

Kiowa verb incorporation and types of mediating relations*

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This paper explores some of the semantic relations between verbs in V+V incorporation structures in the Kiowa language¹ and the consequences for a compositional semantics.

1. The variety in Kiowa verb incorporation

1.1 Polysynthesis and verb decomposition

The semantics of verb incorporation (VI) is a crucial yet understudied aspect of word-building, made even more crucial by recent developments decomposing verbs based on event structure and argument structure. Kiowa verbs allow many kinds of root building with adverbials (1), nouns (2), and verbs (3). Incorporated stems are glossed X_C for ‘combining’.

- (1) *Yáucáui èm bôgùnmàu.*
jókjòj èm—bô:+gùn—mò
young woman S/R—**always**_C+dance—IPFV
‘The young woman was always dancing.’

- (2) *Gà máungòp.*
jà—món+gòp
1 S/S—**hand**_C+hit.PFV
‘I slapped/punched him.’

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¹Endonym *Cáuijògà* [kój.tò:ɣə]. ISO: kio. Kiowa-Tanoan group, spoken in Oklahoma. EGIDS: 8/9. Kiowa examples are in the Parker McKenzie orthography (McKenzie & Meadows 2001, Watkins & Harbour 2010), with phonemic IPA glossing underneath, following Leipzig conventions except where noted, and in verb agreement prefixes, where the following conventions are used: 1: 1st person, 2: 2nd person, otherwise 3rd. D: dual, E: empathetic plural, I: inverse number, P: plural, R: reflexive, S: singular. A- subject, A/B- agent/object, A:B- subj:dative, A/B:C- agt/obj/dat

- (3) *Yáucáui* *án.jǫmǎugàu.*
jókój *án-tó:+mó:gò*
 young woman P:S—**speak**_C+⟨come easy⟩
 ‘The young woman is a good speaker.’

Many aspects of incorporation have been examined in great detail: Adverbials (Travis 2010, Slavin 2017); Nominals (Baker 1988, Van Geenhoven 1998, Farkas & de Swart 2003, Johns 2007, Dayal 2011, McKenzie ms.); Classifiers (Rushforth 1991, Rice 2000); but not verbs. So the basic questions here are three: What semantic structures do distinct V+V formations build? How do we fill in gaps in compositionality? What range of possibilities exists? I don’t offer complete solutions in this paper, but rather, the beginning of deeper lines of inquiry.

1.2 The nature of Kiowa verb incorporation

Kiowa verbs are the only required portion of a sentence (Watkins 1984). Incorporated stems fall between the pronominal prefix/proclitic and main stem, which determines argument structure.

- (4) Prefix — Incorporated stem(s) + Main stem = Auxiliary — Inflection

Several pieces of evidence show that the combination of stems clearly forms one prosodic unit. Speakers write it as one word, even in home orthographies. In the prosody, the first high tone of a word is highest, with subsequent high tones at lower pitches. Also, falling tone, some pronominals, and most compounded stems trigger low tone for the rest of the ‘word’.

- (5) a. Simple: *èm bǫjǎu* ‘I will see you’
 b. Incorporated: *èm tháuibǫjǎu* ‘I might happen to see you’
 c. Falling tone: *èm áuibǫjǎu* ‘I’ll see you again’ (a common valediction)
 d. Low-tone trigger: *bá áuibǫjǎu* ‘We’ll see him again’

In the morphology, incorporated and compounded forms often differ from free ones:

- (6) *hâfè* ([hâ:pè]) ‘pick up’ → *tâfè* ([t^hâ:pè]) ‘pick up_C’
 a. *dé hâfèjǎu* ‘I will pick it up’
 b. *yá tâfè+fějòp* [pick up_C+try] ‘I’m trying/striving to pick it up’
 c. *són+â+tâfè* [grass_C+haul_C+pick up/NOM] ‘hay truck’

Semantic types of Verb Incorporation

I focus on semantics, skipping the syntactic structures, for three reasons. First, the wide variety of processes proposed for building complex verbs, most of which involve PF processes, make it difficult to start there (Mithun 1984, Baker 1988, 1996, 2009, Compton &

Pittman 2010, Barrie & Mathieu 2015). Second, the semantics of incorporation/pseudo-incorporation is underexplored outside of object nouns (Van Geenhoven 1998, Farkas & de Swart 2003, Dayal 2011, Borik & Gehrke 2015), and third, this project contributes to a semantic reference grammar I am currently making for Kiowa.

The table in (7) lists many of the different kinds of meanings found in the combination of two verb stems. For brevity, this paper will focus on just three more: control-like incorporation, *tough*-constructions, and result statives. I propose that for these, a **mediating relation** links the semantics of the two verbs, suggesting that despite the many distinct apparent structures, many of these constructions might actually have a similar LF.

(7) *Partial list of V+V incorporation types in Kiowa*

Type	Kiowa example	gloss	English translation
manner	<i>kúì+bàu</i>	drag _C +bring	‘drag in’
depictive	<i>tǎu+fě+qùigà</i>	hunger _C + dead _C +fall	‘fall dead from hunger’
conjunctive	<i>kîn+qǎu</i>	cough _C +be lying	‘lie down coughing’
aspectual	<i>sál+háun</i>	be hot _C +come to end	‘cool off’
degree	<i>sál+ố</i>	be hot _C +be pleasant	‘be nice and hot’
causative	<i>táp+ǎumě</i>	be dry _C +make	‘dry’ (tr).
inchoative	<i>táp+àumgà</i>	be dry _C +make.ANTIC	‘dry out’ (intr.)
comitative	<i>fǎu+hěbà</i>	bring _C +enter	‘bring in/take in’
pretty-constr.	<i>fố+thǎgà</i>	see _C +be good	‘be good-looking’
tough-constr.	<i>têm+còt</i>	break _C +be strong	‘hard to break’
result state	<i>têm+dǎu</i>	break _C +be	‘be broken’
subject control	<i>têm+àundǎu</i>	break _C +want	‘want to break’ (tr.)
object control	<i>têm+dǎufě</i>	break _C +ask.PFV	‘ask to break’

2. Control-like incorporation

A common productive form of verb incorporation involves an incorporated verb (or phrase) interpreted as a control or purpose structure.

(8) *Èm cúrchàn.*

èm—kún+tsàn

2S—**dance**_C+arrive.PFV

‘You came to dance.’

(9) *Áuhǎu à thǎumfốbǎ.*

óhò: à—[t’òm+fố:]+bà:

there 1S—first_C+**see**_C+go.PFV

‘I went there to see you/him/her/it/them first’

The lower verb’s argument DP is extraposed if expressed at all, perhaps due to a constraint requiring DPs and VPs to be spelled out as one prosodic word.

- (10) *Àuzâi à kâuthâu.*
 òzá.ì: à-k^hâ:t't'ò:
udder 1S—get_C+want
 ‘I want to get the udder!’ (Harrington 1946)

The embedded event is not entailed, but is possible (11), leading to a gap in composition: The two verbs have distinct events and distinct possible worlds, so their denotations cannot be conjoined, simply or otherwise.

- (11) *Delores à fôchàn, né háun gà bômâu.*
 D. à-pô:tsàn né hón jà-bô:-mô:
 Delores 1S—see_C+arrive.PFV but not 1S/S—see—NEG
 ‘I came to see Delores, but I didn’t see her.’

In order to capture the truth-conditions compositionally, I have proposed in previous work (McKenzie ms.) that a mediating relation is required to link the meanings of the verb and the embedded VP.

- (12)
-

In the case of control, a particular mediating relation involving control (call it M_C) relies on the fact that the embedded verb is the product of an *attitude* associated with the main verb’s event. That attitude has content accessible via a content function from objects to their content (cp. Moulton 2009, 2015). The event comes true in worlds where that content holds.

(13) **Attitude associated to an event**

For any event e , let a_e be the attitude held by the agent of e associated with the motivation of e .

- (14) $\llbracket M_C \rrbracket = \lambda P_{s,wt} \lambda e_s \lambda w_w. \forall w' \left[w' \in \text{content}_w(a_e) \rightarrow \exists e' [\text{agent}(\text{holder}(a_e))(e')(w') = 1 \ \& \ P(e')(w') = 1] \right]$

READ: *In all worlds where the content associated to e holds, there is an event of P whose agent is the holder of that content.*

- (15)
-
- $\llbracket \begin{array}{c} \diagup \quad \diagdown \quad \diagup \\ x_1 \quad b\acute{o} \quad M_C \\ \langle \text{see} \rangle \quad \quad \diagup \quad \diagdown \\ \quad \quad \quad \langle \text{arrive} \rangle \quad ch\acute{a}n \end{array} \rrbracket = \lambda x_e \lambda e_s \lambda w_w. \text{arrive}(x)(e)(w) = 1 \ \& \ \forall w' \left[w' \in \text{content}_w(a_e) \rightarrow \exists e' \left[\text{agent}(\text{holder}(a_e))(e')(w') \ \& \ \text{see}(x_1)(e')(w') \right] \right]$
- READ: *e is an event of x arriving in w , and in all worlds where the content associated to e holds, there is an event of seeing x_1 whose agent is the holder of that content.*

Control-like incorporation interacts with noun incorporation in a curious way: It licenses object incorporation. Kiowa generally allows noun incorporation *except* for objects (Watkins 1984, Adger et al. 2009), (16). Yet, the object noun of an incorporated verb is

freely incorporable (17).

- (16) *Á-**áulh̥h̥u**h̥h̥u^{g̃}à.
 á-òlh̥h̥: +h̥h̥: j̥à
 E/S-**money**_C+get.PFV
 ‘They got money’

- (17) á-**áulh̥h̥u**k̥àub̥à.
 á-òlh̥h̥: +k̥ò: +b̥à:
 E-**money**_C+get_C+go.PFV
 ‘They went to get money’

The distribution of object incorporation follows if the content-mediating relation has a variant (M_{CB}) that binds the verb’s event and noun’s entity, along with their world arguments.

$$(18) \left[\begin{array}{c} \text{áulh̥h̥u} \quad \text{h̥h̥u-} \quad \text{M}_{CB} \quad \text{b̥ǎ} \\ \langle \text{money} \rangle \quad \langle \text{get} \rangle \quad \langle \text{go} \rangle \end{array} \right] = \lambda x_e \lambda e_s \lambda w_w. \text{go}(x)(e)(w) \ \& \ \forall w' \left[\begin{array}{l} w' \in \text{content}_w(a_e) \rightarrow \\ \exists e' \left[\begin{array}{l} \text{agent}(\text{holder}(a_e))(e')(w') \ \& \\ \exists y[\text{money}(x)(w') \ \& \text{get}(x_1)(e')(w')] \end{array} \right] \end{array} \right]$$

READ: e is an event of x going in w , and in all worlds where the content associated to e holds, there is an event of getting some money whose agent is the holder of that content.

So far we have seen two basic mediating relations, which link an embedded event description to the attitude motivating the main event.

3. The *tough*-construction

A second construction is the use of Verb incorporation for simple tough constructions. More complex ones can be made into clauses.

- (19) Ėg̃àu áđàu è **tēm**còt.
 é: =gò á: -dò è -t^hēm +kò?
 PROX=INV stick-INV I-**break**_C+be strong
 ‘This stick is hard to break.’²

- (20) Áđàu èt **tēm**jàudè gà f̥ǎu.
 á: -dò è? -t^hēm -tò: =dè j̥à -pó:
 stick.INV P/I-break-MOD=NOM P-be easy
 It was easy for them to break a stick.³

The tough-construction behaves like control-like incorporation in three important ways: The two verbs have distinct events and possible worlds, and so they cannot be conjoined. Consequently, another mediating relation is in order. Let’s call it M_T

- (21) $\begin{array}{c} \text{VP}_2 \quad \text{M}_T \quad \text{V}_1^\circ \end{array}$

²PROX = proximate deixis. INV = inverse number; singular with most inanimates.

³MOD = modal. NOM = nominalizer. Expletive arguments trigger P agreement.

M_T fits with recent accounts of the tough-construction in English (Keine & Poole 2017, Gluckman 2017) that replace movement accounts with a modal operator introducing a judge, and a binder of the unspoken embedded argument where the apparent gap emerges.

- (22) The stick is tough Op_1 [PRO to break x_1] = $\simeq$ The stick is such that if someone tried to break it, such an event would be tough to accomplish.

That part is easy. The hard part is determining exactly what the mediating relation is doing. It must fulfill at least eight tasks at once:

1. Apply the tough-predicate as a property of events
2. Convert that into a stative property of entities for the main subject
3. Bind the gap entity (not necessarily in Kiowa!)
4. Introduce a modal
5. Place both main and embedded properties in the scope of the modal
6. Quantify over the embedded event
7. Involve a judge of the easiness/toughness
8. Deal with degree semantics

Doing that in full requires a lot more than 1/3 of a proceedings paper, so I'll sketch out an approach that ports over the concept of associated attitude: The modal (step 4) and judging (step 7) go hand-in-hand. The judgment is a mental act, so it involves an attitude whose content is such that the embedded events are tough, easy, impossible, fast, etc. Let this attitude be associated in some (admittedly vague) way to a state.

- (23) **Attitude associated to a state**

For any state s , let $a_s, a'_s, \dots$ be a relevant belief tied to s .

What state do we mean? The state holds of the main verb's argument, and the attitude associated to it is a judgment about possible events. Perhaps the state is a special kind of eventuality (24) whose purpose is to bring these judgments along. The meaning of a tough predicate (25) includes a state, but not a modal—that comes with the mediating relation (26), which also specifies the tough-predicate's state as a special state.

- (24) **Defining a 'special state'**

$SpSt(x) = \{ \langle s, w \rangle \mid s \text{ is a state that holds of } x \text{ in } w, \text{ and } \exists b[b = a_s] \}$

- (25) **Tough predicates include a judge argument and take events**

$\llbracket c\acute{o}t \rrbracket$ 'be strong, tough' = $\lambda e_s \lambda j_e \lambda s_s. \lambda w_w. \text{tough}(e)(j)(s)(w)$

READ: s is a state of e being strong according to j in w .

- (26) **The toughness-mediating relation**

$\llbracket M_T \rrbracket = \lambda P_{e,swt} \lambda Q_{s,wt} \lambda x_e \lambda s_s \lambda w_w. SpSt(x)(s)(w) = 1 \ \& \ \forall w' \left[w' \in \text{content}_w(a_s) \rightarrow \forall e[P(x)(e)(w') \rightarrow Q(e)(\text{holder}(a_s))(w')] \right]$

READ: s is a state of x such that in all worlds w' where a relevant judgment in w is accurate, any event of P involving x in w' is Q according to the holder of a_s .

It isn't clear that this mediating relation needs to bind nominal arguments in its scope.

$$(27) \left[\begin{array}{c} \text{têm-} \\ \langle \text{break} \rangle \end{array} \text{ } M_T \text{ } \begin{array}{c} \text{ílbé} \\ \langle \text{be risky} \rangle \end{array} \right] =$$

$$\lambda y_e \lambda s_s \lambda w_w. \text{SpSt}(y)(s)(w) \ \& \ \forall w' \left[\begin{array}{l} w' \in \text{content}_w(a_s) \rightarrow \\ \forall e [\text{break}(y)(e)(w') \rightarrow \text{risky}(e)(\text{holder}(a_s))(w')] \end{array} \right]$$

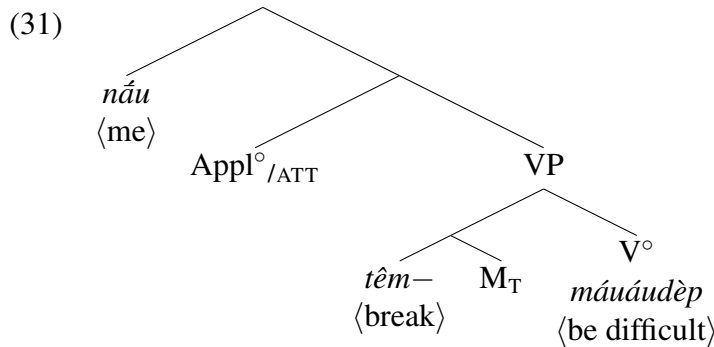
READ: *s* is a state of *y* such that in all worlds *w'* where a relevant judgment in *w* is accurate, any event of breaking happening to *y* in *w'* is risky according to the holder of *a_s*.

If this approach is correct, we should see effects related to the addition of a judge argument, and we do. In Kiowa, attitude predicates (and most psych-predicates) allow the use of the applicative/dative to introduce the attitude holder. Kiowa lacks case marking, so this role is only expressed in the agreement.

- (28) *Ē cún̄tèndàu.*
 ě-kún+tèndò:
 S:1S-dance_C+want
 'I want to dance.'
- (29) *Cáuijògà yá ǒdép.*
 kój+tò:-jæ jǎ-ǒ:dép
 Kiowa_C+speak-NOM P:1S-like
 'I like the Kiowa language.'

The judge can be added as an applicative argument to the main verb, where the applicative head $\text{Appl}^\circ /_{\text{ATT}}$ introduces an attitude holder.⁴

- (30) *Ádàu náu tēm̄màuàudèp.*
 á:-dò nó-t^hêm+mòʔòdèp
 stick-INV I:1S-break_C+be difficult.IPFV
 'I'm having a hard time breaking the stick.', 'The stick is hard for me to break.'



$$(32) \llbracket \text{Appl}^\circ /_{\text{ATT}} \rrbracket = \lambda x \lambda s \lambda w. \text{holder}(x)(s)(w)$$

Objects can be incorporated as well, suggesting a second version (M_{TB}) that binds entity arguments.

⁴Since the verb is incorporated, it is impossible to tell if there are intervention effects (Hartman 2012).

- (33) *yá cǐjǎumàuàudèp.*
 já—kí:+tǎ:+mòʔòdèp
 P:1S—**meat**_C+**cook**_C+be difficult.IPFV
 ‘I can’t cook meat.’ (The stove isn’t working)

That version brings us to a total of four mediating relations so far:

- M_C : (Subject) control
- M_{CB} : (Subject) control + entity binding
- M_T : Tough
- M_{TB} : Tough + entity binding

4. Result statives

Another kind of mediating relation is the result stative, which combines a verb with *dǎu* ‘be’ to indicate that the subject has undergone the described event. The combined verb is always intransitive.

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| <p>(34) <i>Àucàusǎubàu è sǎdǎu.</i>
 òkòsǎ:bò è—sá:+dò:
 window.INV I—shatter_C+be
 ‘The window is broken’</p> | <p>(35) <i>Mátàun è dǎmgádǎu.</i>
 máthòn ẽ—dámjæ+dò:
 girl D—tire.DETR_C+be
 ‘The (two) girls are tired’⁵</p> |
|---|--|

4.1 Similarities to adjectival passives

We can compare the result state to resultatives and adjectival passives, made with *sein* ‘be’, which have been greatly examined in German, where they differ from event passives formed with *werden* ‘become’.

- (36) *Die Reifen werden/sind aufgepumpt.*
 the tires become/are up-pumped
 ‘The tires [are being/are] inflated’

Adjectival passives are more restricted than event passives, and a wide-ranging literature (Rapp 1996, Embick 2004, Maienborn 2009, Gehrke 2011) has tried to find the right balance of lexicon and context that will explain their distribution. I have not yet explored all the possibilities with Kiowa, but for the key facts, Kiowa V+*dǎu* does behave much like [be V+PTCP] in German and English.

First, only changes of state easily license the construction (37). Second, the incorporated verb must be transitive or unaccusative (38), and not unergative.

- (37) *dê* ‘be standing’ → **dêdǎu*

⁵DETR = detransitive (Watkins 1984), which here is anticausative.

- (38) a. = (34) *Àucàusǎubàu è sǎdǎu*. .. ‘The window is broken’
 b. = (35) *Mátàun è dǎmgǎdǎu*. .. ‘The (two) girls are tired.’
 c. **Mátàun è xàngǎdǎu*. .. ‘The (two) girls are run.’

Third, result states can occur with simple unaccusatives. In (39), a field of corn suddenly grew while a man’s back was turned, what he saw was the result.

- (39) *Gà bǒhêl n’óg’ègǎu étál gà qǎdǎumè.*
 jǎe—bǒ:—hêl n(ò)=ó::g(ò)=(h)ègǎ é:t^hál jǎe—k’í?á:+dò:mè:
 S/P—see_P—EVID and:DS=DIST=PRES=then corn P—**grow**_C+be.EVID
 ‘He looked around and for a long ways (in that direction), the corn had grown.’⁶
 (SIL story No. 14)

Fourth, it is easy to modify the adjectival passive’s result state, but not to modify the source event. Temporal and spatial modifiers— in simple contexts at least— describe the result state (40), while manners, instruments, and even material sources can freely modify the event (41).

- (40) Context: Last week, some kids broke a window in the store across the street. Today I asked you about it and you said:

Kǎhǐgǎu héjǎu àucàusǎubàu è sǎdǎu.
 chǎhì:gò: hétó òkòsǒ:bò è—sá:+dò:
 in the morning still window.INV I—**shatter**_C+be
 ‘This morning, the window was still broken.’

- (41) a. Manner

Chènbô thǎgái è féndǎu.
 tsènbo: t’á:jáj è—pén+dò:
 cow **carefully** D—**butcher**_C+be
 ‘The two cows were carefully butchered.’

- b. Instrument

Chènbô qǎujò è féndǎu.
 tsènbo: k’ô:=tò è—pén+dò:
 cow **knife=INSTR** D—**butcher**_C+be
 ‘The two cows were butchered with a knife.’

- c. Material

Hóldá thǎpkáuijò è áumdǎu.
 hóldá t’áp+k^hój=tò è—óm+dò:
 shirt **deer**_C+**skin=INSTR** D—**make**_C+be
 ‘The two shirts were/are made of buckskin.’

⁶DIST = distal deixis, PRES = presentative

4.2 Three differences from adjectival passives

The result stative isn't exactly like the German adjectival passive, for it differs in three ways: It occurs with detransitives, agents are easily added, and it is licensed by verbs of saying and hearing. This section discusses each of these differences in turn.

4.2.1 Result states with detransitives

Result statives can occur with detransitivized verbs. The detransitive marks event passives, anticausatives, out-of-control actives, and manage-to actives—essentially, events that have no controlling agent (Watkins 1984, Harbour 2007).

- | | |
|---|--|
| <p>(42) Transitive</p> <p><i>Yáifáu gà thàljàù.</i></p> <p>jájpó jàʔ-t'ál-tò:</p> <p>rope 1S>3P-sever.SG-MOD.TR⁷</p> <p>‘I will cut the rope in two.’</p> | <p>(43) Detransitive</p> <p><i>Yáifáu gà thátjéthàù.</i></p> <p>jájpó jà-t'áʔté-t'ò:</p> <p>rope P-sever.SG.DETR-MOD</p> <p>‘The rope will snap in two.’</p> |
|---|--|

The detransitive involves a non-agentive Voice^o head (left) that doesn't introduce an argument, while the transitive form is agentive (right) and does introduce an argument.



Both voice forms can be used with +*dấu*, though the meanings are slightly different: *Dấu*-incorporated transitives are adjectival passives (45), while *dấu*-incorporated detransitives only express the result of a change of state (46)—showing that the result state form is not introduced at Voice^o.

- | | |
|--|---|
| <p>(45) Transitive</p> <p><i>Yáifáu gà thàldàù.</i></p> <p>jájpó jàʔ-t'ál+dò:</p> <p>rope P-sever.SG_C+be</p> <p>‘The rope is cut in two.’</p> | <p>(46) Detransitive</p> <p><i>Yáifáu gà thátcádàù.</i></p> <p>jájpó jà-t'áʔcá+dò:</p> <p>rope P-sever.SG.DETR_C+be</p> <p>‘The rope has snapped in two.’</p> |
|--|---|

⁷MOD.TR = modal with transitive verbs

4.2.2 Agents can be added to result statives

Agents can be added easily to result statives, as dative/applicative arguments. Compare (47) below to (34), the same sentence without the added argument.⁸

- (47) (Náú) àucàusáubàu **náú** tēmdāu.
 nó: òkòsò:bò nó-t^hēm+dò:
 me window.INV I:1S-break_C+be
 ‘The window was broken by me.’

4.2.3 Result states without theme changing

Result states of saying and hearing are common, but unlike German result statives, they do not require the theme to undergo a change. For instance, the verb *tháu* ([t’ó:]) ‘hear’ is intransitive despite combining with a CP, and is used to describe the actual event of hearing something (48a). If you’re describing the fact of having heard it, you use the result stative *tháudāu* ([t’ó:+dò:]), for the subject is in the result state of having heard it (48b).

- (48) a. À **tháu** mātāudāu è ǎnê.
 ?à-t’ó: [mát^hò:dò è-?ǎ:nê:]
 1S-**hear** girl.INV I-come.IPFV.EVID
 ‘I heard the girls were coming.’
 b. À **tháudāu** mātāudāu è ǎnê.
 ?à-t’ó:+dò: [mát^hò:dò è-?ǎ:nê:]
 1S-**hear**_C+be girl.INV I-come.IPFV.EVID
 ‘I have/had heard the girls were coming.’

4.3 A mediating relation for results

Essentially, proposals for adjectival passives involve converting a property of events into a property of states resulting from having undergone the event.

Rather than appeal to result states directly, we might simply employ the converse of the meaning of the [cause] feature that Kratzer (2004) proposes to build Germanic causative phrases like *wipe the table clean*.

- (49) $\llbracket \text{wipe the table clean} \rrbracket \simeq \lambda e \lambda w. \text{wipe}(e)(w) \ \& \ \exists s[\text{cause}(s)(e)(w) \ \& \ \text{clean}(\text{the table})(s)(w)]$

Instead of denoting the set of events causing some state, the mediating result relation M_R denotes the set of states caused by some event.

⁸The dative/applicative is also used for affected possessors, so (47) can also mean ‘My window was broken’.

- (50) $\llbracket M_R \rrbracket = \lambda P_{e,swt} \lambda x \lambda s \lambda w. Z(x)(s)(w) = 1 \ \& \ \exists e[P(x)(e)(w) = 1 \ \& \ CAUSE(s)(e)(w) = 1]$,
 where Z is a free variable denoting a
 contextually-determined relation (Maienborn 2009).

READ: *s is a state with property Z that holds of x in w, and there is an event e of P involving x that caused s*

Crucially, result statives do not introduce any attitude or content. Setting aside what ‘be’ means, applying M_R , we propose the following meaning for being severed:

- (51) $\left[\begin{array}{c} \text{VP} \quad \text{M}_R \quad \text{V}^\circ \\ \text{thâl} \quad \quad \text{dấu} \\ \langle \text{sever} \rangle \end{array} \right] = \lambda x \lambda s \lambda w. Z(x)(s)(w) \ \& \ \exists e[\text{sever}(x)(e)(w) \ \& \ CAUSE(s)(e)(w)]$

READ: *s is a state with property Z that holds of x in w, and there is an event of severing x that caused s*

I’ve seen no cases of object incorporation being licensed by result statives. We might expect this absence, since the theme is the subject. However, *agent* incorporation can occur.

- (52) *Chégùn sànéqàuldâu.*
 tségùn Ø–sà:né+k’òl+dò:
 dog S–snake_C+bite_C+be
 ‘The dog is snake-bitten.’ / ‘The dog’s been bitten by a snake.’

To capture this possibility, assume a binding version, M_{RB} , which takes a noun argument, assigns it an agent role, and binds its entity argument.

- (53) $\llbracket M_{RB} \rrbracket = \lambda Q \lambda P \lambda x \lambda s \lambda w. Z(x)(s)(w) = 1 \ \& \ \exists e[\exists y[Q(y)(w) \ \& \ agent(y)(e)(w)] \ \& \ P(x)(e)(w) = 1 \ \& \ CAUSE(s)(e)(w) = 1]$

READ: *s is a state of Z that holds of x in w, and there is an event e of P(x) that caused s, which has an agent of property Q*

5. Conclusion

This brief survey has led us to propose six mediating relations, which necessarily intervene in the semantics between two combined verbs in a compositional semantics.

1. M_C : (Subject) control
2. M_{CB} : (Subject) control + entity binding
3. M_T : Tough
4. M_{TB} : Tough + entity binding
5. M_R : Result state
6. M_{RB} : Result state + entity binding + agent theme

This set of proposed relations leaves us with more questions than answers: How many relations are there? Should there be a limit? If so, what sets it? Are there two relations (binding and not) for every single kind? Or does part of the meaning need to be left to context? Can we decompose these relations? If we can, what is the syntax of V+V constructions?

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