

## Perfective Aspect and Circumstantial Modality: A Cross-linguistic Approach \*

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### 1. Introduction: Ability Attributions, Perfectivity and Actuality Entailments

We begin with a generalization first noted by Bhatt (1999), and expanded upon by Hacquard (2006). Looking at languages which make a morphological distinction between perfective and imperfective aspect, Bhatt and Hacquard note that ability attributions in the perfective aspect give rise to actuality entailments (AEs), uncancelable inferences that the prejacent proposition holds true in the actual world. This is illustrated by the data in (1), from French, where the ability verb *pouvoir* is marked for perfectivity via the passé composé. In uttering the first clause in (1), the prejacent proposition ‘Jane lifted the table’ is asserted to be true in the actual world. This can be seen by the fact that it is infelicitous to deny this proposition.

- (1) Jane *a* *pu* soulever cette table ...  
Jane *PFV.AUX* *can.PFV* lift this table  
‘Jane was able to lift this table ...’
- # mais elle ne l’a pas soulevée.  
# but she NEG it-PFV.AUX NEG lift.PFV  
# but she didn’t lift it.’ (Hacquard 2006:21)

This contrasts with the data in (2), where *pouvoir* is marked for imperfectivity. In (2), the prejacent proposition is not asserted to hold true in the actual world, as can be seen by the fact that it is felicitous to deny the relevant proposition.

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- (2) Jane *pouvait* soulever cette table, mais elle ne l'a pas soulevée.  
 Jane can.*IMPF* lift this table but she NEG it-PFV.AUX NEG lift-PFV  
 'Jane could have lifted this table, but she didn't lift it.' (Hacquard 2006:23)

Under the standard assumption that ability attributions involve existential circumstantial modality (Kratzer 1991, Hackl 1998), this aspectually conditioned pattern is puzzling. Regardless of aspect, the first clause in both (1) and (2) should merely assert that in some circumstantially accessible world, Jane lifted the table. The question is why (1) seems to also assert that Jane lifted the table in the actual world.

Bhatt (1999) accounts for this puzzle by assuming that ability attributions do not necessarily involve modality; elements like *able* and *pouvoir* are implicative verbs similar to *manage*. The lack of an actuality entailment in the imperfective arises from a generic operator introduced by imperfective morphology. Hacquard (2006), on the other hand, assumes that ability attributions do involve modality, and derives actuality entailments via the contribution of perfective aspect. Hacquard proposes that perfective aspect, which takes a world variable in its restriction, raises above ability modals. The world variable associated with perfective aspect thus sits in a structural position where it can only be bound by the default binder (the actual world), resulting in an actuality entailment.<sup>1</sup> Whereas Bhatt's account depends on the language-specific lexical properties of ability auxiliaries – whether they are implicative verbs or modals – Hacquard's account relies on the standard theoretical assumption that there are structural restrictions on binding. She thus makes the strong prediction that 'as long as a language shows an overt perfective/imperfective distinction, we should get an actuality entailment with the perfective' (Hacquard 2006:199).

In this paper we show that Hacquard's prediction is not upheld cross-linguistically. We investigate three languages of the Americas – St'át'imcets (Lillooet), Gitksan and Blackfoot – all of which have an overt perfective/imperfective distinction. We show that regardless of aspect, ability attributions in St'át'imcets and Gitksan lack actuality entailments. Inversely, regardless of aspect, ability attributions in Blackfoot always *have* actuality entailments.

(3)

Language	CIRC Modal + PFV → Actuality Entailment	CIRC Modal + IMPF → Actuality Entailment
St'át'imcets (Salish)	N	N
Gitksan (Tsimshianic)	N	N
Blackfoot (Algonquian)	Y	Y

We suggest that Hacquard's prediction fails on account of the assumption that an overt perfective/imperfective distinction universally correlates with the presence of a dedicated perfective morpheme. Noting that the invariable non-AE pattern (as in St'át'imcets and Gitksan) correlates with unmarked perfectivity, we propose that in these languages

<sup>1</sup> Assuming the utterance has no other, higher, modal element(s) involved.

perfectivity is not encoded by a dedicated morpheme, but instead is lexically encoded in the predicate. This avoids the type-mismatch that triggers Hacquard's perfective raising, and predicts that an ability modal will not give rise to an actuality entailment. We leave an account of the invariable AE pattern (Blackfoot) for another venue (see Reis Silva in prep.), but we provide data in section 5 that suggest that an implicative verb approach following Bhatt is problematic.

## 2. Theoretical Background: Hacquard's Analysis

In this section we briefly present Hacquard's (2006) analysis, as we adopt her assumption that ability attributions involve modality (pace Bhatt 1999). Hacquard derives actuality entailments via two main assumptions. One, ability modals are universally merged below Tense. Two, perfective aspect is a quantifier over events which takes i) a predicate of events, ii) a time argument, and iii) a world argument in its restriction. Its denotation is given in (4), from Hacquard (2006:53);  $\epsilon$  is the type of eventualities.

$$(4) \quad [[ \text{PERFECTIVE} ]] = \lambda w. \lambda t. \lambda P_{\langle e, t \rangle}. \exists e[e \text{ is in } w \ \& \ \tau(e) \subseteq t \ \& \ P(e) = 1]$$

According to Hacquard, perfective aspect merges low as a sister to the verb, but for type reasons raises to a position directly below Tense. In this position, the perfective's world argument cannot be bound by a structurally inferior ability modal, and must be bound by the default binder, the actual world. An event is thus asserted to have taken place in the actual world, even in a modalized clause. For example, the first clause of (1) above will be true iff there is some past event  $e$  in the actual world, and there is a world compatible with Jane's abilities in the actual world where  $e$  is an event of Jane's lifting the table. Hacquard then invokes a principle of 'Event Identification Across Worlds', which states that 'if an event happens in two worlds, and its properties are such that we 'label' it as a P event in  $w_1$ , then everything else being equal, we will label it as a P event in  $w_2$  as well' (Hacquard 2006:59). By Event Identification Across Worlds, we obtain the result for (1) that there is an actual event  $e$  which is an event of Jane lifting the table.

While Hacquard only aims to account for French and Italian, the components of her analysis are not specific to these languages - the account predicts that all else being equal, a language with an overt distinction between perfective and imperfective and a low ability modal should display this aspectually conditioned actuality entailment pattern.<sup>2</sup>

## 3. Cross-linguistic Variation in Actuality Entailments

In this section we present data from two unrelated Pacific Northwest Coast languages, St'át'imcets and Gitksan. We show that there is a lack of actuality entailments in both these languages, despite an overt perfective/imperfective distinction.

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<sup>2</sup> For languages like English where the perfective/imperfective distinction is not obligatorily overtly distinguished, Hacquard claims that the AE 'goes undetected' (2006:13). But if the context is constructed to force a perfective interpretation, the AE will show up; see also Bhatt (1999).

### 3.1 St'át'imcets Invariably Lacks Actuality Entailments

St'át'imcets overtly marks a perfective/imperfective distinction, as shown in (5).<sup>3</sup>

- (5) a. máys-en=lhkan                      ta=káoh=a  
 fix-DIR=1SG.SUBJ                      DET=car=EXIS                      PFV  
 'I fixed the car.'
- b. wá7=lhkan                      máys-en                      ta=káoh=a  
 IMPF=1SG.SUBJ                      FIX-DIR                      DET=car=EXIS                      IMPF  
 'I am/was fixing the car.' (Bar-el et al. 2005)

Unmarked St'át'imcets predicates are interpreted as perfective, not with neutral aspect and not as ambiguous. The first piece of evidence for this is that unmarked predicate activities and states give inceptive readings (cf. Bar-el 2005, and cf. many other languages such as Greek or Bulgarian (Bhatt and Pancheva 2005, Smith 1997)).

- (6) a. ít'em=lhkan    [i=t'íq=as                      ulhcw kw=s=John]  
 sing=1SG.SUBJ [when.PAST=arrive=3CONJ enter    DET=NOM=John]  
 'I started singing when John came in.'
- b. qlil=lhkan                      [i=t'íq=as                      ulhcw kw=s=Lisa]  
 angry=1SG.SUBJ [when.PAST=arrive=3CONJ enter    DET=NOM=Lisa]  
 'I got angry when Lisa came in.'
- (7) a. wá7=lhkan                      ít'-em    [i=t'íq=as                      ulhcw kw=s=John]  
 IMPF=1SG.SUBJ sing-MID [when.PAST=arrive=3CONJ enter    DET=NOM=J.]  
 'I was (already) singing when John came in.'
- b. wá7=lhkan                      qlil    [i=t'íq=as                      ulhcw kw=s=Lisa]  
 IMPF=1SG.SUBJ angry [when.PAST=arrive=3CONJ enter    DET=NOM=L.]  
 'I was (already) angry when Lisa came in.' (Matthewson 2006)

The second piece of evidence that unmarked predicates are perfective is that unmarked achievements cannot be habitual; imperfective marking is required (see Bar-el et al. 2005 for data). Third, unmarked accomplishments give a strong implicature of culmination, unlike imperfective-marked accomplishments (Bar-el et al. 2005). And finally, unmarked predicates advance the reference time in narratives like perfectives do.

In spite of the overt perfective/imperfective distinction in St'át'imcets, perfective St'át'imcets utterances with circumstantial modals do not yield AEs. This is shown in (8).

<sup>3</sup> St'át'imcets data is presented in the practical orthography. The symbol = marks a clitic boundary, and - marks an affix boundary.

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- (8) a. *ka-cát-s=kan-a*                      *ti=túipvl=a,*  
*CIRC-lift-CAUS=1SG.SUBJ-CIRC*    *DET=table=EXIS*  
*t'u7 áy=t'u7 kw=en cat-s*  
 but    *NEG=just*                      *DET=1SG.POSS*    *lift-CAUS*  
 'I was able to lift the table, but I didn't lift it.'
- b. *ka-q'ém-s=kan-a*                      *aylh n-kál'wat=a,*  
*CIRC-swallow-CAUS=1SG.SUBJ-CIRC*    *then 1SG.POSS-medicine=EXIS*  
*t'u7 cw7áoz=t'u7 múta7 kw=en=s xát'-min',*  
 but    *NEG=ADD*                      *again DET=1SG.POSS=NOM*    *want-RED*  
*nilh s=7ús-ts-an*  
*FOC NOM=throw.out-CAUS-1SG.ERG*  
 'I was able to swallow my medicine, but I didn't want it any more, so I  
 threw it out.' (Davis et al. 2009)

### 3.2 Gitksan Invariably Lacks Actuality Entailments

Gitksan overtly marks imperfectivity with the preverbal morpheme *yukw*.

- (9) a. *jam-y'=hl*                      *miyop*  
*cook-1SG=CNDET*    *rice*    *PFV*  
 'I cooked the rice.'
- b. *yukw=mi*    *jam-(t)=hl*                      *miyop*  
*PROG=1SG*    *cook-3SG=CNDET*    *rice*    *IMPF*  
 'I am cooking the rice.'  
 'I was cooking the rice.'

Similarly to in St'át'imcets, Gitksan bare predicates are interpreted as perfective, not with neutral aspect or as ambiguous. The bare predicates in (10) are activities and states, which give inceptive readings. With the addition of *yukw* in (11), the activities and states are interpreted as already in progress:

- (10) a. *al'ax n'iiy' wil=hl*                      *witxw-t*  
*angry 1SG COMP=CNDET*    *arrive-3SG*  
 'I got angry when he came in.'
- b. *bax n'iiy' wil=hl*                      *kuxw=hl*                      *kyuwatan*  
*run 1SG COMP=CNDET*    *run.away-CNDET*                      *horse*  
 'I started to run when the horse ran away.'
- (11) a. *yukw=hl*    *al'ax-y'*                      *wil=hl*                      *witxw-t*  
*PROG=CNDET*    *angry-1SG*                      *COMP=CNDET*    *arrive-3SG*  
 'I was already angry when he came in.'





To derive the absence of AEs in St'át'imcets from the relative syntactic height of the circumstantial modal and aspect, we would have to assume that perfective sits even lower than the *ka-...-a* modal circumfix. Yet for Hacquard, generating a perfective morpheme low inside VP would lead to automatic raising due to a type-mismatch. Hence, there is no purely syntactic solution to the absence of AEs in St'át'imcets. We conclude that this language lacks a Hacquard-style perfective morpheme altogether. St'át'imcets has no perfective morpheme which carries a world argument in its restriction and has the potential to create AEs. Since St'át'imcets has no visible perfective morpheme, we take the further step of assuming that there is *no dedicated perfective morpheme* in St'át'imcets. Instead, perfectivity is lexically encoded on the predicate.

Let us see how this will work. Recall what perfective is standardly assumed to do: it takes a predicate of events and returns a predicate of times, and places the run-time of the event inside the time argument. Kratzer's version is given in (17), and Hacquard's revised version with the extra world argument is repeated in (18).

$$(17) \quad [[ \text{PERFECTIVE} ]] = \lambda P. \lambda t. \lambda w. \exists e[ \tau(e) \subseteq t \ \& \ P(e)(w) = 1 ] \quad (\text{Kratzer 1998})$$

$$(18) \quad [[ \text{PERFECTIVE} ]] = \lambda w. \lambda t. \lambda P_{\langle e, t \rangle}. \exists e[ e \text{ is in } w \ \& \ \tau(e) \subseteq t \ \& \ P(e) = 1 ] \\ (\text{Hacquard 2006})$$

If perfectivity is lexically given on the predicate in St'át'imcets, the predicate will already contain a time argument. The lexical entry for *tsunám'cal* 'teach' is given in (19).<sup>5</sup>

$$(19) \quad [[ \textit{tsunám'cal} ]] = \lambda x. \lambda e. \lambda t. \tau(e) \subseteq t \ \& \ \textit{teach}(e) \ \& \ \textit{Agent}(x)(e)$$

A derivation for the non-modal sentence in (20) is shown in (21). We assume the analysis of St'át'imcets non-future Tense given in Matthewson (2006). The Tense introduces a time variable which receives its value from the assignment function *g*, and which is presupposed to be a non-future time.

$$(20) \quad \textit{tsunám'cal}=\textit{lhkan} \quad (\textit{i}=\textit{nátcw}=\textit{as}) \\ \textit{teach-ACT=1SG.SUBJ} \quad (\textit{when.PAST=one.day.away=3CONJ}) \\ \text{'I taught yesterday.'}$$

$$(21) \quad [[ \textit{Tense}_i \textit{lhkan tsunám'cal} ]]^{\text{S}^c} = 1 \text{ iff } \exists e[ \tau(e) \subseteq g(i) \ \& \ \textit{teach}(e) \ \& \\ \textit{Agent}(\textit{Speaker})(e) \quad (\text{where no part of } g(i) \text{ is after the utterance time } t_e)$$

The sentence in (20) is predicted to be true if and only if there is an event of teaching, whose agent is the speaker, which takes place within the contextually determined non-future reference time.

Now we turn to a sentence containing an ability modal.

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<sup>5</sup> *tsunám'cal* consists of a root *tsunám'* and an active intransitive suffix *-cal*, which introduces the agent; see Davis (1997) for discussion. We set the internal compositional issue aside here for space reasons.

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- (22) ka-tsunam'-cal=lhkán-a                      (i=nátcw=as)  
 CIRC-teach-ACT=1SG.SUBJ-CIRC              (when.PAST=one.day.away=3CONJ)  
 'I was able to teach (yesterday).'

Our analysis of the circumstantial modal *ka-...-a* is given in (23). This is largely borrowed from Davis et al. (2009), with the simplification that we do not deal here with the variable quantificational force of *ka-...-a*. *ka-...-a* adds to a predicate which already has all its arguments, but no tense or (imperfective) viewpoint aspect.

- (23)  $[[ka-...-a]]^{g,c,w}$  is only defined if *c* provides a circumstantial modal base *B* and a stereotypical ordering source.

If defined,  $[[ka-...-a]]^{g,c,w} = \lambda P_{\langle e, \langle i, t \rangle \rangle}. \lambda e. \lambda t. \exists w' [w' \in B(w) \ \& \ P(e)(t)(w')]$

The semantics of sentence (22) are given in (24).

- (24)  $[[ka-...-a]]^{g,c,w} ([[lhkan \ tsunám' \ cal]]^{g,c,w})$   
 $= \lambda e. \lambda t. \exists w' [w' \in B(w) \ \& \ [\tau(e) \subseteq t \ \& \ teach(e)(w') \ \& \ Agent(Speaker)(e)]]$

$[[Tense_i \ ka-...-a \ lhkan \ tsunám' \ cal]]^{g,c,w}$   
 $= 1$  if  $\exists e \exists w' [w' \in B(w) \ \& \ [\tau(e) \subseteq g(i) \ \& \ teach(e)(w') \ \& \ Agent(Speaker)(e)]]$   
 (where no part of *g*(*i*) is after the utterance time *t<sub>c</sub>*)

The sentence in (22) is true at a time *t<sub>c</sub>* and a world *w* if and only if there is an event *e* and a circumstantially accessible world *w'* such that the run-time of *e* is within the contextually salient non-future time, and *e* is an event of teaching in *w'* and the speaker is the agent of *e*. No actuality entailment is predicted: (22) can be true even if I did not actually teach.

In the next sub-section we provide some independent evidence for our proposal that the perfective in *St'át'imcets* is not a dedicated morpheme, in complementary distribution with the imperfective.

#### 4.1 There is No Phonologically Null Perfective in *St'át'imcets*

An obvious alternative to the analysis presented above would be that *St'át'imcets* possesses a phonologically null perfective morpheme, which is in complementary distribution with the imperfective, and sits in the same functional head. In order for such an analysis to be compatible with the lack of actuality entailments, this null perfective would have to differ in semantics from a Hacquard-style perfective; it would have to lack the additional world argument responsible for deriving an actuality entailment. In this section we provide evidence against this alternative idea.

The imperfective morpheme *wa7* in *St'át'imcets* is an auxiliary that can support a second position clitic. This is shown in (25).



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Our analysis of *wa7* is applied to an example in (29-30).

- (29) *wá7=lhkan*                      *tsunám'-cal*  
 IMPF=1SG.SUBJ                      teach-ACT  
 'I am teaching.'
- (30)  $[[ wa7 ] ]^{g,c,w}$  ( $[[ lhkan tsunám'cal ] ]^{g,c,w}$ )  
 =  $\lambda e. \lambda t. [e \text{ is in } w \ \& \ \forall w' \in \text{Best}(\text{Circ}, \text{NI}, e, P): \exists e' \exists t' [e \subseteq e' \ \& \ t \subseteq t' \ \& \ [\lambda e. \lambda t. [\tau(e) \subseteq t \ \& \ \text{teach}(e)(w) \ \& \ \text{Agent}(\text{Speaker})(e)] \ ] (e')(t')(w')]]]$   
 =  $\lambda e. \lambda t. [e \text{ is in } w \ \& \ \forall w' \in \text{Best}(\text{Circ}, \text{NI}, e, P): \exists e' \exists t' [e \subseteq e' \ \& \ t \subseteq t' \ \& \ [\tau(e') \subseteq t' \ \& \ \text{teach}(e')(w') \ \& \ \text{Agent}(\text{Speaker})(e')]]]$   
 $[[ Tense_i wa7 lhkan tsunám'cal ] ]^{g,c,w}$   
 =  $\exists e [e \text{ is in } w \ \& \ \forall w' \in \text{Best}(\text{Circ}, \text{NI}, e, P): \exists e' \exists t' [e \subseteq e' \ \& \ g(i) \subseteq t' \ \& \ [\tau(e') \subseteq t' \ \& \ \text{teach}(e')(w') \ \& \ \text{Agent}(\text{Speaker})(e')]]]$

(29) is true in a world *w* if and only if there is an event *e* in *w* such that in all circumstantially accessible worlds with a no-interruption ordering source, there exists an event *e'*, and a time *t'*, such that *e* is a non-final sub-part of *e'*, the reference time is included within *t'*, the run-time of *e'* is contained within *t'*, and *e'* is a teaching event of which the Speaker is the agent.

### 4.3 Application to Gitksan

We follow essentially the same line of argumentation as above in analyzing the lack of AEs in Gitksan circumstantial sentences. However, there are some notable differences between Gitksan and St'át'imcets. First, Gitksan circumstantial *da'akhlxw* cannot occur with the progressive:

- (31) \* *yukw=hl*            *da'akhlxw-y'* *dim*    *hahla'asd-y'*    *kyo'ots*  
           *PROG*= CNDET    *CIRC*-1SG            MOD    work-1SG            yesterday

The same effect holds in English as well: ability statements are not inherently activities, nor can they take the progressive. Gitksan ability statements, as in English, are stative. Thus, it is not surprising that the progressive *yukw* cannot be added to circumstantial *da'akhlxw*.

The morphosyntax of the ability modal sentences in Gitksan is also significantly different from that of St'át'imcets. In particular, ability attributions in Gitksan always require the additional presence of the modal element *dim*:

- (32) *da'akhlxw*-y' \*(*dim*) hahla'asd-y' kyo'ots  
*CIRC*-1SG *MOD* work-1SG yesterday  
 'I could have/was able to work yesterday.'

Future tense in Gitksan is marked by *dim* (Jóhannsdóttir and Matthewson 2007). However, as with *will* in English, *dim* can also mark deontic modality. Thus the sentence in (33) is ambiguous between a simple future and deontic interpretation.

- (33) *dim* hahla'ast n'iiy' t'aahlakw  
*MOD* work 1SG tomorrow  
 'I will/must work tomorrow.'

To explain how *dim* contributes to an ability reading, we claim that *dim* is in fact a general root modal, and *da'akhlxw* provides a circumstantial ordering source for *dim*. Whereas a root modal base encoded by *dim* picks out possible worlds in which certain relevant facts or circumstances hold, *da'akhlxw* orders those worlds according to a person's known abilities.<sup>7</sup> In a nutshell, *da'akhlxw* and *dim* form a complex which represents an ability interpretation.

Given these assumptions, the analysis for St'át'imcets above makes the correct predictions for *da'akhlxw dim*. The main verb *hahla'asd* 'work' in (32) is perfective and the modalized sentence it occurs in lacks an AE. Even though *da'akhlxw* also is morphosyntactically a verb (it has subject agreement), it is not marked for perfectivity. In this regard it is similar to an auxiliary verb, much like *must* or *might* in English. This also explains why it can't be marked in the progressive with *yukw*, as we don't expect these kinds of elements to take aspectual marking.

## 5. Blackfoot

We now turn from invariable-non-AE languages to an invariable-AE language. Recall from section 3.3 that Blackfoot ability assertions have AEs, regardless of viewpoint aspect. In this section we entertain an explanation of Blackfoot's invariable AE pattern following Bhatt (1999), but show why the potential explanation is problematic.

Recall that Bhatt suggests that elements like *able* and *pouvoir* are implicative verbs like *manage*. For Bhatt, the lack of an actuality entailment in the imperfective aspect arises from the fact that the semantics of the imperfective includes genericity. If we assume that Blackfoot's ability morpheme *ohkott* is an implicative verb, the invariable AE pattern may then fall out from the apparent lack of a generic operator in Blackfoot.

Data suggest that this direction is untenable, however. Assuming that the distinction between habitual and generic readings is that habituals, unlike generics,

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<sup>7</sup> In this regard, *da'akhlxw* is similar to the German ability modal *imstande sein*, which is also evaluated with respect to circumstances that 'are concerned with the strength of our body, character or intellect' (Kratzer 1991).

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require verifying instances (Krifka et al. 1995), there is at least one construction in Blackfoot that fits this description. When the instrumental/means morpheme *iiht-/ooht*<sup>8</sup> combines with the imperfective and an unspecified subject – an “NP is used to VP” construction – verifying instances are not required:

- (34) amo *iiht-á*-ikowai’piksistaki-o’p kitsim-istsi  
 DEM *INSTR-IMPF*-open.VAI-UNSPEC.SUBJ door-PL.INAN  
 kiwa máát-oma-ikak-ooht-ikowai’piksistakio-o’p-wa kitsim-iistsi  
 even.tho NEG-yet-just-INSTR-open.VAI-UNSPEC.SUBJ-NONAFF door-PL.INAN  
 ‘This thing is used to open doors, even though it hasn’t been used to open doors yet.’ (eg. freshly-cut key)
- (35) óma *iiht-á*-ihkssáki-o’p  
 DEM *INSTR-IMPF*-dry.VAI-UNSPEC.SUBJ  
 kiwa máát-oma-ikak-ooht-ihkssáki-o’p-waatsiks  
 even.tho NEG-yet-just-INSTR-dry.VAI-UNSPEC.SUBJ-3:NONAFF.SG  
 ‘That thing is used to dry clothes, even though it hasn’t been used to dry clothes before.’ (eg. brand-new dryer)

If we adopted Bhatt’s proposal, we would expect that ability attributions involving this generic construction would lack AEs. This is not the case, however. The invariable AE pattern still holds when the circumstantial modal is added. Recall the data in (15), reproduced here as (36). In order to convey an ability attribution without a verifying instance, the future modal *áák*- is required, as in (37)<sup>9</sup>.

- (36) # omá isttoan *iihkott / á-ohkott-ooht*-yistsini-’p om-istsi sitokihkiitaan-ists  
 DEM knife *CIRC.PFV / IMPF-CIRC-means*-cut-UNSPEC DEM-PL pie-PL  
 kiwa máát-ooht-yistsini-’p om-istsi sitokihkiitaan-ists  
 even.tho NEG-means-cut-UNSPEC DEM-PL pie-PL  
 ‘That knife can cut those pies, even though it wasn’t used to cut those pies.’
- (37) omá isttoan *áák-ohkott-ooht*-yistsini-’p om-istsi sitokihkiitaan-ists  
 dem knife *FUT-CIRC-means*-cut-unspec dem-pl pie-pl  
 kiwa máát-ooht-yistsini-’p om-istsi sitokihkiitaan-ists  
 even.tho NEG-means-cut.UNSPEC DEM-PL pie-PL  
 ‘That knife can/will be able to cut those pies, even though it wasn’t used to cut those pies.’

These data show that genericity does not always correlate with the lack of an actuality entailment, contra Bhatt (1999). See Reis Silva (in prep.) for an analysis of *ohkott* according to which it introduces a conventional implicature of actuality, which disappears whenever the conventional implicature contradicts the at-issue assertion of the utterance.

<sup>8</sup> This morpheme is *iiht-* in word-initial position, and *ooht-* elsewhere.

<sup>9</sup> Other elements under which the actuality entailment disappears are negation, the epistemic modal *aahkama’p* ‘might’, and the conditional *ikkam*.

## 6. Conclusion and Issues for Future Research

In this paper we have argued for a refined generalization about the distribution of actuality entailments with circumstantial modals. We claim that any language with a dedicated perfective morpheme is able to display AEs, but that languages without overt perfective morphology – even if they overtly distinguish perfective from imperfective – will not display AEs. We have provided an analysis of St'át'imcets and Gitksan, both of which lack AEs. We argue that the perfective in these two languages does not arise from a dedicated perfective morpheme, but comes as part of the lexical predicate. We have argued against an alternative whereby St'át'imcets possesses a phonologically null morpheme which merges syntactically where the imperfective does. Perfective and imperfective in St'át'imcets and Gitksan are not 'equipollent' or in complementary distribution; imperfective is an operation on predicates that are already perfective.

In this final section we briefly address the predictions of our proposals for the cross-linguistic typology of perfectives. Our claim that perfective is part of the predicate in St'át'imcets might be extended to a strong claim that languages do not differ in the semantics of their perfectives. One might assume that there are only two options: a language either has a dedicated perfective morpheme, in which case this has a Hacquard-style semantics and AEs will arise with circumstantial modals, or the language has no dedicated perfective morpheme, in which case it will have lexical perfectivity and no AEs with circumstantial modals. However, it is known that perfectives vary in their semantics in various ways (cf. e.g., Koenig and Muansuwan 2000 on Thai, or Wilhelm 2003 on Denë Suřiné), and the cautious approach given these facts is to allow that an overt, dedicated perfective morpheme may in principle either induce AEs, or not. Future cross-linguistic research will determine whether a stronger claim can be made here.

With regard to null perfectives, we do wish to make a strong claim: we propose that there will be no phonologically null perfectives of the Hacquard type. This predicts that a language without an overt perfective morpheme will always lack AEs. We base this partly on learnability considerations. Imagine that a child learning a language with no overt perfective morpheme had to determine whether her language had a null Hacquard-style perfective, or had lexical perfectivity as in St'át'imcets and Gitksan. The task would seem to require the child to hear AE data, an intuitively implausible result.<sup>10</sup> Again, future cross-linguistic research will confirm or disprove the prediction.

These proposals raise a number of other larger issues, some of which have been partially addressed in the literature, and which we merely mention here. Why do so many languages seem to have overt imperfective marking and unmarked perfectivity? Are there languages where the reverse is the case (see Zucchi 1999 for relevant discussion)? Is it

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<sup>10</sup> As we are allowing the possibility that overt perfectives vary in whether they give rise to AEs, we have to assume that a child could learn the AE/non-AE difference in an overt perfective language. The idea is that an overt morpheme at least gives the child a clue that there is lexical semantics to be learned. The absence of any overt morphology would require the child to figure out whether a morpheme is even there – which is normally done by detecting a semantic effect – but at the same time figure out what the possible null morpheme means, if it does exist. This is a much harder task.

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the case that there is never semantic variation in null functional heads? Is there never a null morpheme which does the same thing as an overt one? Or do these restrictions perhaps hold in some parts of the grammar and not others? More generally, we hope that our inquiries might act as a catalyst for continuing research into when a morpheme can be null, and what kinds of meanings null morphemes can have.

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