed violently.’

Different conditions on the assignment of ergative case apply to the reverse construction. Here it is properties of the main verb that governs assignment of ergative case. For instance, even though the light verb *de* ‘give’ is transitive, the subject in (30) is unmarked for case, because the main verb *bhaag* (run) is intransitive. Conversely, when the intransitive light verb *jaa* ‘go’ in (31) combines with the transitive main verb *bee ch* ‘sell’ to form a reverse CP construction, the complex predicate selects for an ergative subject. In both (30) and (31), then, the transitivity of the main verb, not the transitivity of the light verb, determines the assignment of ergative (vs. unmarked) case to the subject.⁷

- (30) *Ram de bhaag-aa*
 Ram.M give:LV run-M.Sg:MV
 ‘Ram ran (rapidly).’

⁷Note that bodily function verbs do not seem to be able to appear in the reverse CP construction; we have no explanation for this restriction.

- (31) *Ram=ne apnaa makaan jaa beech-aa*
 Ram.M=Erg self house go:LV sell-M.Sg:MV
 ‘Ram sold his house.’

The summary of case assignment patterns in Hindi aspectual CP constructions is as follows. While the transitivity of the light verb determines the presence of ergative case on the subject in the standard CP construction, it is the transitivity of the main verb that determines the presence of ergative case on the subject in the reverse CP construction. Case assignment in Hindi complex predicate constructions is therefore position-dependent, i.e. it is determined by the transitivity of the last verb of the complex predicate.

Subject-verb agreement data provide additional support for the claim that the main verb is the head of the construction in the reverse CP construction and the light verb in the standard CP construction. Hindi verbs agree with the highest unmarked argument in number and gender. In a single predicate construction, the finite verb agrees with the subject if it is unmarked (32a). If the subject is marked for case, the verb instead agrees with the object if it is unmarked, as shown in (32b) and (32c). When there is no unmarked argument in the clause, the verb receives a default masculine singular inflection (32d).

- (32) a. *Leela ghar aa-t-ii hai*
 Leela.F home.M.Sg come-Pres-F.Sg be.Pres.3.Sg
 ‘Leela comes home.’
 b. *Leela=ne ghar khariid-aa*
 Leela.F=Erg house.M.Sg buy-M.Sg
 ‘Leela bought a house.’
 c. *Leela=ne gaadii khariid-ii*
 Leela.F=Erg vehicle.F.Sg buy-F.Sg
 ‘Leela bought a vehicle.’
 d. *Leela=ne gaadii=ko beech-aa*
 Leela.F=Erg vehicle.F.Sg=Dat sell-M.Sg
 ‘Leela sold the vehicle.’

In the standard and reverse aspectual CP constructions as well, the finite verb agrees with the unmarked argument. As shown below, the light verb in the standard construction agrees with the subject if the subject is unmarked (33a) or with the object if the subject is overtly marked for case, as shown in (33b) and (33c).

- (33) a. *baaz parinde=par jhapaT gay-aa*
 eagle.M.Sg bird.M.Sg=Loc swoop:MV go-M.Sg:LV
 ‘The eagle swooped on the bird.’

- b. *Leela=ne Shyam=ko xat likh*
 Leela.F=Erg Shyam.M.Sg=Dat letter.**M.Sg** write:MV
maar-aa
 hit-**F.Sg**:LV
 ‘Leela wrote a letter to Shyam (hurriedly).’
- c. *Leela=ne Shyam=ko ciTThii likh maar-ii*
 Leela.F=Erg Shyam.M.Sg=Dat letter.**F.Sg** write:MV hit-**F.Sg**:LV
 ‘Leela wrote a letter to Shyam (hurriedly).’

The unmarked subject NP in (33a) is masculine and therefore, the light verb is assigned masculine gender *ga-yaa* (go) instead of feminine *ga-yii*. When the subject is marked for case, the verb *maar* (hit) agrees with the unmarked direct object in (33b) and (33c). In (33b), the finite verb is inflected for masculine gender since the direct object *xat* (letter) is masculine and similarly, the finite verb in (33c) is inflected for feminine gender since *ciTThii* (letter) is feminine.

In the reverse CP construction, it is the main verb that agrees with the highest unmarked argument, the subject in (34a) and the object in (34b) and (34c). In (34b), the main verb *likh* (write) is inflected for masculine gender since the highest unmarked NP, the object *xat* (letter), is masculine and similarly in (34c) *likh* is inflected for feminine gender since the object *ciTThii* (letter) is feminine. Overall, the examples in (33) and (34) show that the last verb in the complex predicate, irrespective of whether it is the light verb or the main verb, agrees with the subject.

- (34) a. *baaz parinde=par de jhapt-aa*
eagle.M.Sg bird.M.Sg=Loc give:LV swoop-**M.Sg**:MV
 ‘The eagle swooped on the bird (forcefully).’
- b. *Leela=ne Shyam=ko xat maar likh-aa*
 Leela.F=Erg Shyam.M=Dat letter.**M.Sg** hit:LV write-**M.Sg**:MV
 ‘Leela wrote a letter to Shyam (hurriedly).’
- c. *Leela=ne Shyam=ko citthii maar likh-ii*
 Leela.F=Erg Shyam.M=Dat letter.**F.Sg** hit:LV write-**F.Sg**:MV
 ‘Leela wrote a letter to Shyam (hurriedly).’

5 Hindi CP constructions and the Uniformity vs. Representational Modularity hypotheses

Let us now come back to the issue we started with, namely how uniformly isomorphic the semantic and syntactic structures of Hindi aspectual markers truly are. The properties of heads are a critical determinant of case across languages; similarly, agreement is another relation between heads and their dependents. Therefore, the fact that the assignment of ergative case or subject-verb agreement is determined by the properties of the main verb in the reverse CP construction and

the light verb in the standard CP construction indicate a difference in headedness between the two constructions. The light verb is the head in the standard CP construction and the main verb is the head in the reverse CP construction. It is generally assumed in the kind of syntactic approach Cinque proposes that agreement is a relation between heads and their specifiers and, in the Minimalist framework of Chomsky (1995), checking of case features is also predicated on the presence of a head-specifier relation. The difference in case assignment and agreement between the standard and reverse CP construction therefore strongly supports the hypothesis that the light verb is the head of the standard CP construction and the main verb is the head of the reverse CP construction. But such an hypothesis is hard to reconcile with the Uniformity Hypothesis, which posits that there is a uniform set of aspectual functional heads across languages and within languages. If the light verb is an aspectual functional head in the standard CP that takes the main verb as its complement⁺ (i.e., as a complement of a complement of a complement . . .), as Cinque's Uniformity Hypothesis would predict, it should also be an aspectual functional head that takes the main verb as its complement⁺ in the reverse CP. After all, both constructions express the same perfective semantics. There are some minor, hard to pin down subtle semantic differences between the standard and reverse CP constructions, but none that would affect the respective geometry of the relevant functional heads and main verbs.

At this point, we can imagine two possible solutions to this quandary. First, one could explore the possibility that, even though the light verb is still a functional aspectual head higher than the main verb in the reverse CP, it is the main verb that "counts" as a head for ergative case assignment and subject-verb agreement. We do not presently know of any independent motivation for such a claim (which, of course, could reflect our lack of imagination). Leftward movement of a verb, for example, does not typically affect the head status of the functional heads it moves to the left of. Second, one could treat the light verb-main verb combination in the reverse CP construction as being an instance of compounding (since we do not know of any marker than can appear between the light verb and the main verb in the reverse CP construction) and exempt compounding from the purview of the Uniformity Hypothesis. This line of inquiry seems even less appealing to us, as the relative productivity of the reverse CP construction makes it hard to see how one would distinguish the kind of compounding purportedly present in reverse CP constructs from true VV syntactic combinations. More importantly, exempting compounding from the purview of the Uniformity Hypothesis greatly weakens it, and would run counter to its current scope, as it is standardly assumed that suffixal tense is the expression of a higher functional T head. We take this admittedly cursory discussion to suggest that the Hindi facts present challenges to the Uniformity hypothesis, although a firm conclusion must await a more thorough discussion. In what follows, we show that the Representational Modularity Hypothesis and the approach taken in Koenig and Muansuwan (2005) for Thai provide a straightforward model of the two Hindi aspectual CP constructions.

The ergative/unmarked alternation is captured by the rules in (35)-(40). As

discussed previously, the default case value is unmarked.

(35) *Default Unmarked Constraint*: [CASE /unmarked]

The default in (35) is overridden when either of the other two case assignment constraints apply. The *Transitive Perfective constraint* requires us to define transitivity, which we define here not in terms of properties of the ARG-ST list (its inclusion of two NP *synsem* descriptions), but rather in terms of the attribute/value pair [TRANS +]. We have two reasons to define transitivity in terms of such an attribute/value pair rather than directly in terms of ARG-ST membership. First, as we mentioned above, the constraint must apply to “transitive” light verbs whose ARG-ST need not include two NP descriptions (as when a “transitive” light verb combines with an intransitive main verb, but can still be “transitive” as an idiosyncratic property left over from their main verb uses. Second, treating transitivity as a feature is useful to model the positional nature of ergative assignment within the sequence of main verb, light verb, and auxiliaries. We have suggested above that in the standard CP, the transitivity of the light verb determines the assignment of ergative case to the subject. This is true when no auxiliary follows the light verb (as in (26)-(29)). But, matters are more complex when auxiliaries follow the light verb. When the passive (36), or passive and imperfective auxiliaries together (37) follow a transitive light verb, the subject remains unmarked. In contrast, when the tense auxiliary follows a transitive light verb, the subject bears ergative case, just as when no auxiliary is present, as shown in (38).

(36) *Shyam=ka ghar beech di-yaa ga-yaa*
 Shyam.M=Gen house.M.Sg sell:MV give-M.Sg:LV go-M.Sg
 ‘Shyam’s house is being sold off.’

(37) *Shyam=ka ghar beech di-yaa jaa*
 Shyam.M=Gen house.M.Sg sell:MV give-M.Sg:LV go
rah-aa hai
 stay-Imperf.v.M.Sg be.Pres.3.Sg
 ‘Shyam’s house is being sold off.’

(38) *Shyam=ne ghar beech di-yaa hai*
 Shyam.M=Erg house.M.Sg sell:MV give-M.Sg:LV be.Pres.3.Sg
 ‘Shyam has sold the house.’

It is rather straightforward to explain why the passive and imperfective do not license ergative case assignment as these auxiliaries are not transitive and perfective. The behavior of the tense auxiliary is more complex, as it seems “transparent” to the transitivity and perfectivity of the auxiliary that precedes it. When the tense auxiliary follows a transitive light verb, the clause’s subject bears ergative case, but when it follows the passive or progressive auxiliaries, it does not. To model this rather complex set of facts, we make the following assumptions:

- Ergative case assignment to the subject of “transitive” verbs applies to all verbs that bear the head properties $\begin{bmatrix} \text{TRANS} & + \\ \text{ASP} & \text{perf} \end{bmatrix}$;
- The value of the TRANS and PERF attributes of the tense auxiliary are identical to the values of its verbal complement;
- Each verb in the verb complex sequence licensed by construction (8) include the argument structure of the preceding verb in its argument structure, i.e., induces argument composition. This constraint does not apply to the combination of the light verb and main verb in the reverse CP construction, as such combinations are not licensed by the construction in (8), but by a modifier-head construction (see below);

Based on the above discussion, the *Transitive Perfective Constraint* in (24) is modeled as follows. (We use the relational constraint *last-member* to select the last daughter of the sequence of verbs licensed by the construction (informally) represented in (8).) Note that the aspectual value of the verb is treated as a head feature since it affects verbal morphology.

(39) *Transitive Perfective Constraint*

$$\begin{bmatrix} \text{verb-complex-cx} \\ \text{DTRS} \quad \boxed{1} \end{bmatrix} \wedge \text{LAST-MEMBER}(\boxed{1}, \boxed{2}) \wedge \begin{bmatrix} \text{HEAD} \quad \begin{bmatrix} \text{TRANS} & + \\ \text{ASP} & \text{perf} \end{bmatrix} \end{bmatrix} \\ \Rightarrow \begin{bmatrix} \text{ARG-ST} \quad \left\langle \text{NP}[\text{CASE} \quad \text{erg}], \dots \right\rangle \end{bmatrix}$$

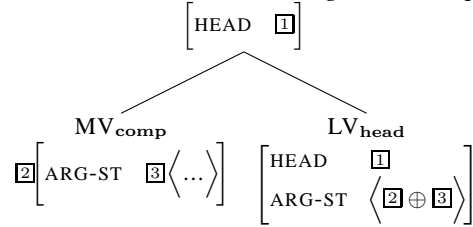
The assignment of ergative case to the subject of intransitive verbs i.e., the *Counter to Expectation Constraint* in (25) is more complex. It applies only to a small semantically-defined subset of intransitive verbs and requires that the conversational background support the contention that the bodily function is counter-to-expectation for the subject’s referent.

(40) *Counter to Expectation Constraint*

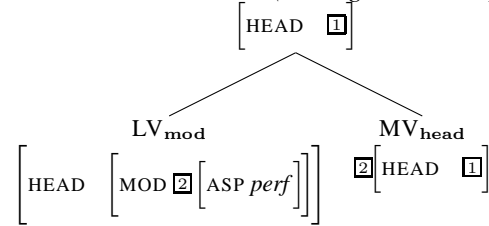
$$\begin{bmatrix} \text{iv-lxm} \\ \text{HEAD} \quad \begin{bmatrix} \text{ASP} \quad [\text{perf}] \end{bmatrix} \\ \text{ARG-ST} \quad \left\langle \text{NP}[\boxed{1}][\text{CASE} \quad \text{erg}] \right\rangle \\ \text{SEM} \quad \begin{bmatrix} \text{RELS} \quad \boxed{3} \quad \begin{bmatrix} \text{EVENT} \quad \boxed{2} \\ \text{ARG} \quad \boxed{1} \end{bmatrix} \end{bmatrix} \end{bmatrix} \Rightarrow \text{BGRND} \left\{ \begin{bmatrix} \text{counter-expect-rel} \\ \text{EVENT} \quad y \\ \text{ARG1} \quad \boxed{1} \\ \text{ARG2} \quad \boxed{2} \end{bmatrix} \right\}$$

We have now implemented the basic ergative case assignment constraints for Hindi. Crucially, the same rules model the assignment of subject case in single verb clauses as well as (standard and reverse) complex predicate constructions. To model the difference in headedness between the standard and the reverse CP constructions, we propose that only the standard complex predicate construction involves argument composition; the reverse complex predicate construction involves a head-modifier structure. Within HPSG, constructions similar to the standard CP have been analyzed as involving an operation of *argument composition* wherein the light verb is considered an operator that subcategorizes for the main verb, and its argument structure also includes what its complement verb subcategorizes for (cf. Hinrichs and Nakasawa (1994) for German, or Abeillé and Godard (2002) for Romance complex predicates). We suggest that an argument composition analysis is also appropriate for the standard aspectual CP construction in Hindi. This is illustrated in the abbreviated phrase structure tree in (41).

(41) *Standard Construction (Argument composition)*



(42) *Reverse Construction (No argument composition)*

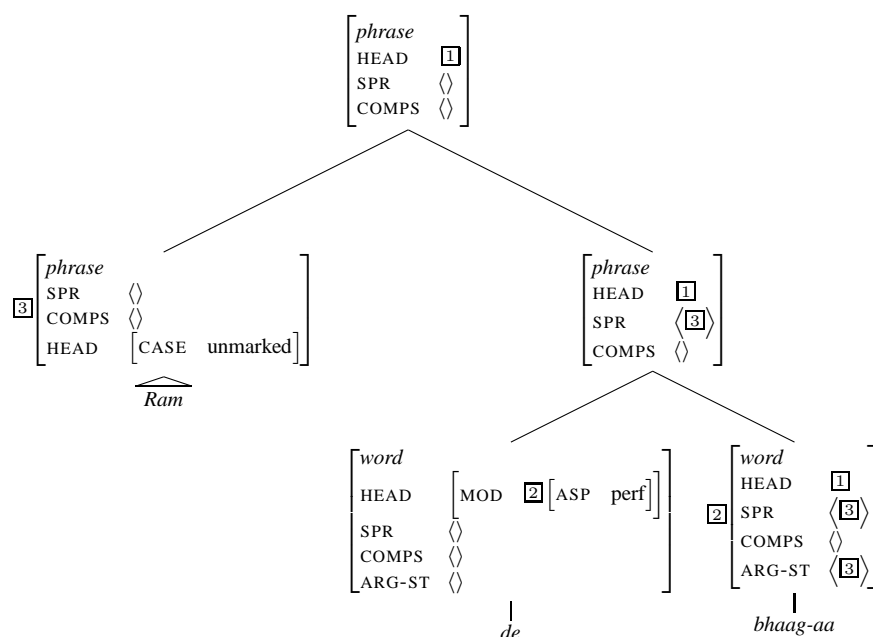


Note that our argument-composition analysis of the standard CP construction accounts for the fact that main verbs that do not denote bodily functions cannot combine with transitive light verbs in the standard CP construction. We assume that only verb whose subject can alternate between ergative and unmarked case do not lexically specify their case value. Since the subject of intransitive verbs that do not denote bodily functions never alternate, their case value is *strictly unmarked*. Since light verbs compose their argument structure with that of their verbal complement, the unmarked case value of this intransitive verb would clash with the ergative value that a transitive light verb would require.

In the reverse CP construction, on the other hand, the main verb is the syntactic head because it assigns case to the subject and agrees with the highest unmarked argument. Furthermore, argument selection in Hindi, a head-final language, takes place from right to left as shown in (41); i.e., the light verb would be expected to follow the main verb if it were the head of the reverse construction). We therefore

need a different mechanism to account for the light verb and main verb combination. We analyze light verbs in the reverse construction as modifiers that take what they modify as arguments, since modifiers (e.g., adjectives or adverbs) in Hindi typically precede the expressions that they modify (Kachru, 1980). We model the modifier status of the light verbs in the reverse construction as shown in (42). The reverse CP construction exemplified in (30) is modeled in (43). Here the subject Ram appears only on the specifier and argument-structure list of the main verb, as there is no argument composition in the reverse construction. The light verb *de* ‘give’ modifies the head of the phrase, the main verb *bhaag* ‘run’, which determines the subject’s case. Crucially, the non-null value of the MOD feature indicates that the light verb cannot be the head of the construction thus ensuring that it cannot assign case to the subject in spite of being the clause’s semantic head.

(43)



Treating the light verb-main verb combination in the reverse CP as an instance of modifier/head combination makes for an interesting parallel between Hindi and Thai. Both languages involve the same two possible structures for the expression of aspect (aspectual verbs heading a head-complement structure and aspectual verbs modifying a main verb). The difference between the two languages reduces to whether the complement or modified verb is a VP (Thai) or a V (Hindi) and parallels the difference between serial verb constructions that involve sequences of VPs or sequences of V discussed in Andrews and Manning (1999).⁸

⁸It should be noted that, although our analysis of the reverse complex predicate construction accounts for all the data we are aware of, other analysis are possible, as reviewers pointed out to us. One may analyze the reverse CP construction via the kind of type-raising analysis proposed in Kim and Sag (2002) for French postverbal negation *pas* (and other similar functors). In a nutshell,

6 Conclusion

This paper has made several contributions. First, we described a complex set of ergative case assignment constraints in Hindi and their interaction with aspectual complex predicate constructions. We suggested that conscious control is not the appropriate information contributed by ergative case for verbs denoting bodily functions, and provided evidence that the last verb in the sequence of *lite* verbs assigns case (ergative, in particular), and, finally, we showed that it is the main verb, not the light verb, that governs ergative case assignment in the reverse CP construction. Second, we argued that this last fact, as well as corroborating subject-verb agreement data support the claim that the head of the standard CP construction is the light verb, but the head of the reverse CP construction is the main verb. Third, we argued that the fact that case-marking is “positional”, supports the conclusion that the mapping between aspectual semantics and syntactic structure need not be uniform within a language, an argument similar to the one presented in Koenig and Muansuwan (2005) for Thai. Such data present a challenge to the hypothesis (such as in Cinque (1999)) that the semantic structure of aspectual functors is almost isomorphic to the syntactic structures that express them. On the other hand, a framework such as HPSG that distinguishes between syntactic and semantic heads and allows for semantic and syntactic information to be partially dissociated can easily model these facts. Finally, we presented an HSPG analysis of the Hindi ergative case assignment constraints as well as of the standard and reverse CP constructions. Clearly, more work is needed, but the intriguing parallels between the syntax of aspect in Hindi and Thai suggest that aspectual verbs can be either heads or modifiers and this split can occur within the same language.

References

- Abeillé, A. and D. Godard (2002). The Syntactic Structure of French Auxiliaries. *Language* 78(3), 404–452.
- Andrews, A. and C. Manning (1999). *Complex Predicates and Information Spreading in LFG* (First ed.). Stanford, CA: Stanford Monographs in Linguistics.

such an analysis would treat the light verb in the reverse construction as a syntactic complement of the main verb despite the fact that it semantically takes scope over the main verb. Our main reason for not exploring this kind of analysis is motivated by the parallel between the syntax of aspect in Hindi and Thai, given that the corresponding Thai structure cannot involve type-raising. A head (main verb)/marker (light verb) structure is also in principle possible. The fact that the light verb is semantically a functor that selects the index of the main verb as argument in a way similar to what verbal modifiers do and the fact that light verbs in the reverse CP construction do not select for a particular form of the main verb makes it quite different from the kind of words classified as markers in, say, Pollard and Sag (1994). None of our arguments against these other possible analysis are unsurmountable, probably a testimony to the fact that deciding which head-non-head construction is involved outside of standard head-complement/head-subject structure is not easy, and possibly not critical within HPSG.

- Butt, M. and T. H. King (2005). The Status of Case. In V. Dayal and A. Mahajan (Eds.), *Clause Structure in South Asian Languages* (First ed.). Kluwer Academic Publishers.
- Butt, M. J. (1994). *The Structure of Complex Predicates in Urdu*. Ph. D. thesis, Stanford University, Stanford, CA.
- Bybee, J., R. Perkins, and W. Pagliuca (1994). *The Evolution of Grammar: Tense, Aspect, and Modality in the Languages of the World* (2 ed.). Chicago: University of Chicago Press.
- Chomsky, N. (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.
- Cinque, G. (1999). *Adverbs and Functional Heads: A Cross-linguistics Perspective* (1 ed.). Oxford, UK: Oxford University Press.
- Copestake, A., D. Flickinger, C. Pollard, and I. Sag (2005). Minimal Recursion Semantics: An Introduction. *Research on Language and Computation* 3, 281332.
- De Hoop, H. and B. Narasimhan (2008). Ergative case-marking in Hindi. In H. de Hoop and P. de Swart (Eds.), *Differential subject marking*, pp. 63–78. Springer.
- Hinrichs, E. and T. Nakasawa (1994). Linearizing AUX's in German Verbal Complexes. In *German in Head-Driven Phrase Structure Grammar*, Number 46, pp. 11–37. Stanford, CA: CSLI Lecture Notes.
- Hook, P. (1975). *Compound Verbs in Hindi*. Ph. D. thesis, University of Michigan.
- Inman, M. V. (1994). *Semantics and Pragmatics of Colloquial Sinhala involitive verbs*. Ph. D. thesis, Stanford University.
- Kachru, Y. (1980). *Aspects of Hindi Grammar*. New Delhi, India: Manohar Publishers and Distributors.
- Kim, J.-B. and I. A. Sag (2002). Negation without Head-Movement. *Natural Language and Linguistic Theory* 20(2), 339–412.
- Koenig, J.-P. and N. Muansuwan (2005). The Syntax of Aspect in Thai. *Natural Language and Linguistic Theory* 23(2), 335–380.
- Malchukov, A. L. (2008). Animacy and asymmetries in differential case marking. *Lingua* 118, 203–221.
- Pollard, C. and I. Sag (1994). *Head-driven Phrase Structure Grammar*. Stanford: CSLI Publications.
- Poornima, S. and J.-P. Koenig (2008). Reverse Complex Predicates in Hindi. In S. Moran, D. Tanner, and M. Scanlon (Eds.), *Proceedings of the 24th Northwest Linguistics Conference*, Volume 27, Seattle, WA, pp. 17–26.