Subject Orientation in Hindi-Urdu Adverbial Clauses

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April 14, 2015

Cross-linguistically, there are particular constructions which can be said to be oriented to subjects. In particular, Obligatory Control constructions frequently require that the controller of their null subject be coreferential with a sentential subject. This is true for both many controlled complement clauses and adjunct clauses in English.

(1)   a   Sebastian promised Charles [to leave] (→ Sebastian would leave)
       b   [Dancing], Sebastian hit Charles (→ Sebastian is dancing)

However, the notion of "subject" is a very vague one in Minimalist syntax, taken from the outset of Minimalism to be a "functional" rather than formal notion (Chomsky 1995:55) and indeed is not necessarily desirable as a primitive concept; it just happens that in languages like English, factors like Case, word order, and argument structure (among others) converge fairly reliably to create the appearance of a single grammatical relation which we traditionally call a subject. A language where this is not the case is Hindi-Urdu (occasionally shortened here to HU); word order is free and "subjects" may take a number of different case forms. There are still, however, constructions which seem to pick out something like the subject as the only possible controller, such as the Conjunctive Participle construction, a type of non-finite adverbial clause, particularly the form marked with the suffix -*kar*.

(2)   *Siddhārth-ne   Karīnā-ko   [nāch-kar]   mār-ā*
       Siddharth-ERG   Karina-DOM   dance-KAR   hit-PERF
       'Dancing, Siddharth hit Karina' (→ Siddharth is dancing)

Given this murkiness in the notion of subject in HU and the lack of a coherent formalism for subjecthood in Minimalism, describing these adverbials as "subject-oriented" is insufficiently precise. Luckily, -*kar* participial clauses show features which allow us to pinpoint a little better the source of subject-orientation in Control constructions by the way their interpretation interacts with valency-changing alternations like the passive and the causative. For example, a passivized version of (2) is still oriented to the same argument, unlike in English (3a-b).

(3)   a   *Siddhārth-dvārā   Karīnā-ko   [nāch-kar]   mār-ā   gayā*
           Siddharth-INST   Karina-DOM   dance-KAR   hit-PERF   go-PERF
           'Dancing, Karina was hit by Siddharth' (→ Siddharth is dancing)
       b   Dancing, Karina was hit by Siddharth (→ Karina is dancing)

In this paper I will defend the notion that the interpretation of -*kar*-clauses (hereafter, KCs) is subject to the structural generalization in (4).

(4)   The controller of a KC is the highest argument associated with a given event.

The prediction of such a claim is that every event, including its associated predicates and their arguments, should have exactly one possible controller for a KC, and this will be the argument of the highest predicate associated with that event. Below I will defend this claim by examining sentence types where this does not seem to hold - where there is not exactly one controller for a KC. I will show how the above assumptions about the form of argument structure, and independent facts about the sentence types in question in Hindi-Urdu, explain these apparent exceptions.

The form of the paper is follows. The first section describes some general facts about the KC construction in Hindi-Urdu and related constructions in other South Asian languages. The second section describes interactions between KCs and the morphological causative, which may add a second possible controller for a KC, and discusses the ways in which the syntax and semantics of causative constructions (specifically what has been called "biclausality" and its relation to the presence of predicates denoting multiple events) can account for this. The third section discusses the passive, which may lack a possible controller for a KC, which again is predicted by general facts about the passive in Hindi-Urdu and especially the role of the agent in passives. The fourth section discusses locality effects on the interpretation of KCs, and discusses the problems they appear to hold for the syntactic representation of argument structure in Hindi-Urdu, and how these apparent problems may be understood given general facts about coreference, word order, and the typology of scrambling in Hindi-Urdu. The fifth section summarized the prospects for expanding this understanding of control of adverbials to other, similar constructions cross-linguistically and within HU. The sixth section summarizes the findings of the paper.

1   The Conjunctive Participle Construction

The Conjunctive Participle is a construction with a widespread distribution across South Asia. Typically, they include a non-finite verb form and a null subject which is coreferential with the matrix subject. The expression is interpreted adverbially, giving temporal (most typically successive or concurrent) or manner (instrumental) information about the matrix event. Hindi-Urdu has several verb forms which meet these criteria, though they vary somewhat in the sort of information they encode: *-kar* (and its phonologically-conditioned variant *-ke*) could be best translated as 'by V-ing' or 'having V-ed'; *-te hue* means 'while V-ing', and *te-hī* means 'upon V-ing'. Each of these is shown in (5).[1]

(5)   a   *Siddhārth-ne pattar phenk-kar ciṛiyā mār-ī*
            Siddarth-ERG stone   throw-KAR bird   hit-PERF
            'Having thrown a stone/by throwing a stone, Siddharth hit a bird'

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[1]Unless otherwise cited data here come from personal interviews with Hindi-Urdu speakers. Abbreviations used herein: ERG for Ergative Case, DAT for Dative Case, DOM for Differential Object Marking, GEN for Genitive Case, ABL for Ablative-Instrumental case (HU *se*), INST for the Instrumental marker (*dvārā*), inf for Infinitive, PRS for Present Tense, PST for Past Tense, PERF for Perfective Aspect, IMPF for Imperfective, PROG for Progressive, DIR.CAUS for Direct Causative, IND.CAUS for Indirect Causative, KAR for the *kar/ke* Conjunctive Participle marker, *top* for Topic Marker, and FOC for Focal Marker. Glosses will not mark agreement; subjecthood of *kar*-clauses does not seem to interact with controller of agreement in any way, and sentences with these clauses show the same agreement patterns seen typically in HU.

    b *Siddhārth-ne pattar phenk-te hue   ciṛiyā mār-ī*
       Siddarth-ERG stone throw-IMPF be.PERF bird   hit-PERF
       'While throwing a stone, Siddharth hit a bird'

    c *Siddhārth-ne pattar phenk-te hī   ciṛiyā mār-ī*
       Siddarth-ERG stone throw-IMPF FOC bird   hit-PERF
       'Upon throwing a stone, Siddharth hit a bird'

KCs are distinct from other adverbial participles in HU by having a very strong preference against the embedded predicate being stative; in particular, copular constructions may only be interpreted as 'become' rather than 'be' and dative subject/experiencer constructions may not appear in KCs.

(6)   a *Siddhārth ṭhaṇḍā ho-kar andar gayā*
       Siddharth cold   be-KAR inside go.PERF
       '(Becoming/*being) cold, Siddharth went inside'

    b **Karīnā-ko lekhak pasand ā-kar*   kitāb kharīd-egī*
       Karina-DAT author like   come-KAR book buy-FUT
       Intended: Liking the author, Karina will buy the book

Other languages which have been observed to have similar constructions, and similar variety in forms and interpretations, include Assamese (Haddad, 2011), Malayalam (Jayaseelan, 2004), Tamil (Lindholm, 1975), and Newari (Genetti, 2005). There is variation both across languages and within Hindi-Urdu as to the interpretation of the null argument in conjunctive participles constructions as well as the possibility of it being non-null. In HU, *-kar* constructions do not allow for a spelled-out subject while *-te hī* does (7); Assamese allows for multiple pronounced subjects, but requires they be coreferential (8); Dzongkha allows for multiple, distinct subjects (9).

(7)   Hindi-Urdu

    a *Rām ghar vāpas ā-kar   (*Siddhārth) so   gayā   thā*
       ram house back   come-KAR Siddharth   sleep go.PERF PST
       'Ram, coming home, (*Siddharth) went to sleep'

    b *Rām ghar vāpas ā-te   hī   (Siddhārth) so gayā   thā*
       ram house back   come-IMPF FOC Siddharth   sleep go.PERF PST
       'Upon Ram coming home, Siddharth went to sleep'

(8)   Assamese (from Haddad 2011)

    Ram-ɒr khub bhok lag-i   (Ram-e/xi) posa bhat khal-e
    Ram-GEN very hunger feel-CPART Ram/he.NOM stale rice ate
    'Ram felt very hungry, and Ram/he ate stale rice' (*if he ≠ Ram)

(9)   Dzongkha (from Clauss 2013)

Karma-gi   kecap-be (Tsering) lõ-yĩ
Karma-ERG call-BE   Tsering   get.up-IMPF
'(Karma) having called, Tsering got up'

Languages which allow multiple overt subjects (whether or not they are coreferential) may also allow optionality in Case-marking when the matrix and embedded predicates take subjects with different Cases. HU does not allow this, even where multiple subjects are possible.

(10)   Dzongkha (Clauss 2013)

Tsering-(gi) ge-be   kasha se-yi
Tsering-ERG fall-CPART deer   kill-IMP
'Falling, Tsering killed a deer.'

(11)   Hindi-Urdu

   a *Rām-*(ne) baiṭh-kar kitāb paṛh-ī*
     Ram-ERG   sit-KAR   book read-PERF
     'Sitting, Ram read a book'

   b *Rām-*(ne) baiṭh-te hī   kitāb paṛh-ī*
     Ram-ERG   sit-IMPF FOC book read-PERF
     'Upon sitting, Ram read a book'

While the focus of the current discussion is of the KC variety of Conjunctive Participle, the sort of variation w havee seen informs us that a theory of KCs must be flexible in some way that could account for sentence types and languages which behave otherwise. See Section 5 for discussion of how these data line up with the analysis of KCs being proposed here.

2   Causatives and KCs

A first pass look at KCs in different kinds of sentences seems to show that any given clause will have exactly one possible controller and it will be the highest argument in that clause.

(12)   a *Siddhārth$_1$ [PRO$_1$ baiṭh-kar] gir-ā*
     Siddharth   sit-KAR   fall-PERF
     'Sitting down, Siddharth fell'

   b *Siddhārth-ne$_1$ kitāb$_2$ [PRO$_{1,*2}$ baiṭh-kar] paṛh-ī*
     Siddharth-ERG   sit-KAR book   read-PERF
     'Sitting down, Siddharth read a book'

   c *Siddhārth-ne$_1$ Karīnā-ko$_2$ kitāb$_3$ [PRO$_{1,*2,*3}$ baiṭh-kar] dī*
     Siddharth-ERG Karina-DAT book   sit-KAR   give.PERF
     'Sitting down, Siddharth gave Karina a book'

d *Siddhārth-ko₁ Karīnā₂ [PRO₁,∗₂ baiṭh-kar] pasand ā-tī   hai*
   Siddharth-DAT Karina   sit-KAR   like   come-IMPF PRS
   'Sitting down, Siddharth likes Karina'

e *Siddhārth-ne₁ kah-ā   [ki Karīnā₂ [PRO₂,∗₁ baiṭh-kar] so-yā]*
   Siddharth-ERG say-PERF that Karina   sit-KAR   sleep-PERF
   'Sid said that Karina slept sitting'

(12a-d) are all monoclausal sentences and all have exactly one possible controller for the KC. In (a), there is an intransitive verb and the sole argument is the sole possible controller; in (b), there is a transitive verb and the external, agentive argument is the sole possible controller; (c) is similar, except that there is a second internal argument (an indirect object), but the external argument is still the only possible controller for the KC. In (d) there is still only one possible controller, but it is an experiencer rather than an agent (though still generally analyzed as an external argument, or at least more prominent than a theme, after Belletti and Rizzi 1988). In (e) there is still just one possible controller for the KC, and it is the only argument of the lower clause, in which the KC appears.

Based on these data, we could conclude that the interpretation of a KC is clause-bound and linked to the highest argument in its clause. However, transitivity altering constructions seem to show a problem for this. To show this we will look first at causativization., where we will see that adding additional arguments to a verb may add additional possible controllers in some conditions.

2.1 Morphological causatives

Morphological causatives are an example of a construction where there may be **more than one** possible controller for KCs, and thus are an apparent exception to the generalization that a clause contains exactly one controller for a KC. Specifically, "indirect" causatives discussed by Bhatt and Embick (2003) and Ramchand (2008) do so. These causatives, expressed most commonly by the morpheme *-vā* attached to the verb stem and marking of the causee with the ablative suffix *-se*, allow for two possible controllers: both the causer and the causee. This contrasts with "direct" causatives, more akin to English transitivity alternations of the burn v. burn (sthg.) variety, marked typically with *-ā*, and which do not result in multiple possible controllers for KCs.

(13) a *Siddhārth-ne₁ [PRO₁ baiṭh-kar] kām kar-vā-yā*
         Siddharth-ERG   sit-KAR   work do-IND.CAUS-PERF
         'Sitting down, Siddharth did work' (Siddharth sat down)

      b *Karīnā-ne₁ Siddhārth-se₂ [PRO₁,₂ baiṭh-kar] kām kar-vā-yā*
         Karina-ERG Siddharth-ABL   sit-KAR   work do-IND.CAUS-PERF
         'Sitting down, Karina had Siddharth do work' (Siddharth or Karina sat down)

(14) a *Sākshi₁ [PRO₁ chillā-kar] jāg-ī*
         Sakshi   shout-KAR wake.up-PERF
         'Shouting, Sakshi woke up'

      b *Karīnā-ne₁ Sākshi-ko₂ [PRO₁,∗₂ chillā-kar] jag-ā-yā*
         Karina-ERG Sakshi-DOM   shout-KAR wake.up-DIR.CAUS-PERF
         'Shouting, Karina woke Sakshi up' (Karina is shouting)

c *Siddhārth-ne₁ Karīnā-se₂ Sākshi-ko₃ [PRO₁,₂,*₃ chillā-kar]*
   Siddharth-ERG Karina-ABL Sakshi-DOM   shout-KAR
   jag-vā-yā
   wake.up-IND.CAUS-PERF
   'Shouting, Siddharth had Karina wake Sakshi up' (Siddharth or Karina is shouting)

In (13a-b) it appears that before morphological causativization, there is one argument which can be a controller in the underived form of the verb, and morphological causativization adds an argument which can also be the controller.

However, in (14b-c) we see that under certain conditions, causativization does not allow the highest argument of the verbal stem (that is, the sole argument in 14a) to be a controller. Specifically, we see that under direct causation in (b), the causee (the patient of 'wake up') is unable to be a controller, but under indirect causation (c), the causee (the agent of 'cause to wake up') is able to be a controller.

An essential difference between the direct and indirect causatives seems to be the presence of two agent arguments. Three facts suggest this: the fact that in the examples in (13-14) only agentive arguments may be controllers of a KC under causativization (the base external argument of a transitive verb and the causer under both direct and indirect causativization); the fact that when unaccusative verbs are causativized the base, non-agentive argument is no longer a good controller for KCs, and that causativization is barred for unergatives (that is, intransitive verbs with only agentive arguments). This latter fact can be seen from the contrast between agentive and non-agentive readings of a verb like *uṛ* 'fly'.

(15) Unergative verbs and causativization (Bhatt and Embick 2003)

   a *patang/chiṛiyā uṛ rahī hai*
      kite/bird   fly PROG PRS
      'The kite/bird is flying'

   b *Anjalī patang/*chiṛiyā ur-ā   rahī hai*
      Anjali kite/bird   fly-DIR.CAUS PROG PRS
      'Anjali is flying the kite/*the bird'

Occurring with an inanimate subject, a verb like 'fly' can be understood as non-agentive[2], but animate subjects are intuitively more agentive in such an act. Under causativization, the inanimate/non-agentive subject becomes a fine object for fly+CAUS, but the animate/non-agentive subject is barred from the construction.

So, we can generalize that, while in principle any argument could be a good controller of a KC, when present, agents are the only possible controllers, and that the presence of multiple agents in a clause allows for multiple possible controllers of a KC. To understand why this might be, we will need a proper understanding of the place of agents in the syntax of Argument Structure. Below I review several approaches to this, focusing on the ideas developed by Harley (1995) and Kratzer (1996) which associate agents with predicates denoting events.

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[2]We should think of the constraints discussed here in terms of agentivity rather than purely in terms of a similar notion like animacy because, in Hindi-Urdu, non-human entities like birds may be agentive (based on examples such as the unergativity-causativization alternation seen here) but are not grammatically animate in that they do not, for example, require DOM as direct objects.

2.2   Events as the domain of Argument Structure

A common idea across formalizations of Argument Structure is that the Agent argument of a verb, where present, is necessarily the most prominent argument. This is derived in a number of ways. One is to posit the existence of a necessary hierarchy of thematic relations which exists as input to syntax (Jackendoff 1972, Grimshaw 1990). A summary of this position from Grimshaw (1990), and a representative such hierarchy, are in (16).

(16)   a   A[rgument]-structure is a structured representation which represents prominence
            relations among arguments. The prominence relations are jointly determined by the
            thematic properties of the predicate (via the thematic hierarchy) and by the
            aspectual properties of the predicate. ... [T]he prominence relations reflect thematic
            information of a very limited kind, namely whether a given argument is higher or
            lower on the thematic hierarchy than another. (Grimshaw 1990:4-5)

        b   *Grimshaw's thematic hierarchy* (1990:8)

            (Agent (Experiencer (Goal/Source/Location (Theme))))

An alternative to this is to build thematic interpretation directly into syntax in such a way that a more prominent position is associated with the Agent than with other arguments, as in Government-Binding approaches to θ-Theory (Chomsky 1981, Baker 1988, Hale and Keyser 1993). A similar approach which doesn't rely on thematic roles being mapped onto the syntax by a distinct module like θ-Theory or Grimshaw's A-structure is the family of approaches is to encode thematic roles into the denotations of different predicates. In most of these, the agent or "external" argument with a functional head more prominent than other arguments (Kratzer 1996, Pylkkänen 2008, Ramchand 2008).[3]

What unites all of these approaches is that the syntax directly encodes the prominence relations described by thematic hierarchies, and guarantees the agent the most prominent position in the domain where thematic roles are determined. This is spelled out in different ways; in Phase Theory (Chomsky 2000, 2001), vP is propositional and thus is a Phase, and so an Agent, as specifier of v, is de facto the most prominent argument in a Phase; for Harley (1995), the head associated with external arguments is also associated semantically with events. Thus, each external argument demarcates an event with its own Argument Structure. Taking this latter insight as a starting place, below I sketch an analysis of the interaction seen above between Causatives and KCs which derives the availability of multiple controllers in a causative sentence from the fact that vPs are the semantic boundaries of events.

2.3   The structure of Indirect Causatives

Harley (1995, 2008) proposes a view of morphological causatives wherein the causation and the event caused are syntactically and semantically distinct entities, based on data from Japanese morphological causatives. She points out four ways in which causees and causers, and the causation and caused events, are semantically akin in Japanese.

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[3]This approach may still imply the existence of a hierarchy like that in (16b) if it is assumed that the relationship between Agents and Verbs is universal, which may indeed be the case.

(17)   (Paraphrasing Harley's 5-8)

      a Certain adverbials can scope over either the causation event or the caused event

      b Subject-oriented adverbials marked -*te* may be controlled by either the causee or the causer

      c The reflexive *zibun* can be bound by either causee or causer

      d Two caused events may be conjoined under a single causative morpheme

Of particular interest here, for obvious reasons, is (b), which we have seen is true in Hindi-Urdu; compare (18), with the "agent-oriented" adverbial morpheme -*te*, with similar examples we have seen in HU above (Data from Terada 1990:245).

(18)   *Takashi-wa   suekko-o   hittori-de   tsukai-ni   ik-ase-ta*
       Takashi-TOP   youngest.child-ACC   alone-ADV   errand-DAT   go-CAUS-PST
       'Takashi made his youngest child go on an errand alone' (Takashi or the youngest child is alone)

Harley argues for an analysis wherein the apparently biclausal nature of these sorts of causatives arises from incorporation of multiple predicates, for each of which the maximal projection is the "[d]omain for subject-oriented reflexive binding, condition B, adverbial control, [and] quantifier scope" (Harley's 12). She builds this analysis in terms of inserting different types of v predicates and the understanding that events, marked by vP, are interpretive boundaries (vis. Phases of Chomsky 2000, 2001), at which information and structure in the syntax is interpreted at the interfaces. Thus, a causative consisting of two vPs has two such boundaries, two domains within which semantic operations like binding of reflexives and indexing of PRO may take place. Applying Harley's analysis to HU, we get a structure like (19), based on Harley's (33).

(19)   a *Siddhārth-ne   Karīnā-se   kām   kar-vā-yā*
         Siddharth-ERG   Karina-ABL   work   do-IND.CAUS-PERF
         'Siddharth made Karina do work'
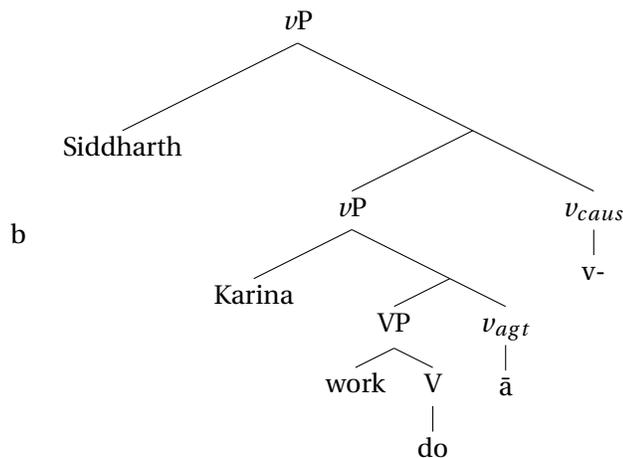
The crucial assumption about this sort of representation of the causative is that the causee is equivalent in status to the causer, and that there is a boundary which separates them. This is

contrary to the analysis of causatives in Ramchand (2008) in that for Ramchand, "intermediate agents" (causees) in indirect causatives are adjuncts without any specified position in the syntax of Argument Structure, and the structure of causatives is simplex, without an interpretive boundary between the event caused and the causation event.

There are several reasons that this latter sort of analysis is undesirable. One is simply that it does not predict the ability of indirect causees to be controllers of KCs. A second is that it does not acknowledge the necessary relationship between indirect causees and the indirect causative morpheme, as illustrated in (20). Indirect causatives, but never direct causatives, allow for -*se*-marked causees; thus a representation of causatives where the indirect causation morpheme is tied to the availability of these causees is preferable.

(20)   a   *Anjum-ne   (*maduroṅ-se) makān ban-ā-yā*
            Anjum-ERG   workers-ABL   house   build-DIR.CAUS-PERF
            'Anjum built a house (through the workers)'

        b   *Anjum-ne   maduroṅ-se makān ban-vā-yā*
            Anjum-ERG   workers-ABL house   build-IND.CAUS-PERF
            'Anjum had the workers build a house'

In Ramchand's system, on the other hand, no specific syntactic or semantic status is given to oblique agents in indirect causatives; the role they play in the underived form is taken by the agent of causation.

A third piece of evidence favoring the Harley-style analysis of causatives comes from what sort of adverbial interpretations go with the different control possibilities in indirect causatives: The causation event may be modified with causer control, and the caused event may be modified with causee control, but causee control can not accompany modification of the causation event. This is shown in (21).

(21)   *Siddhārth-ne   Karīnā-se   Sākshi-ko   chillā-kar   jag-vā-yā*
        Siddharth-ERG   Karina-ABL   Sakshi-DOM   shout-KAR   wake.up-IND.CAUS-PERF
        'Shouting, Siddharth had Karina wake Sakshi up'

        a   Siddharth shouted to Karina that Karina should wake Sakshi up
        b   Karina shouted, which woke Sakshi up
   c   *Karina shouted, and then Siddharth had her wake Sakshi up

The interpretation (a) has causer control of the KC, and the KC is interpreted as an adverbial modifier of the causation event; the interpretation (b) has causee control, and the KC is interpreted as an adverbial modifier of the caused event; the unavailable reading (c) has causee control, but has the KC modifying the causation event. So it seems there is a connection between which of the two arguments is the controller of the KC and what information the KC adds to the sentence. This supports the idea that the availability of multiple controllers for a KC is linked with the indirect causative containing two events which may be adverbially modified. This leads to the generalization of how KCs are interpreted, restated in (22).

(22)   A -*kar* Clause is controlled by the highest argument associated with some event.

Given our treatment of indirect causatives, then, we would analyze direct causatives as involving a single Event and a single argument structures. Thus unaccusatives, directly causativized unaccusatives, and indirectly causativized unaccusatives (as in 14), would have argument structures like those in (23).
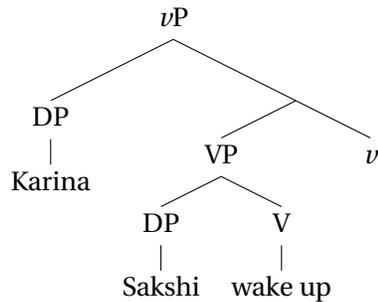
(23)   a Unaccusative

Sākshi jāg-ī
Sakshi wake.up-PERF
'Shouting, Sakshi woke up'

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           VP
          /  \
        DP    V
        |     |
      Sakshi wake up
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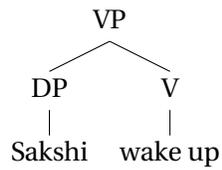
    b Transitive (Direct causative)

Karīnā-ne Sākshi-ko jag-ā-yā
Karina-ERG Sakshi-DOM wake.up-DIR.CAUS-PERF
'Shouting, Karina woke Sakshi up'

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              vP
             /  \
           DP    \
           |    VP   v
        Karina  / \
              DP   V
              |    |
            Sakshi wake up
```

c Indirect causative

Siddhārth-ne   Karīnā-se   Sākshi-ko   jag-vā-yā
Siddharth-ERG Karina-ABL Sakshi-DOM wake.up-IND.CAUS-PERF

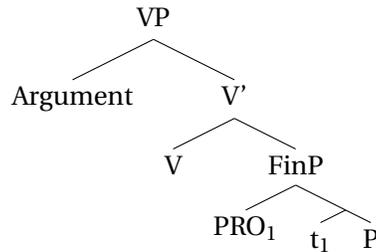'Shouting, Siddharth had Karina wake Sakshi up'
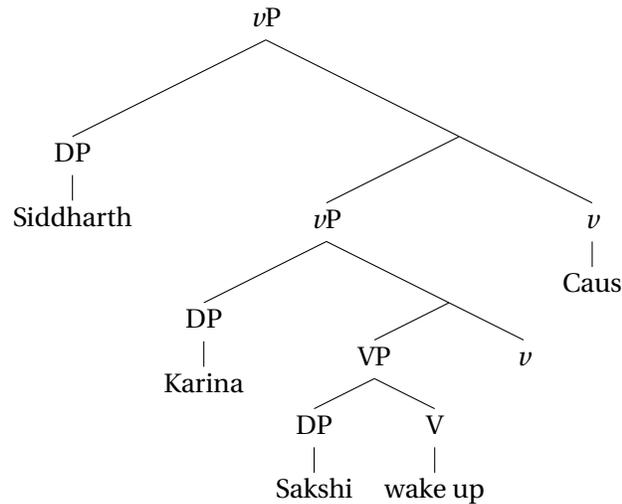
Following the claim in (22), the variation in between the structures in (23a-b), which each contain one possible KC controller, and (c), which has two possible controllers, is due to there being one event defined in (a-b) and two in (c). This is trivially true in (a), which contains only one predicate. In (b), *v* is semantically associated with the same event as V by Event Identification,[4] and thus is the highest head associated with that event, and a KC will be attached there, taking the argument of *v* as its controller. In (c), there is a second *v*, which introduces a second event, and thus a second option for where a KC could attach. If it attaches to this head, the argument of v_{caus} would be the controller of the PRO within the KC.

2.4   Deriving the meanings of sentences with KCs

Here I will walk through the way in which the syntax described above, along with the interpretive principles assumed, derives the semantics of sentences with KCs. The first matter is the interpretation of PRO in adjuncts. I follow Williams (1992) and Landau (2013, 2014) in assuming that adjunct control is an instance of predicative control. This, in Landau's view, involves a complement or adjunct with a null argument in its periphery (raised from a thematic position; 2013:24). The embedding verb composes with the embedded predicate, and the two predicates share an argument. This is schematized in (24).

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[4]Event Identification, as defined in Kratzer (1996), allows composition of a predicate of type <s,t> with one of type <e,st> to produce a predicate of type <e,st>, wherein the event argument of the two composed predicates is the same.

(24) Predicative Control (based on Landau 2013:24)

$$\begin{array}{c}
\text{VP} \\
\diagup \quad \diagdown \\
\text{Argument} \quad \text{V'} \\
\diagup \quad \diagdown \\
\text{V} \quad \text{FinP} \\
\diagup \quad \diagdown \\
\text{PRO}_1 \quad t_1 \quad \text{P}
\end{array}$$

    a $[\![\text{FinP}]\!] = \lambda x . \lambda e . P(x)(e)$

    b $[\![\text{V'}]\!] = \lambda x . \lambda e . V(P(x)(e))$

The key point of this analysis is that the argument of the predicate to which a predicative control clause attaches will necessarily be the controller of PRO.

The second matter is the interpretation of the KC itself. KC's, as discussed above, contain aspectual information. While the aspectual information encoded in a KC interacts with the predicate it embeds, and may potentially interact with matrix aspect, there is no obvious evidence that any aspectual information on -*kar* interacts at all with the interpretation of PRO. Thus I will adopt the following shorthand denotation for KCs.

(25)   a $[\![\text{V}+kar]\!] = \exists e . \text{V-ing}(e)$

        b $[\![\text{KC}]\!] = \lambda x . \exists e . \text{theta}(x)(e)$[5] $\text{and V-ing}(e)$

The last ingredient we need to make the structures assumed for causatives and the rule given for the interpretation (22) to interact in the right way is a hypothesis about the syntactic position of KCs relative to their controllers. Given the syntax of predicative control in (24), the following descriptive generalization will give the correct results.
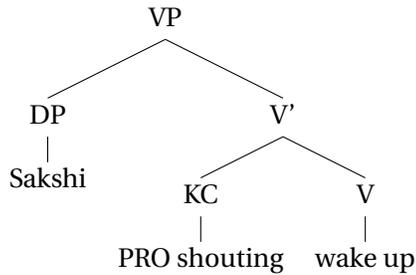
(26) A KC adjoins to the highest projection associated with some event which has an open λx_e variable.

In other words, a KC adjoins to a one-place predicate describing an event; the fact that it must be so is in itself stipulative as nothing about its semantics would prevent it from adjoining below v in a transitive and being controlled by the internal argument; however as such interpretation is impossible there seems to be no option to assume this fact about the structural position of KCs. See section 5 for a brief discussion about what might happen if there were not such a restriction on KCs.

With all of this in mind, I will now sketch out how three syntactic types can compose including a KC: unaccusatives, transitives indirect causatives. The first two, each with a single controller, are a simple matter: following (22), the KC is adjoined to the highest predicate associated with a given event, which is V for an unaccusative (27) and v for a transitive (28).
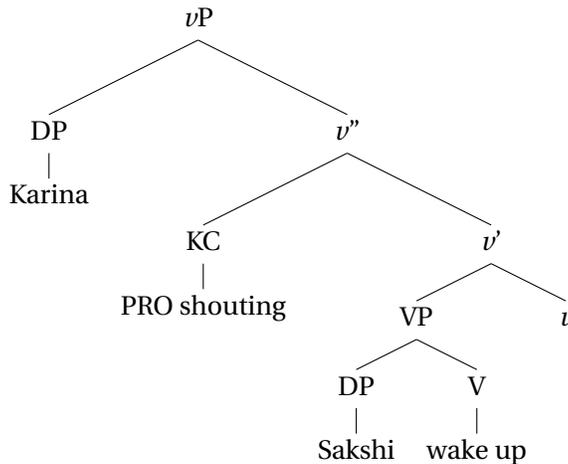
---

[5]As KCs may contain a variety of verb types, "theta" here may be an agent, an experiencer, or whatever would be licensed by the v and V internal to the KC.

(27)   A KC with an unaccusative

```
                    VP
            ┌────────┴────────┐
           DP                 V'
            │            ┌─────┴─────┐
         Sakshi         KC           V
                         │            │
                   PRO shouting   wake up
```

    a ⟦KC⟧= λx . λe . shouting(x)(e)

    b ⟦V'⟧= λx . λe . $\exists$e' . shouting(x)(e') and wake up(x)(e) (*by Predicate Modification*)

    c ⟦VP⟧= λe . $\exists$e' . shouting(Sakshi)(e') and wake up(Sakshi)(e)

(28)   A KC with a transitive

```
                    vP
            ┌────────┴────────┐
           DP                 v"
            │            ┌─────┴─────┐
         Karina         KC           v'
                         │      ┌─────┴─────┐
                   PRO shouting VP           v
                            ┌────┴────┐
                           DP         V
                            │         │
                         Sakshi    wake up
```

    a ⟦KC⟧= λx . λe . shouting(x)(e)

    b ⟦v⟧= λx . λe . agent(x)(e).

    c ⟦VP⟧= λe . wake up(Sakshi)(e)

    d ⟦v'⟧= λx . λe . agent(x)(e) and wake up(Sakshi)(e) (*by Event Identification*)

    e ⟦v"⟧= λx . λe . $\exists$e' . shouting(x)(e') and agent(x)(e) wake up(Sakshi)(e) (*by Predicate Modification*)

    f ⟦vP⟧= λe . $\exists$e' . shouting(Karina)(e') and agent(Karina)(e) and wake up(Sakshi)(e)

This translates easily enough to causative structures - the KC would simply adjoin to either of the two *v* heads; it could adjoin to nothing else, since nothing else meets the condition of being highest head describing a given event. Given the evidence suggesting that the causative introduces a second event, I will use a denotation for v_{caus} as in (29).

(29) v_{caus} = λp . λx . λf . λe . agent(x)(f) and cause(e)(f) and p(e)

However, for the high interpretation a slight problem arises with the mechanism of composition; as Event Identification as defined by Kratzer allows composition of predicates of types <e,st> and <s,t>, and v_{caus}+vP is, under the assumed denotation, of the type <e,<s,st>>. However, it would take only a slight variation on this operation to get the desired result. I leave aside the exact mechanism of composition for the moment.[6]
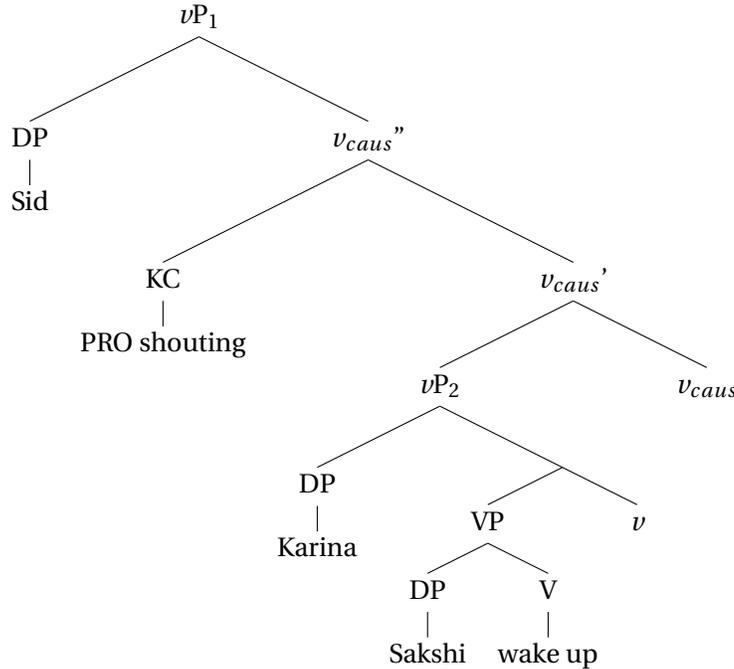
(30)   Low interpretation of a KC
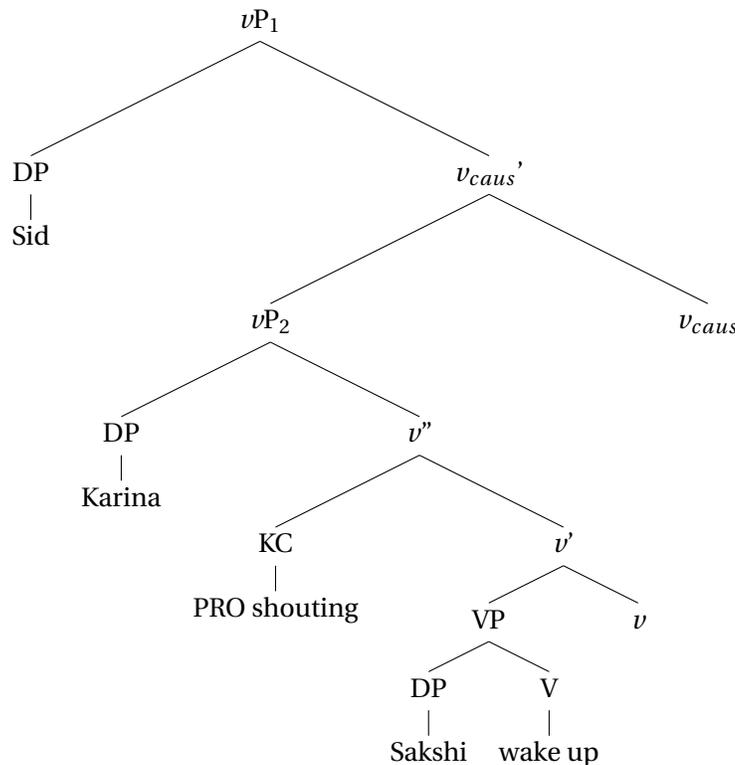
a   ⟦VP ⟧= λe . wake up(Sakshi)(e)

b   ⟦v'⟧= λx . λe . agent(x)(e) and wake up(Sakshi)(e) (*by Event Identification*)

c   ⟦v''⟧= λx . λe . agent(x)(e) and shouting(x)(e) and wake up(Sakshi)(e) (*by Predicate Modification*)

d   ⟦vP$_2$⟧= λe . ∃e' . shouting(Karina)(e') and agent(Karina)(e) and wake up(Sakshi)(e)

e   ⟦v_{caus}'⟧= λx . λf . λe . ∃e' . agent(x)(f) and cause(e)(f) and agent(Karina)(e) and shouting(Karina)(e') and wake up(Sakshi)(e)

f   ⟦vP$_1$⟧= λf . λe . ∃e' . agent(Sid)(f) and cause(e)(f) and shouting(Karina)(e') and agent(Karina)(e) and shouting(Karina)(e') and wake up(Sakshi)(e).

---

[6]But, see Alexiadou (1997) for an idea on how this might occur; she suggests that adverbs might necessarily incorporate with verbs for interpretation (1997:41), which would lead to a similar sort of interpretive result.

(31)   High interpretation of a KC

```
                          vP₁
                 _____/    _____
                DP                    v_caus"
                |              _____/  _____
               Sid           KC                  v_caus'
                             |              _____/    _____
                        PRO shouting      vP₂              v_caus
                                    _____/  _____
                                   DP              VP        v
                                   |          ____/  \____
                                 Karina      DP          V
                                             |           |
                                           Sakshi     wake up
```

a $[\![vP_2]\!]= \lambda e$. agent(Karina)(e) and wake up(Sakshi)(e)

b $[\![v_{caus}']\!]= \lambda x$. λf . λe . Agent(x)(f) and Cause(e)(f) and Agent(Karina)(e) and wake up(Sakshi)(e).

c $[\![v_{caus}"]\!]= \lambda x$. λf . λe . $\exists f'$. Shouting(x)(f') Agent(x)(f) and Cause(e)(f) and Agent(Karina)(e) and wake up(Sakshi)(e).

d $[\![vP_1]\!]= \lambda f$. λe . $\exists f'$. Shouting(Sid)(f') Agent(Sid)(f) and Cause(e)(f) and Agent(Karina)(e) and wake up(Sakshi)(e).

The unaccusative has a single argument, and thus a single possible controller for a KC. The direct causative/transitive structure in (28) is akin to a simple transitive which includes two arguments, but denotes a single event; and since it is only the highest argument associated with an event which may control a KC, the agent of a Direct Causative (Sakshi, the agent of 'wake up') is the only possible controller for a KC in this construction. In the case of the indirect causatives, a second event has been introduced, and with it a second possible controller for a KC, resulting in the two possible structures in (30-31).

Note that these syntactic representations for the two readings implies that there must be a word order transformation to derive the ambiguous form of the causative (with the causee preceding the KC); Section 4 examines how to derive this fact, and argues that this is an unproblematic fact.

The key points of this analysis of causatives are: direct causatives contain only one position for agents (cf. the specifier of v) and one domain in which KCs may be interpreted (vP), and indirect causatives includes two such positions and two such domains, allowing for the distinction between the two types of causatives in allowing or disallowing multiple possible controllers of KCs.

2.5   Ingestive verbs

There is a class of verbs in Hindi-Urdu which seems on the surface to be an exception to these sorts of patterns, in that they are underived transitive verbs where causativization does not allow the base subject/agent to be a controller of a KC. These are often termed "Ingestive" verbs, and include stems like *khā* 'eat', *sun* 'hear', and *samajh* 'understand'.

(32)   a   *Siddhārth-ne$_1$ kahānī   [PRO$_1$ baiṭh-kar]   sun-ī*
Siddharth-ERG   story   sit-KAR   hear-PERF
'Sitting, Siddharth heard the story'

   b   *Karīnā-ne$_1$ Siddhārth-ko$_2$ kahānī   [PRO$_{1,*2}$ baiṭh-kar]   sun-ā-yī*
Karina-ERG   Siddharth-DAT   story   sit-KAR   hear-DIR.CAUS-PERF
'Sitting, Karina told Siddharth the story' (Karina was sitting)

   c   *Karīnā-ne$_1$ Sākshi-se$_2$ Siddhārth-ko$_3$ kahānī   [PRO$_{1,2,*3}$ baiṭh-kar]*
Karina-ERG   Sakshi-ABL   Siddharth-DAT   story   sit-KAR
sun-vā-yī
hear-DIR.CAUS-PERF
'Karina had Sakshi tell Siddharth the story' (Karina or Sakshi was sitting; *Siddharth was sitting)

There are three surface differences between ingestives and other transitive verbs under causativization: both direct and indirect causative morphemes may be used with ingestive stems; the external argument of the base verb appears as a dative,[7] not -*se*-marked, under causativization; and, as shown in (32b-c), the base external argument is never able to control KCs under causativization.

To account for this, Ramchand (2008) proposes that for ingestives in the base form, the ingesting argument (in 32a, Siddharth, the hearer) is both an internal argument and an external argument (in Ramchand's terms, both an "undergoer" and "initiator") of the event; the change under causativization is that this original argument is only the internal argument, and a new argument is in the external position. If we adopt roughly this position (though not holding on the generalized thematic relations Initiator and Undergoer suggested by Ramchand), this works as in as in (33).
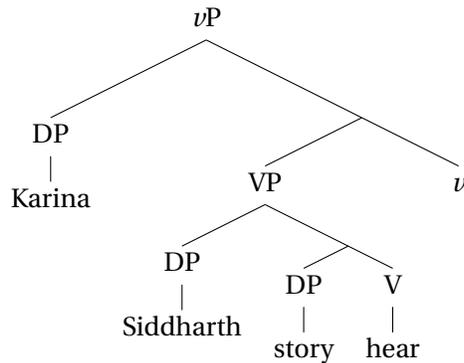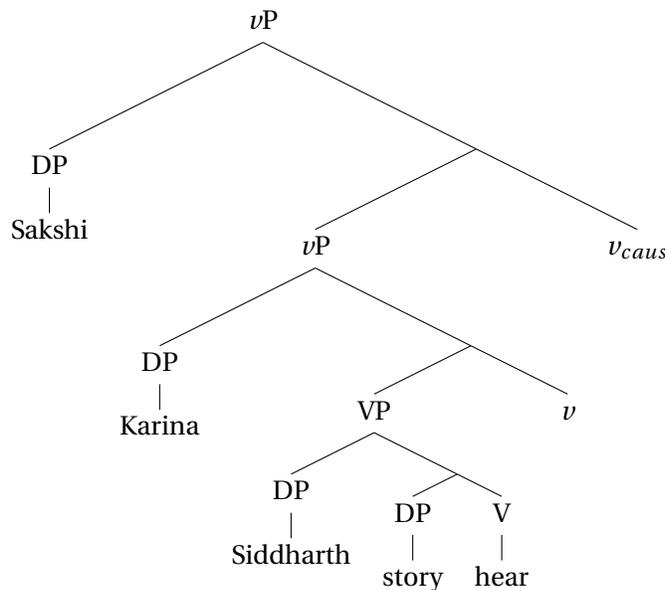
(33)   a   Underived ingestive

---

[7]Bhatt and Anagnostopoulou (1996) show, based on animacy and word order facts, this is indeed dative and not DOM.

b (Direct) Causativized ingestive

```
                         vP
                  ┌──────┴──────┐
                 DP          ┌──┴──┐
                  │         VP      v
               Karina    ┌──┴──┐
                        DP   ┌─┴─┐
                         │  DP   V
                     Siddharth │   │
                             story hear
```

c (Indirect) Causativized ingestive

```
                         vP
                  ┌──────┴────────┐
                 DP           ┌───┴────┐
                  │          vP      v_caus
                Sakshi   ┌────┴────┐
                        DP      ┌──┴──┐
                         │     VP      v
                       Karina ┌──┴──┐
                             DP   ┌─┴─┐
                              │  DP   V
                          Siddharth │   │
                                  story hear
```

The behavior of these with regards to KCs thus falls out naturally from the assumptions already made about their interpretation: both of these structures have only one event with which the KC may be interpreted, and the highest argument of that event's Argument Structure is the only controller of a KC. In both cases the highest argument is an Agent; it is simply the case that the Agent of the base form is the Goal of the derived form, and a new argument is introduced as Agent. The behavior of ingestives in the indirect causative construction (32c) is completely as predicted: it takes the transitive form as input, adds a new argument **and** a new event, and thus a new interpretive possibility for a KC.

An alternate way of representing the syntax of ingestive causatives which makes the same predictions is to suggest that the direct causative of an ingestive adds a second *v*P but not one which introduces a second event. This would maintain the generalization that only predicates which introduce an additional event introduce new possible controllers for KCs, as well as providing understanding of the morphological relationship between underived ingestives and their direct causative forms (ie., explain the presence of the morpheme $-\bar{a}$ in (32b)). The only drawback of such an analysis would be determining what the exact semantics are of the arguments in

such a sentence, as on its own this assumption might result in a denotation for a sentence like (33b) like the following:

(34)
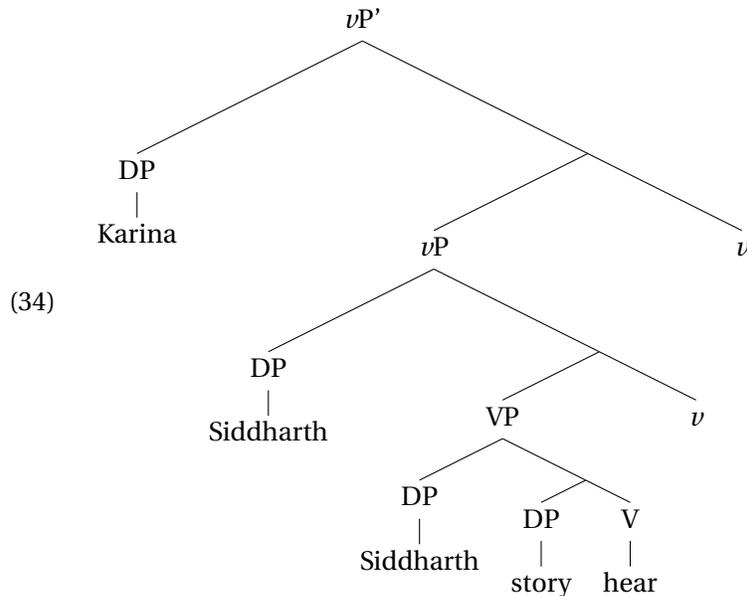
$[\![v\text{P'}]\!] = \lambda e$. Agent(Karina)(e) and Agent(Siddharth)(e) and Goal(Siddharth)(e) and hear(story)(e)

As both analyses make the same predictions regarding the availability of controllers in the various derivatives of ingestive verbs, they are equivalent for present purposes, but surely something like one of these is necessary.
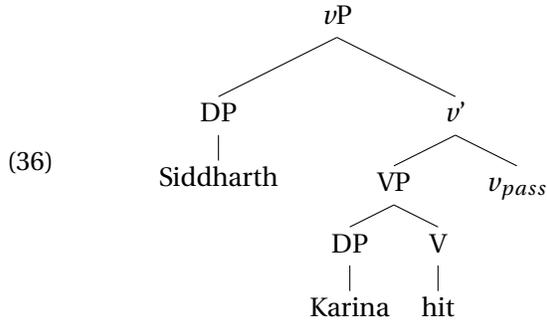
3   Passives and KCs

As mentioned at the beginning of the paper, and discussed first by Mahajan (1996), KCs may - in fact, must - be controlled by oblique agents in passive constructions.

(35)   a   *Siddhārth₁-dvārā   Karīnā₂-ko   [PRO₁,*₂   nāch-kar]   mār-ā   gayā*
              Siddharth-INST   Karina-DOM   dance-KAR   hit-PERF   go-PERF
              'Dancing, Karina was hit by Siddharth' (Siddharth is dancing)

         b   **Karīnā₁-ko   [PRO₁   nāch-kar]   mār-ā   gayā*
              Karina-DOM   dance-KAR   hit-PERF   go-PERF
              Intended: Karina was hit while (someone was) dancing

Mahajan argues that this, among other facts, requires an analysis of passives in Hindi-Urdu where the agent is present in much the same way in the syntax as it is in an active sentence. That is for Hindi-Urdu, analyses of passives as *v*Ps which fail to introduce an agent argument (as is hinted at by Kratzer 1996:124, and spelled out explicitly by Wurmbrand 2001, Bobaljik and Wurmbrand 2005) cannot be correct. Rather, a Hindi-Urdu passive involves a v_{pass} which introduces an agent just as *v* does, but a morphological and morpho-syntactic correlates (such as the

lack of licensing of Ergative case) distinguish it from an active, similar to the analysis of English passives by Baker, Johnson, and Roberts (1989).

(36)

```
                              νP
                        ╱          ╲
                     DP              v′
                      │            ╱    ╲
                  Siddharth     VP       v_pass
                              ╱    ╲
                           DP       V
                            │       │
                         Karina    hit
```

   a ⟦VP⟧= λe . hit(karina)(e)

   b ⟦v_{pass}⟧= λx . λe . Agent(x)(e)

   c ⟦v'⟧= λx . λe . Agent(x)(e) and hit(Karina)(e)

   d ⟦vP⟧= λe . Agent(Siddharth)(e) and hit(Karina)(e).

It follows very naturally if the KC is interpreted as adjoined to v that the controller of the KC will be the argument of v. Since the KC must be adjoined to the highest predicate associated with an event, it will necessarily (given the system described above) be controlled by the argument of v_{pass} and never by the theme. Thus a KC will compose with a passive vP as in (37).

(37)

```
                              νP
                        ╱            ╲
                     DP               v″
                      │           ╱        ╲
                  Siddharth     KC           v′
                              ╱    ╲       ╱    ╲
                       PRO dancing    VP       v_pass
                                    ╱    ╲
                                 DP       V
                                  │       │
                               Karina    hit
```

   a ⟦VP⟧= λe . hit(karina)(e)

   b ⟦v_{pass}⟧= λx . λe . Agent(x)(e)

   c ⟦v'⟧= λx . λe . Agent(x)(e) and hit(Karina)(e)

   d ⟦v''⟧= λx . λe . ∃e' . Agent(x)(e) and dancing(x)(e') and hit(Karina)(e).

   e ⟦vP⟧= λe . ∃e' . Agent(Siddharth)(e) and dancing(Siddharth)(e') and hit(Karina)(e).

What is not immediately clear is why an implicit agent cannot be understood as a controller of a KC. However, this is not a peculiarity of passives; implicit agents in indirect causatives are also unable to be controllers of a KC.

(38)   a   *Karīnā₁-ko   [PRO₂   nāch-kar]   mār-ā   gayā
           Karina-DOM   dance-KAR   hit-PERF   go-PERF
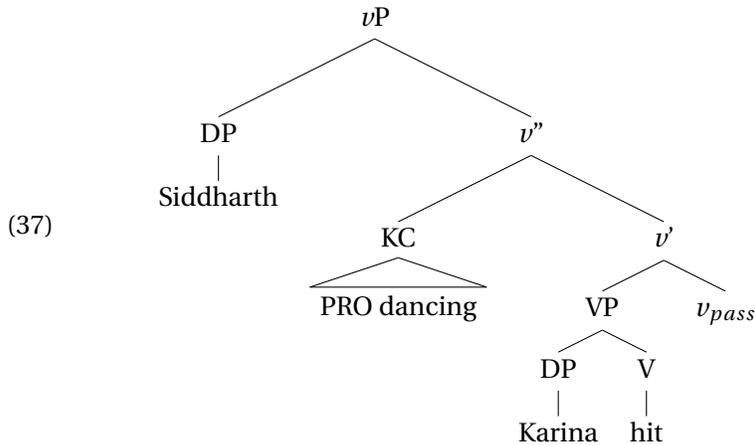   Intended: Karina was hit (during someone's) dancing

       b   *Siddhārth-ne₁   Sākshi-ko₂   [PRO₃   chillā-kar]   jag-vā-yā
           Siddharth-ERG   Sakshi-DOM   shouting   wake.up-IND.CAUS-PERF
           Intended: Siddharth woke up Sakshi during someone's shouting

This would not be predicted if we followed Mahajan closely and adopted for HU an analysis of passives along the lines of Baker, Johnson, and Roberts (1989), wherein the passive semantically **and syntactically** encodes an agent, but is compatible with the analysis in (36-37), assuming the constraint against covert subjects in these constructions being controllers to be an idiosyncrasy of HU. Note it is not a general ban on non-overt arguments as controllers, in Hindi-Urdu or cross-linguistically: null controllers are perfectly licit as such in English, and in fact may be required given certain likelihood conditions (Roeper 1987), and nominative/ergative null arguments **may** be controllers of KCs in Hindi-Urdu.

(39)   The ship₁ was sunk [PRO₂,#1 to collect the insurance money]

(40)   pro₁   Karīnā₂-ko   [PRO₁   nāch-kar]   mār-ā
              Karina-DOM   dance-KAR   hit-PERF
       'Dancing, (he/she) hit Karina'

While there is no obvious answer to the question of why implicit agents in Hindi-Urdu may not control KCs, given the distinction between implicit arguments and null subjects, it seems sufficient to claim that this is a matter for a theory of *pro* drop to address rather than a theory of adjunct control per se. Still, it is an open and important question.

4   Scrambling and locality

Given the syntax of vPs, and KCs' place within them, which I have argued for in the previous sections, there are a few remaining issues pertaining to the linear position of KCs and their interpretation which require some explanation and investigation: The derivation of ambiguous word orders, and the absence of ambiguity in other configurations. Other well-established facts about scrambling in Hindi-Urdu and its effect on interpretation provide further understanding of this.

KCs are ambiguous just in the case that the KC follows both the causer and the causee.

(41)   a   Sid-ne₁   Karīnā-se₂   [PRO₁,₂   baiṭh-kar]   kām   kar-vā-yā
           Sid-ERG   Karina-ABL   sit-KAR   work   do-IND.CAUS-PERF
           'Sitting, Sid had Karina do work' (Ambiguous)

       b   Sid-ne₁   [PRO₁,*₂   baiṭh-kar]   Karīnā-se₂   kām   kar-vā-yā
           Sid-ERG   sit-KAR   Karina-ABL   work   do-IND.CAUS-PERF
           'Sitting, Sid had Karina do work' (Sid is sitting)

       c   [PRO₁,*₂   baiṭh-kar]   Sid-ne₁   Karīnā-se₂   kām   kar-vā-yā
                     sit-KAR   Sid-ERG   Karina-ABL   work   do-IND.CAUS-PERF
           'Sitting, Sid had Karina do work' (Sid is sitting)

I will deal first with the first two word orders. In (41b), the interpretation mirrors the syntax sketched for high interpretation of KCs exactly. The word order in (a) seems to mirror the syntax of low interpretation, but also allows for high interpretation; thus, something must change to allow the surface ambiguous word order to be derived.

(42) a [Sid$_1$ [Karina$_2$ [[$_{kc}$ PRO$_2$ ...] [VP ...] v]] v-Caus] (Causee control)

b [Sid$_1$ [[$_{kc}$ PRO$_2$ ...] [Karina$_2$ [VP ...] v] v-Caus] (Causer control)

→ [Sid$_1$ [Karina$_2$ [t$_1$ [[$_{kc}$ PRO$_1$...] [t$_2$ [$_{VP}$ ...] v] v-Caus]]]]^8

Hindi-Urdu is a free word-order language and this sort of movement is perfectly plausible. While there is no concrete evidence that this has occurred, other than that some speakers prefer low readings in this word order, there is every reason to believe it is a possible operation; the word order permutation as analyzed in (42) is essentially akin to scrambling out of a small clause over a sentence-level adverbial, which is readily available, as in the alternation in (43).

(43) a *Sid-ko   zarūr   [Karīnā sundar] lag-tī   hai*
         Sid-DAT surely Karina   pretty   seem-IMPF PRS
         'Surely Sid finds Karina pretty'

b *Sid-ko   Karīnā zarūr   [sundar] lag-tī   hai*
         Sid-DAT Karina surely pretty   seem-IMPF PRS
         'Surely Sid finds Karina pretty'

In addition to the general possibility of such scrambling occuring, further investigation of HU word order permutations and their semantic effects, particularly in interaction with KCs, is supports the validity of this approach.

Like other HU scrambling, reordering of DPs relative to KCs is not semantically vacuous. For example, local binding of bound variable pronouns is subject to surface c-command restrictions, which are satisfied by scrambling, as first discussed by Mahajan (1990).

(44) Crossover effects in Hindi-Urdu

a **us-kī$_1$ bahan-ne sab$_1$-ko   dekh-ā*
         3sg-GEN sister-ERG all-DOM see-PERF
         'Their sister saw everyone' (* on bound reading)

b *sab$_1$-ko us-kī$_1$ bahan-ne dekh-ā*
         all-DOM 3sg-GEN sister-ERG see-PERF
         'Their sister saw everyone' (✓bound reading)

In causative sentences, local scrambling of the KC bleeds non-subject control of the KC in a sentence with an indirect causative.

---

^{8}This structure assumes that scrambling must obey the Extension Condition, and a DP could not scramble over a KC but under a higher DP; it is equivalent for the current purposes to assuming that the latter operation is licit, as the effects of scrambling seem to refer only to the derived structures and not the number of operations deriving them.

(45) *[PRO$_{1,*2}$ baiṭh-kar] Siddhārth-ne$_1$ Karīnā-se$_2$ kām kar-vā-yā*
          sit-KAR   Siddharth-ERG Karina-ABL work do-IND.CAUS-PERF
       'Sitting, Siddharth had Karina do work' (Siddharth was sitting)

Non-local scrambling - that is, scrambling out of a finite clause - fails to fix weak-crossover effects the way local scrambling does (44); non-local scrambling also distinguishes itself from local scrambling in the control possibilities it makes available; a KC may be understood as originating in the lower clause after scrambling.
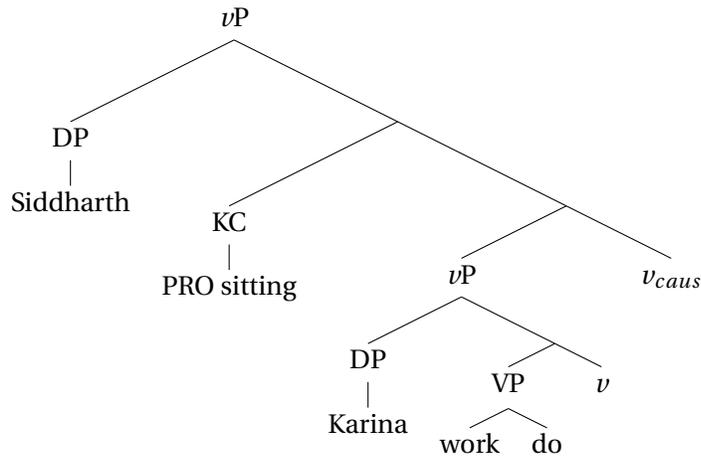
(46) Crossover effects across clauses

   a **us-kī$_1$ bahan-ne soch-ā   [ki rām-ne   sab$_1$-ko dekhā*
       3sg-GEN sister-ERG think-PERF that Ram-ERG all-DOM saw
       *'His$_1$ sister thought that Ram saw everyone'

   b **sab$_1$-ko us-kī$_1$ bahan-ne soch-ā   [ki rām-ne   t$_1$ dekhā*
       all-DOM 3sg-GEN sister-ERG think-PERF that Ram-ERG   saw
       *'His$_1$ sister thought that Ram saw everyone$_1$'
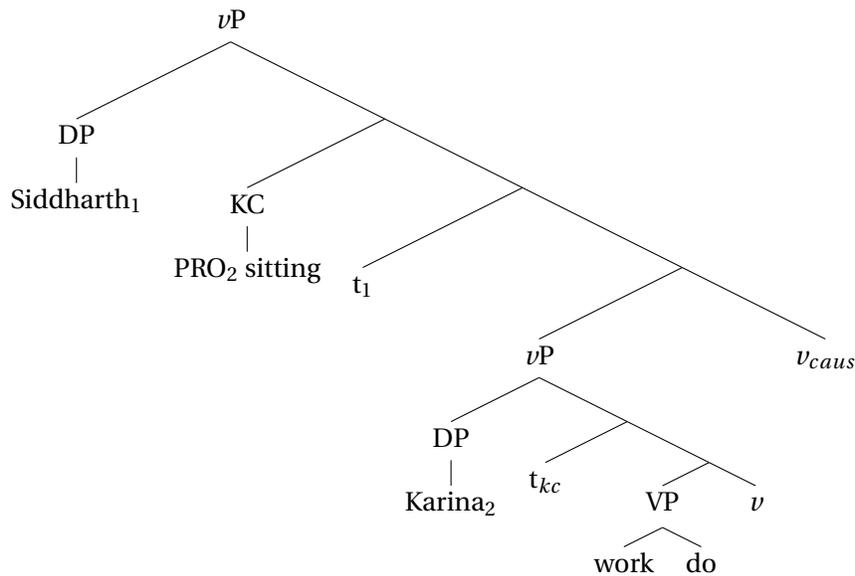
(47) KC Control across clauses

   a *Siddhārth-ne$_1$ jān-ā   [Karīnā$_2$ [PRO$_{*1,2}$ baiṭh-kar] so   rahī hai]*
       Siddharth-ERG know-PERF Karina   sit-KAR   sleep PROG PRS
       'Siddharth found out that Karina is sleeping sitting' (*Siddharth is sitting)

   b *[PRO$_{1,2}$ baiṭh-kar] Siddhārth-ne$_1$ jān-ā   [Karīnā$_2$ t$_{kc}$ so   rahī hai]*
             sit-KAR   Siddharth-ERG know-PERF Karina   sleep PROG PRS
       'Siddharth found out that Karina is sleeping sitting' (Siddharth or Karina is sitting)

An idea about this which would be consistent with the claim by Mahajan that local, but not long-distance scrambling, is A-movement, and KCs, being adjuncts, are not capable of A-moving. Relative positions of arguments and KCs would thus be determined purely by scrambling of the arguments around the KCs. This has the virtue of accurately predicting the unavailability of causee control in a configuration like (41b). If a KC is unable to scramble, this sentence could only have a structure like (48a), where the KC originates in the higher *v*P and the word order is underived, and the order in (b), where the KC originates lower and gets higher, is impossible.

(48)   a Without scrambling

```
                        vP
           /                          \
         DP                            \
          |               /              \
      Siddharth         KC                 \
                         |        /           \
                    PRO sitting  vP            v_caus
                                /    \
                              DP      VP   v
                               |      /  \
                            Karina  work  do
```

        b *Scrambling

```
                        vP
           /                          \
         DP                            \
          |               /              \
     Siddharth_1         KC                \
                         |        \          \
                    PRO_2 sitting  t_1         \
                                    /            \
                                  vP            v_caus
                              /         \
                            DP           \
                             |    t_kc    \
                         Karina_2     VP    v
                                      /  \
                                   work   do
```

The idea that KCs can only A-bar scramble is also supported by the unavailability of causee control in the configuration in (49).

(49)   *Karīnā-se$_2$ [PRO$_{1,*2}$ baiṭh-kar] Siddhārth-ne$_1$ kām kar-vā-yā*
       Karina-ABL   sit-KAR   Siddharth-ERG work do-IND.CAUS-PERF
       'Sitting, Siddharth had Karina do work'

On the surface this would seem like a peculiar fact, as the causee precedes the KC and the causer does not, yet only the causer may be a controller. However, if a KC may only A-bar scramble to a left peripheral position, it follows that an argument could not then A scramble and still precede the KC; thus the word order in (49) could only be derived by both the KC and the causee A-bar scrambling. Since A-bar scrambling requires reconstruction, it is expected that this word order should pattern with sentence-initial KCs, which it does: neither allows causee control of the KC.

The fact that KCs pattern with bound pronouns in this way tells us something about the mechanism of adjunct control; it namely supports the notion, per Landau (2013) *inter alia*, that adjunct control involves PRO, understood as a "bound minimal pronoun". The mystery of adjunct control remains the control of things scrambled past the highest possible controller, even in the simplest sentences.

(50) *[PRO₁ baiṭh-kar] Karīnā-ne₁ Siddhārth-ko   chūm diyā*
          sit-KAR   Karina-ERG Siddharth-DOM kiss   give.PERF
      'Sitting, Karina kissed Siddharth' (Karina was sitting)

Summing up the arguments made in this section, word order permutations in sentences with KCs have semantic effects which mirror the effects of scrambling on sentences involving variable binding discussed in Mahajan (1990). This is predicted by the theory that adjunct control involves binding of a null minimal pronoun (PRO), and the understanding that KCs, as adjuncts, may only A-bar move, and not A scramble as HU arguments may.

5   Future work: Cross-linguistic application

The analysis here has made specific reference to the structure of vP and interpretation of adjuncts in Hindi-Urdu, but cross-linguistically similar patterns suggest that there is some hope for applicability in other languages.

5.1   Conjunctive Participles across South Asia

As discussed in Section 2, the Conjunctive Participle construction, of which KCs are a subtype, vary to some degree in their form and interpretation. While KCs are an Obligatory Control construction, languages like Telugu and Assamese allow for backward control, and languages like Dzongkha allow for non-obligatory control in Conjunctive Participles. While many of these languages include morphological patterns similar to the Hindi-Urdu passive and causative, the analyses of these languages which do exist do not look at how they interact with valency-changing operations.

The possibility of non-obligatory control constructions which are similar to KCs in other ways might be understood by variation in the presence of the interpretive and structural constraints on KCs suggested here (22 and 26); if, for example, a conjunctive participle clause were allowed to adjoin lower in a vP than the highest controllable position it would produce an adverbial clause which could be controlled by any argument of a verb. An example of such a conjunctive participle would be the Hindi-Urdu -*te hī* participle described briefly in Section 2; further investigation of control effects of the other conjunctive participle forms in Hindi-Urdu and related languages would be revealing as to the variation in interpretive constraints available cross-linguistically and within a language.

Further work on languages like Assamese which looks at the interaction between backward control in conjunctive participles and morphological causativization and passivization may be enlightening to the understanding of backward control phenomena; if A-movement analysis of control adopted by Haddad (2011) is correct, there may be restrictions on whether backward control and causee control can cooccur (for example).

5.2 English

English has two constructions which are intriguingly similar to the KC in a couple of ways. One is Rationale Clauses, which, when occurring with passives, may be controlled by implicit agents, by oblique agents, or by themes.

(51)   a The ship$_1$ was sunk (by the owners$_2$) [PRO$_{2,\#1}$ to collect the insurance money] (*Roeper 1987*)

      b The house$_1$ was emptied (by the owners$_2$) [PRO$_{1,\#2}$ to be demolished] (*Landau 2014*)

The English facts actually follow naturally from a v_{pass} which fails to introduce an agent argument but asserts the existence of one. The fact that passives assert the existence of an agent in English is necessary for the contrast between (39) and (52).

(52)   #The ship sank to collect the insurance money.

Since unaccusatives fail to allow for an understood agent while passives do, we do somehow want the passive to encode the existence of an agent. Thus it may be a point of cross-linguistic variation whether v_{pass} introduces an agent or merely asserts the existence of one.

(53)   a Hindi-Urdu: $[\![v_{pass}]\!] = \lambda x \, . \, \lambda e \, . \, \text{Agent}(x)(e)$

      b English: $[\![v_{pass}]\!] = \lambda e \, . \, \exists x \, . \, \text{Agent}(x)(e)$

A second construction type in English relevant to the Hindi-Urdu data is the depictive, which, like KCs, varies depending on word order in how locally it must be interpreted, with left-adjoined depictives being restricted to subject interpretation.

(54)   a Siddharth$_1$ saw Karina$_2$ [PRO$_{1,2}$ drunk]

      b [PRO$_{1,*2}$ drunk], Siddharth$_1$ saw Karina$_2$

A closer investigation if English depictives may be important to understanding the unavailability of causee control for left-adjoined KCs.

6 Conclusion

Here I have investigated the interaction of controlled adjuncts with word order and valency transformations in Hindi-Urdu, in order to shine light on the notion of adjuncts being "subject-oriented", and shown that this orientation is best understood as orientation to the highest argument associated with a given event-denoting predicate. This understanding of the orientation of these adverbials successfully explains the ability of causees in morphological causatives and oblique agents to be controllers, despite not being sentential subjects in the traditional sense. Further, an understanding of adjunct control as involving a bound minimal pronoun allows for the understanding of the interaction of word order permutations with the interpretation of adjuncts: -*kar*-clauses are subject to reconstruction effects in exactly the same cases as bound variable pronouns in Hindi-Urdu, and locality effects are predicted by assuming any movement of a KC must be A-bar movement.

While the semantic behavior of KCs and similar constructions has been frequently argued to present insoluble problems for syntactic analyses of them (Davison 1984, Genetti 2005), I have shown here that, without positing much of anything in the way of new theoretical machinery, at least a portion of KCs' behavior falls out very naturally. Though further work needs to be done to have a full understanding of KCs and related constructions, the analysis here presents a lot of hope that conjunctive participles are a wholly tractable problem for minimalist syntax and compositional semantics.

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