

- b. Ivan tepér' guljáet' / *NA-guljáetsja^P.
Ivan now walk.3SG.PRES / *ACM-walk.3SG.PRES.REFL

'Ivan is right now taking a walk.'

- (4) Definition of the 'Gradual Patient' thematic role (Krifka, 1986, 1989, 1992):

$\forall P$ [GRAD(P) \leftrightarrow UNI-O(P) \wedge MAP-O(P) \wedge MAP-E(P)]

- a. Mapping to objects

$\forall R$ [MAP-O(R) \leftrightarrow $\forall e, e', x$ [R(e, x) \wedge e' \leq e \rightarrow $\exists x'$ [x' \leq x \wedge R(e', x')]]]

[Example: *drink a glass of winee*; every part of a drinking of a glass of wine

corresponds to a proper portion of the glass of wine]

- b. Mapping to events

$\forall R$ [MAP-E(R) \leftrightarrow $\forall e, x, x'$ [R(e, x) \wedge x' \leq x \rightarrow $\exists e'$ [e' \leq e \wedge R(e', x')]]]

[Example: *drink a glass of wine*; every proper portion of the glass of wine that is drunk

corresponds to a part of the drinking]

- c. Uniqueness of objects

$\forall R$ [UNI-O(R) \leftrightarrow $\forall e, x, x'$ [R(e, x) \wedge R(e, x') \rightarrow x = x']]

[Example: *drink a glass of wine*; it is not possible for one event to have two different object tokens, x = x', subjected to it]

Krifka (1998) argues that we need stricter relations than mapping to events and mapping to objects, namely mapping to subevents and mapping to subobjects. The latter are defined as follows (Krifka, 1998:211-212)

- a'. Mapping to subobjects

$\forall x \in U_P \forall e, e' \in U_E$ [$\theta(x, e) \wedge e' <_E e \rightarrow \exists y$ [y $<_{P \times E} \theta(y, e')$]]]

- b'. Mapping to subevents

$\forall x, y \in U_P \forall e \in U_E$ [$\theta(x, e) \wedge y <_{P \times E} e \rightarrow \exists e'$ [e' $<_E e \wedge \theta(y, e')$]]]

3

On Lexical Verb Meanings: Evidence from Salish

HENRY DAVIS AND HAMIDA DEMIRDACHE

3.1 Introduction

This paper brings evidence from a lesser-known language to bear on theories of the universal structure of lexical semantic representations. The language in question is St'át'imcets (Lillooet), a member of the Northern Interior branch of the Salish family, spoken in southwestern interior British Columbia. As we shall see, the lexical decomposition of the meaning of a predicate into aspectual classes or event types — developed for verb classes in languages such as English where the event structure of predicates is to a large extent morphologically obscure — is morphologically transparent in Salish. Salish languages thus, provide important empirical evidence for probing the lexical semantic structure of verbs and, in particular, for elucidating the permissible limits of the unaccusative-causative alternation.

Our investigation of the lexical semantic structure of St'át'imcets reveals properties which are at once strikingly different and surprisingly similar to those of more familiar systems. In particular, we shall see that St'át'imcets diverges radically from languages like English or Italian in that predicates denoting actions which cannot come about without the external intervention of an agent (e.g. 'punch', 'whip' or 'build') have unaccusative alternants in St'át'imcets. We will argue, however, that the underlyingly lexical semantic representation of (syntactically) unaccusative predicates in St'át'imcets is causative. If this proposal is correct, then St'át'imcets differs from languages like English or Italian at the level of morphosyntax but not at the level of lexical semantic structure — a welcome result since it is the null hypothesis. We will conclude, however, that identifying the locus of parametric variation between languages like St'át'imcets and English and, in particular, reconciling the apparent contradiction between

the lexical structure of predicates and their morphosyntax in St'át'imcets poses non-trivial problems for current theories of the lexical representation of verb meanings and their mapping to morpho-syntax.

The paper is organized as follows. In section 2, we show that all roots in St'át'imcets¹ must be classified as *morphosyntactically unaccusative*, in the sense that they invariably select a single, internal, argument. In contrast, we demonstrate that all unergative and transitive predicates are morphosyntactically derived by the addition of intransitivizing and transitivity morphology (respectively) to an unaccusative root.

In section 3, we provide strong empirical evidence that unaccusatives — in spite of the fact that they are morphosyntactically primitive — must be *semantically causative*, as argued for languages like English, Italian or Dutch, by Chierchia, G. (1989), Levin and Rappaport Hovav (1995), Pustejovsky (1995) and Reinhart (1997), among others. The conclusion that unaccusatives have a causative lexical representation is of course all the more surprising in a language where all transitives and unergatives are morphologically derived from unaccusatives: that is, in a language where the direction of morphosyntactic derivation is the reverse of the direction of lexical semantic derivation.

In section 4, we discuss the role of overt (in)transitivizing morphology in deriving unergatives and transitives. We derive these alternants in parallel from the same underlying causative representation via event foregrounding, in the sense of Pustejovsky (1995). We account for morphological asymmetry in the expression of in(transitivity) by arguing that morphologically unmarked alternants are in fact also derived from an underlying causative structure via zero- morphology. In St'át'imcets, unaccusatives are zero-derived; in other languages, such as Russian or Italian, the transitive alternant represents the zero-derived option. This approach to cross-linguistic variation in the morphosyntax of transitivity alternations allows us to maintain the underlying causative lexical semantic hypothesis be it in languages with anti-causative morphology or languages with causative morphology.

Section 5 addresses the question of the scope of the causative analysis of unaccusatives. Is it applicable to all unaccusatives as argued by Chierchia, G. (1989) or Pustejovsky (1995), or can it be confined to a semantically defined subclass, as argued by Levin and Rappaport Hovav (1995) and Reinhart (1997)? This question is particularly acute in St'át'imcets, where all roots are unaccusative. We show that any attempt to constrain the unaccusative-causative alternation based on the semantic criteria available in the literature leads to the interesting consequence that natural language

¹As far as we can tell, the conclusions we report here for St'át'imcets hold more generally throughout Salish. We confine ourselves here (mostly) to a single system for purposes of clarity and concision.

must tolerate a far higher degree of lexical semantic flexibility than previously acknowledged; indeed, such a position amounts to a kind of neo-Whorfian view of the lexicon.

3.2 Morpho-Syntactic Unaccusativity in St'át'imcets

3.2.1 St'át'imcets

St'át'imcets² (also known as Lillooet) is a Northern Interior Salish Language spoken in southwest interior British Columbia, with about two hundred remaining native speakers. There are two principal dialects, the Lower (Mount Currie) dialect and the Upper (Fountain) dialect; differences between the dialects do not affect the issues discussed in this paper.

St'át'imcets, like other members of the Salish family, is a radical head-marking language. Sentences consist minimally of a predicate with associated pronominal affixes and/or clitics; lexical (DP) arguments are optional.

Predicates consist of an obligatory root plus a variety of affixes and reduplicative processes which mark aspect, valency, and various adverbial functions. The lexical meaning of the root itself can be modified by addition of 'lexical suffixes'. See van Eijk (1997), Davis (1997) for details.

In the next section, we establish that unaccusative predicates are morphologically primitive. The argument is straightforward. We first show that all roots in St'át'imcets are syntactically unaccusative: that is, a) all roots are intransitive, licensing a single argument in the syntax; and b) crucially, this single argument has the range of interpretations associated with internal arguments (i.e. patient or theme) but never those associated with an external argument (be it agent, causer or experiencer). We then show that both unergative and transitive predications are morphologically derived by addition of (in)transitivizers to the unaccusative root.

3.2.2 Roots in St'át'imcets are Syntactically Unaccusative

There are two classes of roots in St'át'imcets: free and bound roots. *Free roots*, appear without any affixal material. Examples are given in (1) below:³

²We are very grateful to our St'át'imcets consultants Alice Adolph, Beverley Frank, Gertrude Ned, Laura Thevarg and Rose Whitley. We would also like to thank the participants of the LSA workshop on *Events as grammatical objects*. Finally, we are indebted to Carl Alphonse and, in particular, Bowen Hui for rescuing us from our incompetence in converting this text to latex format. Research on St'át'imcets is supported in part by SSHRCC grant #410-95-1519.

³The St'át'imcets Practical Orthography is employed in all examples. A conversion chart giving phonemic values is appended to the paper.

- | | | | | |
|-----|--------|---------------------------------|-------|--------------------------------|
| (1) | us | 'to get thrown out' | ats'x | 'to be seen, visible' |
| | zwat | 'to be known' | lhwal | 'to be left behind, abandoned' |
| | xwez | 'to be loved, dear' | qwez | 'to be used' |
| | t'iq | 'to arrive, get here' | kwis | 'to fall' |
| | qam't | 'to be hit by something thrown' | k'ác | 'to get dried, be dry' |
| | ts'aw' | 'to be washed' | mays | 'to be fixed' |
| | qlil | 'to be angry' | páqu7 | 'to be afraid' |

Note first, that free roots are invariably intransitive, licensing the projection of a single argument in the syntax, as the ungrammaticality of (2) illustrates.

- (2) * $\sqrt{\text{qam't}}$ ti sqáycw-a ti k'ét'h-a
hit DET man-DET DET rock-DET

Second, the sole argument selected by a bare root may only have the patient-oriented interpretation of an internal argument, as shown in (3). Note, in particular, that the single syntactically expressed argument in (3) is not interpreted as either an agent, an experiencer or a causer, but only as a patient or a theme.

- (3) a. $\sqrt{\text{lhwal}}$ ti sqáycw-a
abandoned DET man-DET
'The man was left behind'
- b. $\sqrt{\text{qam't}}$ ti sqáycw-a
hit DET man-DET
'The man was hit (with something thrown)'
- c. $\sqrt{\text{k'ac}}$ ti sqáycw-a
dry DET man-DET
'The man got dried' or 'The man is dry'
- d. $\sqrt{\text{t'iq}}$ ti sqáycw-a
arrive DET man-DET
'The man arrived'
- e. $\sqrt{\text{xwez}}$ ti sqáycw-a
loved DET man-DET
'The man is loved'
- f. $\sqrt{\text{ats'x}}$ ti sqáycw-a
seen DET man-DET
'The man was seen'

Aside from free roots, St'át'imcets has a second, much larger class of *bound roots* — that is, roots which cannot surface without some form of

affixation. For our purposes, affixes may be divided into two classes. The first class (to be discussed below in sections 2.3-2.4) contains transitivity and intransitivity suffixes which, as their name suggests, are suffixes which affect the valency of a predicate. The second class contains all affixes which are neutral with respect to valency (including all lexical and adverbial suffixes, as well as certain aspectual affixes such as the stative and inchoative markers).

Bound roots, as illustrated in (4), are roots which surface with valency-neutral affixes. Note that affixation of either a lexical suffix (as in (4a-b)) or an aspectual affix (as in (4c-d)) has no effect on the underlying unaccusativity of the root to which the affix is bound. That is, bound roots, just like free roots, license a single argument in the syntax; this single argument will have the range of interpretations associated with internal arguments (typically, patient or theme) — never those associated with external arguments.

- (4) a. $\sqrt{\text{sek-}}$ 'to be hit with a long object' + **-aka7** 'hand' (lexical suffix)
→ **sekáka7** 'to be hit on the hand with a stick or switch'
- b. $\sqrt{\text{ken'n'-}}$ 'to be bumped' + **-alqw** 'log, long hard object' (lexical suffix)
→ **ken'n'alqw** 'to get hit by a car'
- c. $\sqrt{\text{pulh-}}$ 'to boil' + **s-** 'stative' (aspectual prefix)
→ **spulh** 'to be boiled'
- d. $\sqrt{\text{gwel-}}$ 'to burn' + **-p** 'inchoative' (aspectual suffix)
→ **gwelp** 'to be burning'

3.2.3 Deriving Transitive Predicates

All transitive verbs are morphologically derived by suffixation of a transitivity marker to the root (be it bound or free). See Davis (1997) and references therein for discussion. There are four main transitivity markers, as given in (5). The two direct transitivity markers yield transitive predications with a direct object, as illustrated in (6); whereas the two indirect transitivity markers yield transitives with an indirect object as in (7).

(5)	DIRECT	INDIRECT
FULL CONTROL	-Vn, -Vn' (<i>DIRective</i>)	-cit (<i>INDirective</i>)
NEUTRAL CONTROL	-s, -ts (<i>CAUsative</i>)	-min, -min' (<i>RELational</i>)

(6) **DIRectives (full control, direct):**

- a. $\sqrt{\text{tup-un}}$ b. $\sqrt{\text{ats}'x\text{-en}}$ c. $\sqrt{\text{mays-en}}$
 be-punched-**DIR** be seen-**DIR** be fixed- **DIR**
 'to punch 'to see 'to fix something'
 someone/thing' someone/thing'

CAUsatives (neutral control, direct):

- d. $\sqrt{\text{kwis-ts}}$ e. $\sqrt{\text{t}'iq-s}$ f. $\sqrt{\text{us-ts}}$
 fall-**CAU** arrive-**CAU** get thrown out-**CAU**
 'to drop 'to bring 'to throw out
 something' something' something'

(7) **INDirectives (full control, indirect):**

- a. $\sqrt{\text{mays-cit}}$ b. $\sqrt{\text{t}'iq-cit}$
 be fixed-**IND** arrive-**IND**
 'to fix something 'to bring something
 for someone' for someone'

REDirectives (neutral control, indirect):

- c. $\sqrt{\text{páqu7-min}}$ d. $\sqrt{\text{qlil-min}}$
 be afraid-**RED** angry-**RED**
 'to be afraid of something' 'to be angry with someone'

Note that the transitivity markers in (5) are further cross-classified along the important dimension of *agent control*. The referent of the subject of a control transitive is a participant to which we ascribe conscious (mindful) control over the action denoted by the predicate. (Thus, (6a), for instance, cannot be used to report that some person inadvertently punched someone). In contrast, the subject of a neutral control transitive either lacks control or need not have control over the action denoted by the predicate. See Demirdache (1997) and references therein for discussion.

3.2.4 Deriving Unergative Predicates

Having established that roots in St'át'imcets are syntactically unaccusatives and, further, that transitive predications are morphologically derived by addition of a transitivity marker to the root, we now turn to unergative predicates. Unergatives are derived by suffixation of an intransitivity marker to the root. The intransitivity markers are given in (8), with examples in (9-10) below:

(8)	IMPLIED OBJECT	MEDIO-REFLEXIVE
	-cal (ACTIVE)	-lec, ílc (AUTonomous)
	-Vm, Vm' (MIDDLE)	-Vm, Vm' (MIDDLE)

Suffixation of any intransitivity marker to the root yields a syntactically intransitive predicate, whose single argument is interpreted as an agent in full control over the action denoted by the predicate. Intransitivity markers differ in the following way.

The active intransitivity marker **-cal** yields a predicate describing an activity with an *object-oriented* reading — that is, the activity denoted by the predicate is directed at an object, like English intransitive 'eat' or 'play', as illustrated in (9a-c). In other words, although unergatives derived by suffixation of the active intransitivity marker **-cal** are morphosyntactically intransitive, they remain semantically transitive and, as such, permit a 'weak object' in de Hoop's (1992) sense — that is, a generic/non-specific theme, requiring typically either the collective determiner **ki** as in (9d) or the non-specific determiner **ku**. Note, crucially, the absence of ergative marking in (9d) (vs. (9e)) which signals a morphosyntactically intransitive predicate. Following de Hoop (1992) and van Hout (1993), Davis and Demirdache (1995) analyse the weak object in (9d) as a predicate modifier.

(9) **ACTIVE (object-oriented):**

- a. $\sqrt{\text{k}'ác\text{-cal}}$ b. $\sqrt{\text{t}'iq\text{-cal}}$ c. $\sqrt{\text{páqu7-cal}}$
 be dry-**ACT** arrive-**ACT** be afraid-**ACT**
 'to dry (stuff)' 'to bring (stuff)' 'to scare (people)'

Syntactically intransitive DRY derived by affixation of the ACT intransitivity marker:

- d. [k'ác -cal - \emptyset / *-as] [ki sts'wán-a] [s-Laura]
 dry -**ACT-ABS** / *- **ERG** COLL.DET salmon-DET NOM-Laura
 'Laura did some salmon-drying'

Syntactically transitive DRY derived by affixation of the DIR transitivity marker:

- e. [k'áéin' - \emptyset -as] [ti sts'wán-a] [s-Laura]
 dry-**DIR-ABS** -**ERG** DET salmon-DET NOM-Laura
 'Laura dried the salmon'

Whereas suffixation of the active intransitivity marker yields an *object-oriented* reading, suffixation of the autonomous intransitivity marker **-lec/ílc** yields a *medio-reflexive* reading — where the action denoted by the predicate is self-directed, like English intransitive 'wash' or 'dress', as illustrated in (9f-h).

(9) **AUTonomous (medio-reflexive):**

- f. $\sqrt{\text{k}'ác\text{-lec}}$ g. $\sqrt{\text{kwis-lec}}$ h. $\sqrt{\text{ts'áw'-lec}}$
 be dry-**AUT** fall-**AUT** be washed-**AUT**
 'to dry oneself' 'to lower oneself' 'to wash oneself'

Note that whereas the active intransitivizer always yields an object-oriented meaning (9a-d) and the autonomous intransitivizer always yields a medio-reflexive meaning (9f-h), the middle intransitivizer may yield either an object-oriented reading as in (10a-c) or a medio-reflexive reading as in (10d-f), depending on the root to which it is attached.

(10) *MIDDLE (object-oriented):*

a. $\sqrt{\text{cwik'}}$ -em be butchered-MID 'to butcher (stuff)'	b. $\sqrt{\text{áts'x}}$ -em be seen- MID 'to see (things)'	c. $\sqrt{\text{legw- úm}}$ be hidden-MID 'to hide (stuff)'
--	---	---

MIDDLE (medio-reflexive):

d. $\sqrt{\text{málh-am'}}$ be rested-MID 'to rest (oneself)'	e. $\sqrt{\text{sácw-em}}$ be bathed- MID 'to bathe (oneself)'	f. $\sqrt{\text{xat'-em}}$ hard-MID 'to go up hill'
---	--	---

This ambiguous behaviour of the middle intransitivizer provides us with an explanation for an apparently anomalous set of bare (unsuffixed) roots that are interpreted as unergative predicates, to which we now turn.

3.2.5 'Control' Roots

There is a small set of bare roots that are interpreted as unergative predicates. These roots are known as 'control' roots in the Salishan literature because their single (syntactically expressed) argument must be an agent with full control over the activity denoted by the predicate. Control roots number roughly 75 out of 2000 or so roots in St'át'imcets, with comparable figures for other Salish languages. Davis (1997) argues that these bare unergative roots are in fact concealed middles and, as such, do not invalidate the generalization that all roots in St'át'imcets are unaccusative.

First, compare (11a) with (11b). In (11a), the middle-marker is in complementary distribution with the indirective transitivizer. This is the expected pattern. In contrast, in (11b), the middle has been reanalyzed as part of the root to which the (indirective) transitivizer affixes.

(11) *Lexicalization of middle marker:*

a. $\sqrt{\text{it'-em}}$ sing-MID 'to sing, do some singing'	→ $\sqrt{\text{it'-cit}}$ sing-IND 'to sing for someone'
b. $\sqrt{\text{it'em-}}$ sing- \emptyset MID 'to sing, do some singing'	→ $\sqrt{\text{it'em-cit}}$ sing-IND 'to sing for someone'

For Davis (1997), the acceptability of both *it'cit* and *it'emcit* in contemporary St'át'imcets shows overtly the process whereby a middle suffix

becomes part of the root, leading to the creation of a zero-suffix alternant to replace it.

Second, control roots, just like middles, yield either an object-oriented reading, as illustrated in (12a-c), or a medio-reflexive reading, as illustrated in (12d-f). A natural account of the ambivalent behaviour of control roots is to analyse these forms as zero-derivations of the middle intransitivizer (\emptyset -MID) - as in (12). We expect control roots to behave ambiguously just like middles if, indeed, they are formed by suffixation of a zero-alternant of the middle intransitivizer.

(12) \emptyset -MIDDLE (object-oriented):

a. $\sqrt{\text{naq'w-}}$ \emptyset be stolen- \emptyset MID 'to steal (stuff)'	b. $\sqrt{\text{paqw-}}$ \emptyset be observed- \emptyset MID 'to observe (things)'	c. $\sqrt{\text{úqwa7-}}$ \emptyset be drunk- \emptyset MID 'to drink (stuff)'
---	---	--

\emptyset -MIDDLE (medio-reflexive):

d. $\sqrt{\text{yax-}}$ \emptyset be dressed- \emptyset MID 'to dress (oneself)'	e. $\sqrt{\text{súxwast-}}$ \emptyset come down- \emptyset MID 'to come down a hill'	f. $\sqrt{\text{mítsaq-}}$ \emptyset be sat- \emptyset MID 'to sit (oneself)'
--	--	---

Further evidence for the conclusion that 'underived' unergatives are actually formed by suffixation of a zero-intransitivizing morpheme to the root is provided by the morphological alternations in (13). In (13), we see that roots suffixed with overt intransitivizers are in free variation with zero-marked forms.

(13) *Free variation between intransitivizing suffix and zero suffix:*

úmik- \emptyset	or	úmik-em	'to go upstream'
q'um- \emptyset	or	q'úm-lec	'to shrivel'
q'it'- \emptyset	or	q'it'-lec	'to heal, scar'

Once we recognize the existence of zero-intransitivizers, we can set aside the sole set of apparent exceptions to the fundamental unaccusativity of roots in St'át'imcets. We are thus left with two absolute generalizations: (i) underived roots are invariably intransitive, selecting an internal argument; (ii) transitive and unergatives are derived by morphosyntactic operations that may be phonologically null. For further arguments and discussion, see Davis (1997).

3.3 Unaccusatives in St'át'imcets are Semantically Causative

We have established that roots in St'át'imcets are morpho-syntactically unaccusative and that all unergatives and transitives are morphologically

derived by suffixation of an (in)transitivizer. We now turn to the second major claim of this paper. We establish that although unaccusatives in St'át'imcets are *not* morphologically derived from transitives, they nonetheless must have an underlyingly *causative* semantic structure, as proposed in Chierchia, G. (1989), Levin and Rappaport Hovav (1995) Pustejovsky (1995) and Reinhart (1991) among others. Under these proposals, both unaccusatives and causatives will share the same underlying causative structure.

To establish that unaccusatives in St'át'imcets are semantically causative, we first show that the arguments given in the literature for a causative analysis of unaccusatives carry over to St'át'imcets. First, unaccusatives can be modified by instrumental PPs. Second, some unaccusatives can appear with reflexive morphology, just as is the case in Romance (see Chierchia, G. (1989)), Dutch, German or Hebrew (see Reinhart (1997)).

We further provide two Salish-internal arguments for the underlying causative hypothesis. First, this hypothesis explains the existence of certain lexical verb meanings in Salish. In particular, it explains why certain unaccusative verbs incorporate into their meaning the instrument which brings about the change of state specified by the root. We take this incorporated instrument to reflect the presence — in the semantic representation of the root — of the causing event with which the instrument must be construed. This argument parallels the argument from instrumental adjuncts given in the literature for the underlying causative analysis of unaccusatives.

The second argument comes from a phenomenon known as *out of control* in the Salishan literature. When out of control morphology is affixed to a morphologically transitive verb, it suppresses the control of the agent over the action denoted by the verb, yielding an accidental reading (*x* accidentally caused *y* to become V-ed). Crucially, out of control morphology also applies freely to unaccusative predicates, yielding a 'suddenly, accidental' reading (*y* suddenly/accidentally became V-ed). The assumption that causatives and unaccusatives share the same underlying semantic structure will explain why a morphological operation that suppresses agent control whenever there is an agent can also productively apply to predicates that lack an external argument altogether; and, indeed, why such a morphological process should exist in the first place. We conclude this section by suggesting that the argument from out of control in Salish can be generalized to languages like English by examining the distribution of adverbs such as 'accidentally' as opposed to that of (agent-oriented) adverbs such as 'intentionally'.

We take the evidence presented here for an underlying causative semantic representation for unaccusatives to be very strong precisely because it is evidence from languages where causatives are clearly morphologically derived from unaccusatives, as was established in section 2: that is, from

languages where the direction of morphological derivation is the reverse of the direction of lexical semantic derivation, which by hypothesis is universal.

3.3.1 Argument #1. Instrumental Adjuncts

One of the central arguments for assigning an underlying causative structure to unaccusatives comes from the fact that a sentence with a change of state predicate can make reference to the event that caused the change of state to come about (see Chierchia, G., Pustejovsky 1995 or Levin and Rappaport Hovav 1995). The argument goes as follows. The PPs in (14a) and (15a-b) make reference to the initial event that causes the package to arrive and Max to die, respectively. Reference can be made to this initial causing event precisely because it is part of the semantic representation of 'arrive' or 'die'.

- (14) a. The package arrived with the postman
 b. *The package arrived by the postman
- (15) a. Max died from a gunshot/pneumonia
 b. The ice melted with the heat
 c. *The ice melted by Max
 d. *The ice melted to clear the driveway

As illustrated by the grammaticality contrasts in (14) and (15), only certain types of adjuncts are licensed with unaccusatives. For Pustejovsky (1995), it is accessibility to the initial (causing) subevent in the event structure of an unaccusative — as opposed to accessibility to the agent of the event itself — which determines the licensing of adjuncts such as those in (14-15). The adjuncts in (14a) and (15a-b) are licensed because a coherent causal chain can be construed by associating the adjunct with the initial causing event, which is part of the semantic representation of the unaccusative predicate. In contrast, the *by*-phrase in (14b) or (15c) and the purpose clause in (15d) are ungrammatical because they do not make reference to the initial causing event itself but rather to the agent of the event. Adjuncts which modify the agent are ungrammatical with unaccusatives for the simple reason that the agent is not part of the lexical representation of the predicate — hence, no coherent causal chain can be constructed in either (14b), (15c) or (15d).

The same argument can be made in St'át'imcets since instrumental adjuncts can modify unaccusative predicates. This is illustrated by the Okanagan examples in (16), quoted from Mattina (1996), and the St'át'imcets example in (17a).

(16) *Unaccusatives in Okanagan* (from Mattina 1996)

- a. kn c'wak i7 t-t'ic'men
 ISG.ABS get burnt ART CS-iron
 'I got burnt by the iron'
- b. ku-nik'ek' i7 t-nik'mn
 ISG.SUBJ-cut (AC) ART CS-knife
 'I got cut with a knife'

(17) a. *Unaccusatives in St'át'imcets*

xán'-lhkan l-ta míxalh-a
 be(come) hurt-1SG.SUBJ OBL-DET bear- DET
 'I got hurt by the bear'

b. *Passive in St'át'imcets*

xan'-s-tum'cálem l-ta míxalh-a
 be(come) hurt-CAUS-1SG.PASS OBL- DET bear-DET
 'I got hurt by the bear'

Note, in particular the contrast between (17a), with the unaccusative free root *xan'* 'to get hurt', and its passive counterpart in (17b), which is itself derived from the causative form *xan'-s* 'to hurt someone, cause someone to be hurt' by suffixation of the passive marker. (17a) is grammatical under the interpretation where the bear is construed as an instrument but, crucially, not under the interpretation where the bear is construed as an agent. Thus, (17a) would be felicitous in a context where the speaker got hurt by tripping on the bear, but not in a context where the bear attacked the speaker. In contrast, in the passive in (17b), the bear must be interpreted as the agent, and not as an instrument.

We take the instrumental PPs in (16) and (17a) to reflect the presence in the semantic representation of the root of the causing event with which the instrument (e.g. the knife, the bear) must be construed. Just as was the case with the English examples in (14b) and (15c-d), adjuncts which do not make reference to the initial event itself, but rather only to the agent of the event, are not licensed because the agent is not part of the lexical representation of the predicate.

3.3.2 Argument #2. Lexical Verb Meanings: [verb+instrument] schema

By the same line of reasoning, we can explain the lexical meaning of a set of certain roots in Salish. Beck (1995) argues that unaccusative roots in Lushootseed can have the schema [verb + instrument], as illustrated in (18). The same holds in St'át'imcets, as illustrated in (19). Note first that all the roots in (18-19) are syntactically unaccusative — licensing the

projection in the syntax of a single internal argument. Crucially, however, we see that the instrument which brings about the change of state specified by the root is incorporated into the meaning of the root itself.

We can explain the existence of roots such as those in (18-19)⁴ by the same line of reasoning developed for instrumental adjuncts in section 3.1. above. The incorporated instrument reflects the presence — in the semantic representation of the root — of the causing event with which the instrument (e.g. 'with a stick or whip', 'by flying object', 'by a thrown object', 'with fist', 'with a gun shot' or 'by water') must be construed. See Demirdache (1997) for further discussion.

(18) *Lushootseed roots* (from Beck (1995))

- a. √pus 'be struck by a flying object'
 b. √c'axw 'be struck by a stick'
 c. √t'uc' 'be shot'

(19) *St'át'imcets*

- a. √qam't 'be hit by thrown object'
 b. √sek 'be hit with a stick or a whip'
 c. √tup 'be hit with fist, be punched'
 d. √weq'w 'be carried away by water'
 e. √meq' 'to be full from eating'
 f. n-√ts'q'-ána7 'to get wet from something that is leaking'
 g. √ken'n'-alqw 'to get hit by a car'

Consider, for instance, the lexical meaning of the unaccusative root in (19e). The lexical meaning of the predicate specifies that the (change of) state described by the root — that is, *x* BE(COME) FULL — is caused by an event of eating. In other words, it is clear from the lexical meaning of the root itself, that the event leading to the (change of) state denoted by the root must be part of the semantic representation of the root. Likewise, in (19f), the causing event that brings about the change of state *x* BE(COME) WET is clearly part of the lexical meaning of the unaccusative verb: the lexical meaning of the root specifies that the causing event must be an event of leaking or dripping, such as rain, for instance. (19f) could thus not be used to report that someone got wet when the causing event is, say, his/her falling into the swimming pool.

⁴The two roots in (19f-g) contain lexical suffixes. (19f) contains the suffix *ána7* which means 'ear'. By metaphorical extension, this lexical suffix yields the meaning 'from ear to ear' — that is, completely, thoroughly. Thus, *nts'q'ána7* means 'to get thoroughly wet from something that is leaking'. The root in (19f) (see also (4b), section 2.2) is a bound root which surfaces here with the lexical suffix *-alqw* 'log, long hard object'.

3.3.3 Argument #3. Lexical reflexives

An important argument — discussed in Chierchia, G. (1989) — for assigning a semantically causative structure to unaccusatives is based on the fact that, crosslinguistically, a significant class of unaccusatives is marked with reflexive morphology, as illustrated in (20) with data from Romance (Italian data from Chierchia, G. (1989)). For recent discussion of the morphological similarities between unaccusatives and reflexive verbs in Dutch, German and Hebrew, see also Reinhart (1997).

(20) Romance reflexive clitic *se*

- a. *Italian unaccusatives*
scontrarsi 'collide', *arrabbiarsi* 'get angry', *inginocchiarsi*, 'knee'
Italian unaccusative/causative alternants
rompersi/romper 'break', *aprirsi/aprir* 'open', *irritarsi/irritar*
 'irritate'
- b. *French unaccusatives*
s'évanouir, 'faint', *s'en aller* 'go away', *s'endormir* 'fall asleep'
French unaccusative/causative alternants
se casser/casser, *se briser/briser* 'break', *s'ouvrir/ouvrir* 'open',
se noyer/noyer 'drown'
- c. *Spanish unaccusatives*
desmayarse 'to vanish', *irse* 'go away', *morirse* 'die'
Spanish unaccusative/causative alternants
abrirse/abrir 'open', *romperse/romper* 'break', *hundirse/hundir*
 'sink'

Chierchia, G. (1989) offers a principled account for the fact that unaccusatives and reflexives can have the same morphology. Assuming that the lexical representation of unaccusatives is underlyingly causative, Chierchia, G. argues that the unaccusative form is either an **overt** reflexivization of a transitive counterpart (as would be the case with say *se noyer* 'drown' in French) or a **zero** reflexivization (as would be the case with say *couler* 'sink' in French) of a transitive counterpart. The transitive counterpart may be lexicalized in some languages but not in others. For instance, *arrive* has no transitive counterpart in some languages (e.g. English or Italian) but has a morphologically transparent transitive counterpart in other languages — i.e. *bring* in e.g. Hebrew (as pointed out by Reinhart (1997)) or St'át'imcets (where $\sqrt{t'iq+s}$ 'to bring something here' is derived from $\sqrt{t'iq}$ 'to come here, arrive' by addition of the causative transitivizer). This proposal explains why unaccusatives and reflexives can have the same morphology across languages: the Romance reflexive clitic *se* in (20) overtly signals that the causative has been lexically reflexivized.

For Chierchia, G., reflexivization is an operation identifying the two arguments of an underlying causative predicate. There are two possible options: reflexivization can either externalize or internalize an argument (see also Reinhart (1997) for discussion). The remaining argument can either be the external argument, in which case an 'agentive unaccusative' surfaces, or the internal argument, in which case a non-agentive unaccusative surfaces. We illustrate this with the derivations in (21). First, both transitive *roll* or *sink* and unaccusative *roll* or *sink* have the same underlying causative semantic representation, given in (21). Second, the unaccusative use of *roll/sink* is derived by zero reflexivization of the causative structure in (21), as illustrated in (21b-c).

If reflexivization externalizes an argument, as in (21iv), then an 'agentive unaccusative' surfaces, as illustrated by (21v-vi). Note, in particular, the contrast between (21vi) and (21vii). (21vii) is ungrammatical because the boat is inanimate and, thus, cannot be an agent. In contrast, (21vi) is grammatical because Max can be an agent causing himself to drown.

If, on the other hand, reflexivization internalizes an argument as in (21viii), then a non-agentive unaccusative surfaces, as illustrated by (21ix-x). Note, crucially, that for Chierchia, G., the causing event in (21ix-x) is interpreted statively: this event is not construed as an action performed by the subject, but as a property or a state of the subject.

(21) x CAUSE y to ROLL/SINK

- a. *Transitive*
 - i. x CAUSE y to ROLL/SINK ii. Max rolled the ball → Max caused the ball to roll iii. Max sank the boat → Max caused the boat to sink
- b. *Agentive unaccusative derived by External Reflexivization:*
 - iv. x CAUSE y to ROLL/SINK → x CAUSE x to ROLL/SINK v. Max rolled (in order to impress us) → Max caused Max to roll (in order to impress us) vi. Max drowned (to collect the insurance) → Max caused Max to drown (to collect insurance) vii. *The boat sunk (to collect the insurance)
- c. *Non-agentive unaccusative derived by Internal Reflexivization:*
 - viii. x CAUSE y to ROLL/SINK → y CAUSE y to ROLL/SINK ix. The stone rolled → A property of the stone cause the stone to roll x. The boat sunk → A property of the boat cause the boat to sink

The argument from reflexive morphology for the underlying causative analysis of unaccusatives carries over to St'át'imcets, on the basis of the so-called 'medio-reflexives' discussed in section 2.4. Recall that medio-reflexives are inherently reflexive predicates derived by suffixation of *íc/lec*

to a root. There are in fact two classes of medio-reflexives. Alongside the medio-reflexive discussed in section 2.4. which have an agentive (control) interpretation, as illustrated in (22a), there is a second class of medio-reflexives which have an unaccusative (patient oriented/inchoative) interpretation, as illustrated in (22b).

(22) **Medio-reflexives in St'át'imcets**

a. *Agentive intransitives*

legw-ílc 'to hide oneself', k'ác-lec 'to dry oneself', kwílec 'to lower oneself'

External reflexivization:

x CAUSE y to become V-ed \rightarrow x CAUSE x to become V-ed

b. *Non-Agentive unaccusative*

t'úp-lec 'to get twisted', zenp'-ílc 'to get tangled', k'wíc'-lec 'to get crooked'

Internal reflexivization:

x CAUSE y to become V-ed \rightarrow A property of y CAUSED y to become V-ed

Davis & Demirdache (1995) analyse the agentive (control) medio-reflexives in (22a) as lexically reflexivized causatives: the medio-reflexive affixes to a transitive (agentive) predicate, triggering identification of its two arguments, thus yielding an agentive reflexive predicate. Davis & Demirdache (1995), however, do not assume an underlying causative analysis of unaccusatives. The existence of the non-agentive unaccusative medio-reflexives in (22b), thus, remains unexplained: how can an unaccusative be reflexivized if it only has a single (internal) argument in its lexical representation?

This question disappears once we assume that unaccusatives are underlyingly causative. We can uniformly analyse all medio-reflexives — including the non-agentive medio reflexives in (22b) — as lexically reflexivized causatives. Following Chierchia, G., we assume that reflexivization can either externalize or internalize an argument. Thus, in (22a), reflexivization externalizes an argument, yielding an agentive medio-reflexive, whereas in (22b), reflexivization internalizes an argument, yielding a non-agentive medio-reflexive. Following Chierchia, G., the causing event in (22b) is interpreted statively; that is, as a property or a state of the subject. We can, thus, uniformly analyse the agentive and the unaccusative medio-reflexives in (22) as inherently (lexically) reflexivized causatives.

We have thus far argued that the two central arguments provided in the literature for the causative analysis of unaccusatives carry over to St'át'imcets: (i) instrumental adjuncts can modify unaccusative predicates; (ii) unaccusatives can surface with reflexive morphology. We have further extended the argument from instrumental adjuncts to explain the exist-

tence of certain verb meanings in St'át'imcets, where the instrument which brings about the change of state specified by the root is incorporated into the meaning of the unaccusative root itself. See Demirdache (1997) for further arguments and discussion.

We now turn to our final argument for the causative hypothesis which comes from a phenomenon known in the Salishan literature as *out of control*.

3.3.4 Argument #4. 'Out of Control'

Out of control morphology suppresses the control of the agent over the action denoted by the verb, yielding either an accidental reading with transitive verbs, or an ability reading with unergative verbs. Crucially, however, it also productively applies to unaccusative predicates, yielding a 'sudden, spontaneous occurrence, accidental reading'. The paradox of *out of control* is this: why can the same morphological operation suppress agent control with verbs that have an external argument, and at the same time productively apply to unaccusatives — that is to predicates which denote events or states which are never under the control of an agent in the first place, since they lack an external argument altogether? Indeed, how could such a morphological operation exist? To resolve this paradox, we make two assumptions: (i) both unaccusatives and causatives have the same underlying semantic representation; (ii) out of control suppresses the causing event in the lexical representation of a causative predicate. These two assumptions will not only explain why out of control applies productively to unaccusatives yielding an 'all at once, suddenly, unexpectedly' reading, but also how the lexical meanings of verbs of appearance are derived in St'át'imcets — that is, why verbs of appearance surface with *out of control* morphology.

3.3.4.1 The Predictable Distribution of Out of Control (OOC) Readings

OOC morphology suppresses the 'agentivity' of the agent — with verbs that select an agent — yielding either of two readings: (i) an accidental reading (x accidentally caused y to become V-ed); or (ii) an ability reading (x is able to cause y to become V-ed). The distribution of these two readings obeys the generalizations in (23), as illustrated by the paradigms in (24) through (27).

- (23) a. The ability reading obtains in sentences describing atelic (unbounded) events.
 b. The accidental reading obtains elsewhere — that is, in sentences describing telic (bounded) events.

When the discontinuous OOC morpheme *ka...a* is affixed to a predicate denoting an activity (that is, an atelic event), the resulting predicate no longer describes an activity but the ability of the subject to perform the activity denoted by the unergative verb:

(24) **ACT derived unergatives**

- a. *sék-cal* 'to hit (people/things)'
 b. *ka- sék -cal -a*
 OOC- hit -ACT -OOC
 'to be able to hit (people/things) with a stick or a whip'

(25) **MDL derived unergatives**

- a. *píx-cal* 'to hunt'
 b. *ka- píx -cm' -a*
 OOC- hunt -MID -OOC
 'to be able to hunt'

In contrast, when OOC is affixed to a verb denoting an accomplishment (that is, a telic event), it suppresses the control of the agent over the action denoted by the verb, yielding an accidental reading, as illustrated in (26).

(26) **Morphological causatives**

- a. *sék- s* 'to hit with a stick or a whip'
ka- sék -s -a
 OOC- hit -CAU -OOC
 'to accidentally hit with a stick or a whip'
 b. *sék'w-s* 'to break' (transitive)
ka- sék'w -s -a
 OCC- broken -CAU -OOC
 'to accidentally break'

Under the scope of certain operators, the accidental reading that obtains with accomplishment verbs is lost and, the ability reading surfaces. This is expected given the generalization in (23), since a sentence with an accomplishment verb under the scope of either the progressive or negation is stative (cf. Dowty (1986)).

(27) a. **Under the scope of negation: (compare (27a) with (26a))**

cw7a0z kw-s ka-sék-s-as-a [ti sq'úm'ts-a]
 NEG DET-NOM OOC-hit-CAU- ERG-OOC DET
[ti sqáycw-a]
 ball-DET DET man-DET

'The man is not able to hit the ball'

* 'The man is accidentally not hitting the ball'

b. **Under the scope of the progressive: (compare (27b) with (26b))**

wa7 ka--sék'w-s-as-a [ti
 PROG OOC-broken-CAU-ERG-OOC DET
nk'wan'ústen-a] [ti sqáycw-a]
 window-DET DET man-DET

'The man is able to break the window'

* 'The man is accidentally breaking the window'

3.3.4.2 'Out of Control' Applies Freely to Unaccusatives

Since unaccusatives are aspectually telic, we expect OOC applied to an unaccusative not to yield an ability reading, given the generalization in (23). This is correct. A sentence with OOC applied to an unaccusative describes an event that happened either accidentally and/or all at once, suddenly or unexpectedly, as illustrated in (28).

- (28) a. *ka- t'ál -a*
 OOC- stop -OOC
 'to stop suddenly'
 b. *ka- lwés -a*
 OOC- break -OOC
 'to break (shatter) accidentally, suddenly'
 c. *ka- nem' -a*
 OOC- blind -OOC
 'to go blind suddenly'

Below, we give two minimal pairs illustrating the readings that OOC yields when applied (i) to an unaccusative root, as in (29a/b), and (ii) to the causative morphologically derived from this root, as in (29a'/b').

- (29) a. *ka-paqu7-lhkán-a* a'. *ka-paqu7-s-kán-a*
 OOC-scared-SG.SUBJ-OOO OOC-scared-CAU-SG.SUBJ-OOO
 'I suddenly got scared' 'I accidentally scared him'

- b. **ka-qám't-a** b'. **ka-qám't- s- as-a**
 OOC-hit-OOC OOC-hit-CAU-ERG-OOC
 'He got hit suddenly/
 accidentally' 'He accidentally hit someone'

As was the case with morphological causatives (see (27)), the accidental reading of unaccusatives is lost under the scope of negation or the progressive. Once again, an ability reading surfaces in (30) because a sentence with a telic verb under the scope of either the progressive or negation is stative.

(30) **Under the scope of the progressive**

- a. [**ka-kwís-a**] [ti k'ét'h-a]
 OOC-fallen-OOC DET rock-DET
 'The rock accidentally fell'
- b. wa7 [**ka-kwís-a**] [ti k'ét'h-a]
 PROG OOC-fall-OOC DET rock-DET
 'The rock can fall'
 *'The rock is accidentally falling'

c. **Under the scope of negation**

- cw7aoz kw-s [**ka-kwís-a**] [ti k'ét'h-a]
 NEG DET-NOM [OOO-fall-OOC] DET rock-DET
 'The rock can't fall' (GN: 'There's no way that rock can fall')
 *'The rock accidentally didn't fall'

We are thus faced with the following paradox. Why can the same morphological operation suppress agent control with verbs that have an external argument and at the same time productively apply to predicates which denote events or states which are never under the control of an agent in the first place, since they lack an external argument altogether? This is all the more mysterious since OOC can only suppress the control of an agent, not that of either an instrument or a natural cause or force, as the grammaticality contrast between (31a) and (31b) illustrates. (31a) is grammatical because the subject is a human agent whose control over the action denoted by the predicate can be suppressed by affixation of OOC morphology to the verb. In contrast, OOC morphology on the verb is illicit in (31b) because OOC suppresses the control of the agent over the action denoted by the verb and the storm is not an agent — it cannot act willfully. In other words, the storm cannot be put out of control since it never has control over the action denoted by the verb in the first place.

- (31) a. [**ka- sék'w -s -as -a**] [ti nk'wan'ústen-a]
 OOC broken -CAU -ERG -OOO DET window-
 [ti **sqáycw-a**]
 DET DET man-DET
 'The man accidentally broke the window'
- b. (***ka-**) sék'w -s -as (***-a**) [ti nk'wan'ústen-a]
 OOC broken -CAU -ERG -OOO DET window-
 [ti **qvl- alh-tmícw-a**]
 DET DET bad-CON-land-DET
 *'The storm accidentally broke the window'

Following Thompson (1985), we conclude that the notion of (agent) control in Salish cannot be reduced to the traditional notion of volition precisely because both controlled events (that is, actions) and non-controlled events (states and changes of states) can be morphologically marked as 'out of control' of an agent.

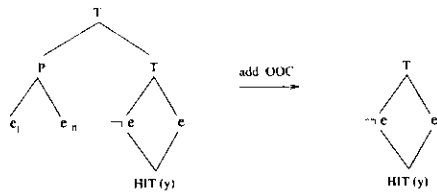
Demirdache (1997) argues that the distribution of OOC readings provides strong support for the causative analysis of unaccusatives. OOC morphology makes reference to the coming into existence of the change of state denoted by a predicate or to the causal chain leading to the described change of state. The resulting change of state is construed as coming about spontaneously/all at once, or as having being caused by some initial event which was not under the full control of an agent. Reference can be made to the coming into existence of the change of state denoted by a predicate or to the causal chain leading to the described change of state, if both the initial causing event and the resulting change of state are part of the semantic representation of the predicate. This is precisely the claim underlying the causative analysis of unaccusatives.

Though we cannot present in full an analysis of OOC here, for reasons of space (but see Demirdache 1997), we will argue in the next section that the 'spontaneous occurrence, all at once, suddenly' reading that OOC yields when applied to unaccusatives can be derived from two simple assumptions: (i) unaccusatives have an underlying causative representation; and (ii) OOC suppresses the initial causing event in the event structure representation of a causative. We will provide further support for this proposal by showing that it explains how the lexical meaning of verbs of appearance is derived in St'át'imcets — that is, why verbs of appearance surface bound to OOC morphology.

3.3.4.3 Deriving the Sudden/Spontaneous Occurrence Reading of OOC

Adopting Pustejovsky's (1991, 1995)⁵ model of lexical representation, an unaccusative predicate will have the causative underlying event structure representation in (32a). It is a recursive transition consisting of two subevents: the causing process (E1) and the resulting change of state (E2), where E2 is itself a simple transition or change of state ($\neg p$ becomes p). OOC is defined as an event functor that type-shifts an event type into a lower event type by suppressing the initial subevent in the event structure of the predicate to which it applies. Thus, when OOC is applied to the recursive transition in (32a), it suppresses the causing event P and type shifts the causative into a simple change of state predicate, yielding (32b).

- (32) **The sudden/spontaneous occurrence reading of OOC**
 a. $\sqrt{\text{qám't}}$ 'to be(come) hit' b. **ka-qám't-a**



Suppression of the initial (causing) event in (32) yields the 'it happened spontaneously, suddenly, unexpectedly, all at once' reading of out of control. That is, once the causing event in the event structure of the predicate has been suppressed, the change of state specified by the root must be construed as coming into being suddenly, all at once, spontaneously.

3.3.4.4 Verbs of (Dis)Appearance in St'át'imcets

The above analysis of the spontaneous occurrence reading that OOC yields when applied to an unaccusative, explains how the lexical meanings of verbs of appearance is morphologically derived in St'át'imcets. Consider the following paradigms. Note first that the roots in (33a/34a) are bound roots: they do not surface unaffixed (see section 4.2. for further discussion of these paradigms). As shown in (33/34b), the verb meanings 'appear' and 'disappear' surface bound to OOC morphology, respectively. The question is why.

⁵In Pustejovsky (1991, 1995), the aspectual properties of verbs are configurationally and compositionally defined in terms of recursive event structures. Events are decomposed into recursive subeventual structures. There are three primitive event types whose terminal elements are atomic events: (i) a State defined as a single eventuality that is viewed or evaluated relative to no other eventuality; (ii) a Process defined as a sequence of identical eventualities; (iii) a Transition defined as a single event evaluated relative to another single event.

- (33) a. $\sqrt{\text{hál'a}}$ (bound root)
 b. **ka-hál'h-a** 'x appeared'
 OOC+root+OOC
 c. **hál'h-an** 'y show x'
 root+DIR
- (34) a. $\sqrt{\text{cim'}}$ (bound root)
 b. **ka-cim'-a** 'x disappeared'
 OOC+root+OOC
 c. **cim'-ín** 'y put x out of sight'
 root+DIR

Levin and Rappaport Hovav (1995) argue that verbs of appearance describe changes of states for which the notion of causation (be it external or internal) is not relevant. As such, these verbs lack an external CAUSE in their lexical semantic representation. (For Levin and Rappaport Hovav, the lack of an external CAUSE explains the crosslinguistic patterns of behaviour of verbs of appearance. In particular, it predicts that verbs of appearance do not have causative alternants crosslinguistically. Levin and Rappaport Hovav's analysis will be discussed in detail in section 5.2.)

Note, first, that this prediction is invalidated in St'át'imcets since 'appear' and 'disappear' have the causative alternants in (33c/34c): 'y caused x to appear/become visible' and 'y caused x to disappear' (respectively). We see, however, that the lexical meanings of verbs of (dis)appearance are morphologically derived by applying OOC to the root. We have argued that the role of OOC morphology is precisely to suppress the initial causing event in the causative underlying representation of the unaccusative root. Thus, Levin and Rappaport Hovav's proposal that verbs of appearance lack an external CAUSE in their lexical representation proves to be both right and wrong for St'át'imcets: these verbs do indeed lack an initial causing event in their derived semantic representation (suppressed by OOC morphology), but at the underlying level they have a causative structure.

In sum, the proposal that OOC suppresses the causing process in the event structure of a causative verb allows us to maintain Levin and Rappaport Hovav's characterization of this class of verbs as unaccusatives that lack an external CAUSE in their lexical representation -but only in a derived sense, since verbs of appearance in St'át'imcets have an underlying causative representation. As such, verbs of appearance in St'át'imcets fall under the class of predicates which describe externally caused eventualities and are therefore (correctly) predicted to have causative/unaccusative alternants in the model of Levin and Rappaport Hovav. (See section 5.2 for detailed discussion).

3.3.4.5 Conclusion

Once we assume that unaccusatives and causatives have the same underlying semantic representation, then the fact that out of control freely applies to both unaccusative and causative predicates is no longer surprising. The underlying causative hypothesis thus explains why control is an opposition that cuts across all verb classes, including unaccusatives, as Thompson (1985) emphasizes.

Finally, we suggest that the OOC argument from St'át'imcets can be generalized to languages like English — where control adverbs such as *accidentally* can occur with unaccusatives, as illustrated in (35).

- (35) a. The bomb exploded by accident.
 *The bomb exploded intentionally.
 b. The vase broke accidentally.
 *The vase broke intentionally.

The adverbs in (35) makes reference to the causal chain leading to the change of state described by the unaccusative verb: the explosion of the bomb in (35a) was caused by some event which was not under the full control of an agent. This is possible because both the initial causing event and the resulting change of state are part of the semantic representation of unaccusatives. In contrast, control adverbs such as *intentionally* are ungrammatical because they do not make reference to the causal chain leading to the change of state described by the unaccusative verb but rather to the agent of the event. These agent-oriented adverbs are not licensed because the agent itself is not part of the lexical representation of the predicate and, hence, no coherent causal chain can be construed. This argument parallels the argument from instrumental adjuncts for the underlying causative analysis of unaccusatives discussed in sections 3.1-3.2.

3.4 The Role of (In)Transitivizing Morphology

We now turn to the question of the relationship of overt transitivizing and detransitivizing morphology to lexical semantic representations. This is one area in which there has been substantial cross-linguistic investigation: see in particular Haspelmath (1993) and references therein. The results of this work have shown that there is a great deal of variation in the morphological encoding of the causative-unaccusative alternation, with languages grouping very broadly into 'causative' and 'anti-causative' systems. Causative systems are those which build causative (transitive) predicates from unaccusative (intransitive) predicates via transitivizing morphology; anti-causative systems derive unaccusatives from causatives via intransi-

tivizing morphology.⁶

In this context, St'át'imcets shows a particular interesting profile. From the morphological point of view, there is little doubt that it is at the extreme causative end of the causative/anti-causative continuum. As we have seen, all causative predicates in St'át'imcets are morphologically derived by affixation of a transitivizer to a root with an unaccusative (patient-oriented) interpretation. On the other hand, we have provided equally strong evidence that unaccusatives — which are typically unaffixed — must have a semantically causative representation. Under this proposal, what is the role of causative morphology in St'át'imcets? We propose that (in)transitivizers in St'át'imcets serve to foreground sub-event(s) in an event structure, adapting Pustejovsky (1995.)

3.4.1 Event Foregrounding

Under the underlying causative hypothesis, both unaccusatives and causatives will have the same underlying complex event structure shown in (36), where a process (P) brings about a resulting (change of) state (T/S).

Adapting Pustejovsky (1995), we assume that the difference between an unaccusative and a causative predicate lies in the relative prominence of the two subevents in a causative event structure. Causatives belong to the aspectual class of accomplishments: the event denoted by the verb is viewed as a whole and presented in its entirety, and the focus of the interpretation thus includes the natural endpoints of the event (the causing event P and the resulting event T/S). Hence, in a causative both subevents are foregrounded.⁷ In contrast, an unaccusative is an achievement predicate: the focus of the interpretation is on the temporal interval that defines the end point of the event (the resulting (change of) state T/S), but not on the temporal interval that brings about this (change of) state. Hence, in an unaccusative predicate, only the final subevent (T/S) is foregrounded.

This leaves a third logical possibility, where only the *initial* process is foregrounded. This, we claim, is precisely the event structure representation of unergative predicates, which, recall, are derived via suffixation of an intransitivizer to the root.

The syntactic projection of arguments is constrained by the relative prominence of the two subevents in (36). Arguments correspond to participants in an event structure: the participant associated with the first subevent (P) is the external argument of a predicate, whereas the partic-

⁶It should, however, be emphasized that the causative/anti-causative distinction is not a simple binary parametric opposition; in fact, it could be more accurately described as a continuum, with the vast majority of languages falling in between the two extremes of pure causativity or pure anti-causativity.

⁷Note that this system differs from that of Pustejovsky (1995: 187f), who treats transitive predicates as involving foregrounding of the initial P subevent but not of the final subevent.

ipant identifying the second subevent (T/S) is its internal argument (see also Grimshaw J. 1990, van Hout 1994, 1996, or Ritter & Rosen 1993). An unaccusative verb projects a single, internal argument position because only the second subevent in (36) is foregrounded. When the first subevent is also foregrounded, as is the case with a causative, the verb will project two argument positions. Finally, an unergative verb projects a single, external argument position because only the first subevent in (36) is foregrounded.

We now turn to the question of the relation between overt morphology and event-structure foregrounding. Since unergatives and transitives are morphologically derived by suffixation of an (in)transitivizer, we conclude that the role of an (in)transitivizer is to indicate the relative prominence of a subevent -that is, to trigger event foregrounding. Note, however, that the system we have developed is semantically but not morphologically symmetrical, in the following sense. Given an underlyingly causative event-structure representation, all three logical foregrounding possibilities are realized: if the initial subevent is foregrounded, we get an unergative; if the final subevent is foregrounded, we get an unaccusative; and if both are foregrounded, we get a transitive. However, the system is not morphologically symmetrical in the same way: overt (intransitivizing) morphology accompanies foregrounding of the initial subevent, overt (transitivizing) morphology accompanies foregrounding of both subevents; but, strikingly, unaccusatives are realized as bare roots, without any overt transitivity-related morphology. Indeed, the morphological unaccusativity of roots in St'át'imcets provided the starting-point for this paper.

We will nevertheless maintain that event-foregrounding of the final subevent in the event structure of an unaccusative is also morphologically triggered. For concreteness, we assume a zero derivation of the unmarked alternant.⁸ Note, crucially, that under this proposal, there is no direct derivational relation between the three alternants (causative, unaccusative and unergative). Rather these three alternants are derived in parallel from the same semantically causative underlying representation.⁹ There are two main advantages to this proposal, which we discuss in the following subsections.

⁸Note that we are not committed to zero-derivation of the unmarked alternant; we could view the unmarked form as part of a paradigmatic opposition, as is commonly assumed for agreement patterns. Under this analysis, the bare root will be morphologically associated with a particular aspectual interpretation, in opposition to overtly marked classes. Moreover, the unmarked class may vary: in St'át'imcets, it is unaccusative, but in a language like Russian, it is causative

⁹Hirose (1998) pursues an interesting approach to the causative-inchoative alternation, which shares some characteristics with our analysis. In particular, Hirose also rejects a direct derivational approach to transitivity alternations. However, he derives both alternants from an underlying state via event-composition, whereas we derive both alternants from an underlyingly causative structure via event-foregrounding.

3.4.2 Crosslinguistic Variation in the Morphological Encoding of Transitivity Alternations

Once we abandon the idea that there is a direct derivational relation between alternants, then we allow the possibility that languages vary in the morphological encoding of transitivity alternations. In particular, we would like to suggest that languages may differ as to which alternant they choose as a zero alternant. Thus, suppose that zero (unmarked) morphology is always a possibility for a given aspectual class in a language, but UG makes no special stipulation as to *which* aspectual class should be zero-marked. In that case, some languages (such as Russian or Italian) may choose to treat the transitive alternant as a zero alternant, and append overt morphology to intransitives; others (such as St'át'imcets or Turkish) might take the unaccusative alternant as morphologically unmarked, and append overt transitivizing morphology to causatives; and still others, such as Cree (Hirose 1998) and possibly Athapaskan, might choose neither as basic, and affix in/transitivizing morphology to both.

This approach to morphological variation in transitivity alternations allows us to maintain a cross-linguistically constant underlying lexical semantic representation, thus avoiding problems of conceptual relativity while providing a locus for systematic morphological variation, in line with the empirical facts. We thus believe it to be a promising approach to one of the more intractable problems on the morphology-lexical semantics interface.

3.4.3 Unergatives

Unergatives provide a compelling argument against a *direct* derivational approach to transitivity alternations, even though there is both semantic and morphological evidence that they must be derived — contra Levin and Rappaport Hovav (1995) and Pustejovsky (1995) among others, for whom unergatives are *monadic, underived* predicates. The reason is that the semantic evidence is almost impossible to reconcile with the morphological evidence as long as we assume a direct derivational approach, as we will now show.

The morphological evidence that unergatives are derived comes from the fact that they are always formed by suffixation of an intransitivizer to a root with an unaccusative (patient oriented) interpretation, as argued in section 2.4. If unergatives were underived predicates, why would they require an intransitivizer? The semantic evidence that unergatives are derived is as follows. Recall that agentive medio-reflexives, derived by suffixation of the lexical reflexivizing suffix *-lec/-lc*, have the semantics of inherently reflexivized causatives (e.g. k'ác+lec 'to dry oneself' → *x* caused *x* to become dry) and, thus, must be derived from an underlyingly causative lexical semantic representation. Recall also that unergatives derived by

suffixation of the active intransitivizer *-cal* show reflexes of semantic transitivity, since they permit a weak object in de Hoop's (1992) sense - that is, a generic/non-specific object. Such predicates typically yield an object-oriented meaning such as 'to hit people', 'to dry stuff', 'to salmon-dry' (see section 2.4 for discussion and illustration)

Now observe that it is very hard to reconcile the morphological and semantic evidence if we assume a direct derivational approach. In order to explain why unergatives are semantically transitive, we would have to first *transitivize* the underlyingly unaccusative root or alternatively, assuming that unaccusatives have an underlyingly causative structure, foreground the initial subevent in its event structure. Subsequently, we would have to *detransitivize* the lexical predicate via a kind of lexical anti-passive or, alternatively, background the final subevent in its event structure. However, there is no evidence at all for the intermediate step: in particular, there is no trace of transitivizing morphology, as would be expected under such an analysis.

In contrast, the derivation of unergatives is straightforward once we assume that they are neither directly derived from their transitive, nor from their unaccusative alternants. Rather, unergative alternants - just like transitive and unaccusative alternants - are derived from semantically causative lexical representations via a foregrounding operation.

3.5 The scope of the Causative Analysis of Unaccusatives

Recall the principle conclusions of the first two parts of the paper, summarized below:

- (36) a. Roots in St'át'imcets are morpho-syntactically unaccusative
 b. Unaccusatives in St'át'imcets have a causative lexical semantic representation.

St'át'imcets differs from languages like English or Italian at the level of morphosyntax but not at the level of lexical semantic structure. In particular, both 'punch' and 'hit' have a causative semantic representation - be it in English or St'át'imcets. However, St'át'imcets differs from English at the morphosyntactic level since 'punch' and 'hit' have an unaccusative alternant in St'át'imcets but not in English. Under this proposal, variation is thus confined to morphosyntax and does not extend to semantic structure: this is a welcome result since it is the null hypothesis.

However, while we have provided an account for morphosyntactic variation in the direction of derivation between unaccusatives and transitives, based on zero-derivation for the unmarked class, the question remains of how to account for crosslinguistic variation in the classes of (non-)alternating predicates. Thus, as we have seen the causative-unaccusative alternation

is pervasive in St'át'imcets, applying to virtually all predicates, whereas it is far more restricted in languages like English. We will now show that this poses non-trivial problems for some prominent contemporary theories of lexical representation.

In Chierchia, G. (1989) and Pustejovsky (1995), morphosyntactic variation is accidental and, thus, predicted to be random. We find this approach unsatisfactory in so far as it denies the existence of any systematic variation in the classes of (non-) alternating predicates in languages like English.

In contrast, in Levin and Rappaport Hovav (1995) (henceforth L&R) and Reinhart (1997), variation is semantically determined and, thus, predicted to be systematic. The latter approach is clearly more attractive in that it seeks to provide a principled explanation for crosslinguistic variation in the classes of predicates which undergo the causative/unaccusative alternation. However, if this approach is correct (a question which is beyond the scope of this paper), then we are back at our point of departure. That is, we started off by arguing that although St'át'imcets and English verbs differ morpho-syntactically, these differences do not extend to the lexical semantic representation of verbs. But if variation in the classes of alternating predicates is semantically determined, then the differences between St'át'imcets and English are much deeper: the source of variation will reside in how speakers conceptualize events. Indeed, such a position amounts to a kind of neo-Whorfian view of the lexicon.

3.5.1 Chierchia, G. (1989) and Pustejovsky (1995)

While we have shown that at least some unaccusatives have a causative lexical semantic representation, we have not yet addressed the question of exactly which class (or classes) of unaccusative predicates the hypothesis should apply to crosslinguistically. Note that this question is independent of the actual direction of morphological derivation; it is as relevant to an analysis which derives unaccusatives from causatives as to one which derives causatives from unaccusatives.

Consider first the radical possibility that all or nearly all unaccusative predicates are universally related to underlyingly causative lexical representations, whether or not a causative alternant actually surfaces in a given language. While to our knowledge no one has adopted the most extreme version of this hypothesis, the models of Chierchia, G. (1989) and Pustejovsky (1995) come close. Thus, Chierchia, G. (1989) argues that

...an unaccusative verb like 'come', for example, which lacks a causative use, is related to a causative verb meaning something like 'bring', but [that] this causative verb either is not lexicalized or is marked as being lexicalized by a verb that is not related to the intransitive use morphologically.

In the same spirit, Pustejovsky claims that all “lexical unaccusative verbs” have a semantically causative representation.¹⁰ Of course, this risks circularity, unless there is some independent criterion for assessing what exactly counts as a “lexical unaccusative verb”.

This approach has obvious desirable consequences for the analysis of languages like St’át’incets, where the causative-unaccusative alternation is pervasive. Recall that all roots in St’át’incets (setting aside nouns — e.g. \sqrt{sqaycw} ‘man’) have causative alternants. And recall that all roots — except the set of unsuffixed unergative roots discussed in section 2.5 — have unaccusative alternants. This regular and pervasive diathesis is exactly what is predicted by a uniform causative analysis for unaccusatives such as that advocated by Chierchia, G. and Pustejovsky.

On the other hand, this type of analysis runs into potential problems with languages like English, where the causative-unaccusative alternation is far less uniform. In order to deal with non-occurring forms and irregular lexicalization patterns in such languages, the uniform causative hypothesis must resort to ad-hoc diacritics. This in turn predicts that exceptions to the causative-unaccusative alternation across languages should be random, since they are simply a function of lexical idiosyncrasy.

In contrast to this view, consider an approach where only some unaccusative predicates are based on underlying causatives. Such an approach claims that the underlying causative analysis is only valid for a semantically definable subclass of unaccusative predicates; this subclass is the same in English and in St’át’incets, and by hypothesis, universally.

The principle advocates of this approach are L&R (1995) and Reinhart (1997). Since they provide different semantic criteria for defining alternating subclasses of unaccusatives, we will examine their proposals separately.

3.5.2 Levin and Rappaport Hovav (1995)

For L&R, the relevant distinction is between *internal* and *external* causation. Internally caused eventualities (including all unergative verbs as well as non-alternating unaccusatives) are monadic:

With an intransitive verb describing an internally caused eventuality, some property inherent to the argument of the verb is “responsible” for bringing about the eventuality. (L&R: 91).

¹⁰We confine ourselves here to unaccusatives for reasons of space. Note that adoption of a causative analysis for unaccusatives does not entail a causative analysis for unergatives, or vice versa. As discussed in section 4.3, Levin and Rappaport Hovav (1995) and Pustejovsky (1995) adopt a causative analysis for unaccusatives but a monadic analysis for unergatives, whereas Chierchia, G. (1989) and Reinhart (1997) adopt a causative analysis for both, and Hale and Keyser (1993) treat unaccusatives as underived and unergatives as derived. As we have already argued in sections 2.4 and 4.3, St’át’incets provides support for the Chierchia, G./Reinhart approach to unergatives, since both unergative and unaccusative predicates show evidence that they are derived.

In contrast, externally caused eventualities (including all alternating causative-unaccusative verbs) are dyadic:

Unlike internally caused verbs, externally caused verbs by their very nature imply the existence of an “external cause” with immediate control over bringing about the eventuality described by the verb: an agent, an instrument, a natural force, or a circumstance. (L&R: 92).

Thus, for L&R, only verbs that can be characterized as externally caused have an underlying causative lexical semantic representation. We will now discuss the predictions of this semantic characterization of the classes of alternating and non-alternating verbs, as it applies to St’át’incets.

3.5.2.1 Verbs of Existence and Appearance

L&R’s proposal that only verbs that can be characterized as externally caused have an underlying causative lexical semantic representation predicts that verbs of existence and appearance will not alternate. That is, such verbs lack an external CAUSE in their lexical semantic representation and, thus, will have no causative alternant, as illustrated in (37) for verbs of existence and (38) for verbs of appearance:

- (37) a. *The bad weather remained the family indoors.
 b. *The Big Bang existed the universe.
- (38) a. *The magician appeared the rabbit out of the hat.
 b. *The wind vanished the clouds from the sky.

Turning to St’át’incets, we will argue that L&R’s predications are indirectly supported. First, for verbs of existence, it holds vacuously — there simply are no such verbs. In this sense, St’át’incets provides indirect support for L&R’s proposal.

Second, consider verbs of appearance. As shown in the derivations in (39-40) (which we already discussed in section 3.4.4), the bound roots in (39c/40c) meaning ‘appear’ and ‘disappear’ do in fact have causative alternates, as shown in (39d-f) and (41d), contrary to L&R’s prediction.

- (39) a. $\sqrt{hál’a}$ (bound root)
 b. s-hál’a ‘x is visible’
 STATIVE+root
 c. ka-hál’h-a ‘x appeared’
 OOC+root+OOC
 d. hál’h-an ‘y show x’
 root+DIR Y CAUSE X TO BECOME VISIBLE
 e. hál’a-cal ‘y shows (things)’
 root+ACT Y CAUSE (THINGS) TO BECOME VISIBLE

- f. **hál'a-cit** 'y show x to z'
 root+IND Y CAUSE X TO BECOME VISIBLE TO Z
- (40) a. $\sqrt{\text{cim}}$ ' (bound root)
 b. ***s-cim**' (non-existent)
 c. **ka-cím'-a** 'x disappeared'
 OOC+root+OOC
 d. **cim'-ín** 'y put x out of sight'
 root+DIR Y CAUSE X TO DISAPPEAR

The prediction that verbs of appearance do not have causative alternants is thus invalidated in St'át'imcets since 'appear' and 'disappear' have (respectively) the causative alternants in (39d)/(40d): 'y caused x to appear/become visible' and 'y caused x to disappear'. As was argued, however, in section 3.4.4, the proposal that verbs of appearance lack an external CAUSE in their derived lexical semantic representation is nonetheless valid in St'át'imcets since the lexical meanings 'appear' and 'disappear' *only surface as bound roots affixed with OOC morphology*. Recall that the role of OOC morphology is precisely to suppress the initial causing event in the causative underlying representation of the unaccusative root, as was illustrated by the derivation in (32) above (section 3.4.3).

We thus conclude that, although verbs of appearance in St'át'imcets must be derived from roots which have a causative semantic structure (contra L&R) and, as such, will have both unaccusative and causative alternants, the St'át'imcets facts indirectly support L&R's characterization of verbs of appearance as unaccusatives lacking an external cause in their semantic representation, since the only possible unaccusative alternant must be derived by OOC morphology.

3.5.2.2 Verbs Describing Internally Caused Events

For L&R, verbs that describe internally caused eventualities lack an external CAUSE in their lexical semantic representation and are, thus, predicted to have no causative alternant. These classes of verbs include agentive intransitives (unergatives) and non-agentive intransitive verbs which describe eventualities that arise from internal properties of their argument, such as verbs of emission (see L&R: 91, for a classification of these verbs). We set aside here unergatives, which were already discussed in section 4.3 and turn to verbs of emission. We give St'át'imcet counterparts of some verbs of emission below together with their relevant alternants.

- (41) a. $\sqrt{\text{pexw}}$ pexw-p root+INC
 péxw-en root+DIR
 pexw-cál root+ACT
 'to water steaming, gushing, spraying'
 'to spit, squirt water out'
 'to do water spitting'
- b. $\sqrt{\text{gwel}}$ ka-gwel'-a root+OOC 'bubbles come up and disappear'
- c. $\sqrt{\text{tigw}}$ ka-tígw-a root+OOC 'to make a ringing sound'
 tígw-in root+DIR 'to ring a bell'
- d. $\sqrt{\text{k'it}}$ ka-kít'-a root+OOC 'to creak'
- e. $\sqrt{\text{xus}}$ xús.lec root+LEX 'to bubble'
 xús.es root+OOC 'to foam'

There are two arguments for assigning an underlying causative structure to these predicates in St'át'imcets. First, verbs of emission can have transitive (and unergative) alternants, as shown in (41a) and (41c). Second, the unaccusative alternants of this class of verbs almost always surface as bound roots. Thus, in (41b-e), the roots surface bound to OOC morphology as signaled either by *ka...*a (see (41b-c-d)), or final reduplication (see (41e)); in (41e), the root surfaces bound to the lexical reflexive intransitivizer *-íc/lec*; and in (41a), it surfaces bound to the inchoative marker *-p*. Recall that both OOC morphology and lexical reflexive morphology apply to underlying causative representations: OOC suppresses the causing event in the underlying semantic representation of the root (as argued in section 3.4.3), whereas reflexive morphology triggers identification of the two arguments of a causative predicate (as argued in section 3.3).¹¹

We, thus, conclude that St'át'imcet counterexamples L&R's claim that verbs of emission do not have a causative semantic underlying representation.

3.5.2.3 'Agentive' Transitive Predicates

A second, distinct set of predictions made by L&R concern what they call a 'constraint on detransitivization'. Following Smith (1970), they propose that transitive verbs that describe eventualities which must be brought by a volitional agent may have no unaccusative alternant, as shown for English in (42):

- (42) a. *The article wrote.
 b. *The man whipped.
 c. *The house built.

¹¹A parallel argument can be made for the inchoative marker, which we have not discussed here for lack of space.

d. *The boy punched.

On the other hand, the unaccusative St'át'imcets equivalents of these and other strongly agentive transitive predicates are perfectly grammatical. We give one subset of these predicates below; we will discuss another in 5.2.5.

(43) a. **qam't**

'x become hit by thrown object'

qam't-s

hit with a thrown object+CAU

'y hit x with a thrown object'

b. **sek**

sék-en

hit with a stick/whip+DIR

'x become hit with a stick/whip' 'y hit x with a stick/whip'

c. **tup**

túp-un'

hit+DIR

'x become hit with fist' 'y hit x with fist'

d. **√k'etcw** (bound root)

√k'etc-ús

k'etc-ús-en

severed-face

severed-face+DIR

'x become decapitated' 'y decapitated x'

It, thus, appears that L&R's constraint on detransitivization is counterexemplified by data from St'át'imcets. In the face of this counterevidence, there are two possible moves. The first is simply to conclude that the relevant semantic distinctions are incorrect, and look for an alternative set. But notice that it is going to be extremely hard or impossible to find a set of generalizations that are not either too restrictive to account for St'át'imcets or too unrestricted to provide an explanatory account of non-alternating predicates in languages like English.

The second possibility is to assume that the relevant distinctions are indeed valid, both for languages like English and those like St'át'imcets. In that case, we must acknowledge the possibility that predicates with the meaning of HIT, WHIP, PUNCH or DECAPITATE are conceived of in different ways in English and in St'át'imcets. Thus, one could assume that while in English, these predicates describe eventualities that require a volitional agent, in St'át'imcets, these predicates describe "eventualities that can come about spontaneously without the volitional intervention of an agent", (L&R 1995: 102) since they may be detransitivized to yield unaccusative verbs, as in (43). We will argue in the next section that there is, indeed, empirical evidence to support this move for a subclass of the

predicates in (43) (i.e. for verbs of hitting). As we shall see, however, this move is not tenable for another subclass of agentive transitives — that is, for verbs such as *build* or *abandon*). Let us, first, take a more detailed look at how L&R explain variation in the causative-unaccusative alternation both language internally and crosslinguistically, in order to understand why we would make such a move in the first place.

3.5.2.4 Fluctuation in the Causative-Unaccusative Alternation

For L&R, the distinction between external and internal causation explains fluctuation with respect to verb classification both within and across languages. Thus, according to their analysis, the predicates *shudder* and *shake* are synonymous along all dimensions save that of internal versus external causation. *Shake* describes an externally caused eventuality and, as such, has a causative alternant; in contrast, *shudder* describes an internally caused eventuality and, as such, does not have a causative alternant.

(44) a. His whole body shook.

b. I shook his whole body.

(45) a. His whole body shuddered.

b. *I shuddered his whole body.

Moreover, for L&R fluctuation along the external/internal causation dimension is not confined to isolated pairs of verbs, but characterizes whole classes of predicates. These classes include verbs of emission and of spatial location and configuration, which may vary both within and across languages.

L&R's distinction between external and internal causation is very attractive, since it provides a principled explanation for crosslinguistic variation in the causative/unaccusative alternation. It does not seem plausible to us that the fact that all verbs in St'át'imcets alternate, in contrast to languages like English where only a subclass of verbs alternate is an accident, merely a function of lexical idiosyncrasy.

Given that many predicates must be classed as fluctuating even within one language or across closely related languages (e.g. between Dutch and German or French and Italian) it becomes perhaps less surprising that languages as different as English and St'át'imcets show such a large degree of lexical semantic fluctuation. Nevertheless, it is certainly the case that we have to extend the class of fluctuating predicates rather dramatically to handle the St'át'imcets system where, as we have seen, virtually all predicates show a causative-unaccusative alternation, and thus (virtually) all predicates must describe externally caused eventualities — that is, eventualities with an external cause (an agent, an instrument, a natural force, or a circumstance) "responsible" for bringing about the event.

It should be emphasized that the implications of adopting such an approach are rather profound since the source of variation between St'át'imcets and English ultimately resides in how speakers conceptualize events.

The distinction between externally and internally caused events is a distinction in the way events are conceptualized [and does not necessarily correspond to any real difference in the type of events found in the world.] In general, the relation between the linguistic description of events and the events taking place in the real world is mediated by the human cognitive construal events, which is what we take our lexical semantic representations to reflect. (L&R: 98-99)

Although we will provide below some empirical support for this approach to variation, we will conclude by emphasizing what we take to be the implications of such an approach for languages like St'át'imcets.

3.5.2.5 Fluctuation in the Behaviour of 'Agentive' Transitives

We can now return to the question of why predicates which describe eventualities which must be brought about by a volitional agent violate L&R's constraint on detransitivization since they have unaccusative alternants in St'át'imcets, as was illustrated in (43) above. In particular, consider the unaccusative alternant of \sqrt{sek} 'to hit with a whip or stick', as illustrated in the following example.

(46) \sqrt{sek} ti sqáycw-a
hit DET man-DET

'The man was hit with a stick (or a whip)'

Note that the unaccusative root \sqrt{sek} can be used to describe an eventuality externally caused by either a natural force or cause, an instrument or a volitional agent. For instance, (46) could be used felicitously to describe a situation where the referent of the subject is say sitting under a tree and gets hit by a branch that the wind blows off the tree. This might provide us with a clue to the difference between HIT/WHIP in St'át'imcets and English. In particular, we could explain this difference as follows. In both languages, HIT/WHIP have underlying causative representations (that is, describe externally caused eventualities). However, whereas in English, HIT/WHIP are conceptualized as eventualities that can only be brought about by a volitional agent; in St'át'imcets, HIT/WHIP can be conceptualized as eventualities that come about spontaneously *without the volitional intervention of an agent* — that is, as eventualities that can be brought about by an instrument, a natural force, a circumstance or an agent. Hence, English HIT/WHIP will be subject to L&R's constraint on detransitivization and, as such, will not have an unaccusative alternant; in

contrast, St'át'imcets HIT/WHIP will not be subject to this constraint and will alternate.

In further support of this hypothesis, note that a root like \sqrt{sek} can take either the CAUsative or the DIRective transitivizer, as illustrated below. Recall that the difference between these transitivizers lies in the degree of control of the agent over the action denoted by the predicate (cf. section 2.3.). The DIRective yields a control transitive: the referent of the subject of a DIRective is a human participant to which we ascribe conscious (mindful) control over the action denoted by the verb. In contrast, the CAUsative yields a neutral control transitive: the subject of a CAUsative *need not* have control over the action denoted by the predicate and, thus, can be a natural force, cause, instrument, as well as a volitional agent.

(47) a. **Full control transitivizer**

\sqrt{sek} -en	'y hit x with a stick'
hit-DIR	'y cause x to be hit with a stick'

b. **Neutral control transitivizer**

\sqrt{sek} -s	'y hit x with a stick or a whip'
hit-CAU	'y cause x to be hit with a stick'

We have provided two pieces of evidence in support of the hypothesis that the predicates in (43) can be conceptualized as eventualities that come about without the volitional intervention of an agent — that is, as eventualities that can be brought about by an instrument, a natural force, a circumstance or an agent — and, as such, are expected to violate L&R's constraint on detransitivization. First, the unaccusative alternant \sqrt{sek} in (46) can be used felicitously to describe a situation where the referent of the subject gets hit by a natural force or a circumstance. Second, the transitive alternant of this root is morphologically derived by affixation of either the CAUsative or the DIRective transitivizer.

In sum, the above line of reasoning could plausibly explain why predicates like 'hit by thrown object', 'hit with fist' and even 'decapitate' have unaccusative alternants in St'át'imcets (see (43)) — in so far as these predicates can be used to describe events occurring spontaneously *without* the volitional intervention of an agent. For instance, one could imagine getting decapitated while lying on the floor by an ax flying out of a window.

It seems quite implausible, however, that predicates such as 'build' or 'abandon' could be used to describe events occurring spontaneously *without* the direct intervention of an agent. Yet these predicates, just like 'hit with fist' or 'decapitate', have unaccusative alternants, as shown in (48)-(50).

- (48) a. $\sqrt{\text{mays}}$
built
- b. mays ti tsítcw-a
built DET house-DET
'The house got built'
- c. máys-en ti tsítcw-a
built-DIR-ERG DET house-DET
'The man built the house'
- (49) a. $\sqrt{\text{lhwal}}$
abandoned/left behind
- b. lhwal i stsmál't-i-ha
abandoned PL.DET child-3SG.POSS-DET
'Their children were abandoned'
- c. lhwal-en i stsmál't-i-ha
abandoned-DIR-ERG PL.DET child-3SG.POSS-DET
'They abandoned their children'
- (50) a. $\sqrt{\text{us}}$
thrown out
- b. us i náo7q'-a petáok
thrown out PL.DET rotten-DET potato
'The rotten potatoes were thrown out.'
- c. us-en i náo7q'-a petáok
thrown out-DIR-ERG PL.DET rotten-DET potato
'They threw out the rotten potatoes'

It should be emphasized that the intransitive alternants of the predicates in (48-50) are truly unaccusative, denoting a change of state, rather than quasi-adjectival, denoting a (resulting) state. We can see this clearly when we add the progressive auxiliary *wa7* to the sentences in (48b-50b).

wa7 yields a temporary state reading with (resulting) state predicates (that is, with predicates derived by prefixing the stative marker *es* to the root). This often leads to semantic anomaly, as shown in (51a). In contrast, when *wa7* is applied to a change of state predicate, it yields a process reading, as shown in (51b). As shown in (52), the unaccusatives in (48-50) yield the process reading, thus testing as change of state rather than resulting state predicates.

- (51) *Temporary State Reading*
- a. $\sqrt{\text{zuqw}}$ 'die'
??* wa7 es-zúqw ti sqáx7-a
PROG STAT-die DET dog-DET
'The dog is dead (temporarily).'
- b. $\sqrt{\text{pulh}}$ 'boil'
??* wa7 es-púlh ti qú7-a
PROG STAT-boil DET water-DET
'The water is boiled (temporarily).'
- c. $\sqrt{\text{mays}}$ 'built'
??* wa7 es-máys ti tsítcw-a
PROG STAT-boil DET house-DET
'The house is built (temporarily).'

Process Reading

- d. $\sqrt{\text{t'iq}}$ 'arrive'
wa7 t'íq ti sqáycw-a
PROG arrive DET man-DET
'The man is arriving.'
- e. $\sqrt{\text{kwis}}$ 'fall'
wa7 kwis ti k'ét'h -a
PROG fall DET rock-DET
'The rock is falling.'
- f. $\sqrt{\text{zuqw}}$ 'die'
wa7 zuqw ti sqáx7-a
PROG die DET dog-DET
'The dog is dying.'
- (52) a. wa7 mays ti tsítcw-a
PROG built DET house-DET
'The house is in the process of being built'
- b. wa7 lhwal i stsmál't-i-ha
PROG abandoned PL.DET child-3SG.POSS-DET
'Their children were abandoned'
- c. wa7 us i náo7q'-a petáok
PROG thrown out PL.DET rotten-DET potato
'The rotten potatoes are being thrown out right now.'

Thus, in contrast to *hit*-type predicates, these cases constitute clear counterexamples to L&R's generalization. Clearly, more investigation is

required in order to understand why these agentive predicates have unaccusative alternants in St'át'imcets.

To conclude, we would like to emphasize that the view that variation is semantically defined amounts to introducing a degree of linguistic relativity into lexical semantics, with the consequence that languages may differ not only in their morphology and syntax, but also in their conceptual structure. It could indeed be argued that this is tantamount to a kind of neo-Whorfian view of the lexicon, where the structure of the language determines the way we conceive of events.

3.5.3 Reinhart (1997)

The same considerations apply to Reinhart's (1997) model. For Reinhart, the principle constraint on detransitivization of an underlyingly causative predicate is her *Constraint on Role Reduction*:

(53) A thematic role specified as +mental state cannot be reduced

This amounts to the claim that unaccusative alternants will only show up with predicates that are non-agentive and do not have experiencer subjects. Reinhart, just like L&R, thus predicts, contrary to fact, that predicates describing events which cannot come about without the intervention of an agent (e.g. *whip* or *build*) cannot be detransitivized and, thus, have should not have unaccusative alternants in St'át'imcets. As we have already shown in (43) and (48-50), agentive predicates have unaccusative alternants in St'át'imcets.

Reinhart's constraint on role reduction further predicts that psychological verbs like *hate*, *admire*, *like* should not show unaccusative alternants, since they have [+mental state] experiencer subjects. In St'át'imcets, these predicates are typically formed from intransitive roots with adjectival meanings, as shown in (54):

- (54) a. *tex* 'bitter' *tex-álhts'a7-min* 'to hate'
bitter+inside+red
- b. *t'ec* 'sweet, tasty' *t'ec-s* 'to like food'
sweet+caus
- c. *áma* 'good' *áma-s* 'to like, find good'
good+caus
- d. *xat* 'difficult, hard' *xát'-min* 'to want, desire'
hard+red
xat'-s
hard+caus 'to have a hard time with'

To the extent that such adjectival roots can be considered unaccusative alternants of the psychological causatives which are based on them, Reinhart's *Constraint on Role Reduction* is counter-exemplified by experiencer

predicates. It should be noted that Reinhart herself allows adjectives to count as unaccusative alternants in her class of [-mental state] psychological predicates, including *surprise/surprised*, *worry/worried*, *frighten/frightened*. This leads to parallel conclusions to those we reached with respect to L&R's semantic distinctions: either St'át'imcets speakers conceive of all psychological predicates as [-mental state], in contrast to English speakers, or Reinhart's constraint must be abandoned.

3.6 Conclusion

Our investigation of lexical verb meanings in St'át'imcets has led us to the following conclusions:

1. We have provided evidence from a strongly morphologically causative language like St'át'imcets, where all transitives appear to be derived from unaccusative roots, for an underlyingly causative lexical semantic representation of unaccusatives. This supports the conclusions of Chierchia, G. (1989), Pustejovsky (1995), Levin and Rapoport Hovav (1995) and Reinhart (1997) that unaccusatives are universally derived from causatives. Indeed, we take the evidence from St'át'imcets to be very strong precisely because it is evidence from a language where the direction of morphological derivation is the reverse of the direction of lexical semantic derivation.
2. In order to reconcile the morphosyntactic facts (which indicate that transitives and unergatives are derived from an unaccusative base) with the semantic facts (which indicate that unaccusatives and unergatives are derived from a causative lexical representation), we adopt an analysis whereby all three morphological alternants (transitive, unergative and unaccusative) are derived in parallel from an underlyingly causative semantic representation, via event foregrounding. We account for the absence of overt affixation in the unaccusative alternant by appealing to zero-derivation, and further speculate that the unmarked alternant may differ crosslinguistically, with the transitive alternant unmarked in strongly anti-causative languages.
3. We then tackled the issue of how to constrain crosslinguistic variation in the classes of (non-)alternating predicates. The pervasiveness of the unaccusative/causative alternation in St'át'imcets is exactly what is predicted by a uniform causative analysis for unaccusatives such as that advocated by Chierchia, G. and Pustejovsky. We find, however, such an approach unsatisfactory, since, under these proposals, the fact that all verbs in St'át'imcets alternate, in contrast to other languages like English where only subclasses of verbs systematically alternate, is an accident, merely a function of lexical idiosyncrasy.

4. The alternative proposed by Levin and Rappaport Hovav (1995) (as well as Reinhart 1997) is to try to semantically constrain the mapping of causative structures onto unaccusatives. We find this approach very attractive in that it seeks to predict the classes of predicates which systematically alternate (or fluctuate), crosslinguistically. We have shown, however, that the implications of the St'át'imcets facts for such theories are far from trivial. This leads to a view whereby speakers of different languages differ radically in their conceptualization of events. In particular, since the vast majority of predicates in St'át'imcets undergo the causative-unaccusative alternation, in contrast to languages like English, St'át'imcets speakers would have conceptualized all or almost all events as externally caused — that is, as eventualities with an external cause (an agent, an instrument, a natural force, or a circumstance) “responsible” for bringing about the event.¹²

Though some of these conclusions are tentative, their empirical basis is not. Thus, whatever the ultimate solution might be to the problems raised by St'át'imcets, it affords opportunities for a genuinely different and fascinating perspective on the relation between lexical semantic representations and their morphosyntactic realizations.

We, thus, conclude simply by noting once again the value of investigating a language like St'át'imcets, whose position at one extreme of the morphological continuum in the causative/unaccusative alternation allows us to clarify and sharpen the outlines of what a possible theory of the lexical representation of verb meanings should look like.

¹²Recall, further that St'át'imcets speakers, unlike English speakers, would have to conceptualize predicates with the meaning of HIT/WHIP/PUNCH/DECAPITATE as eventualities that can come about spontaneously *without the volitional intervention of an agent* — in order to explain why these predicates violate L&R's constraint on detransitivization in St'át'imcets (see section 5.2.5).

Bibliography

- Beck, D. (1996). Transitivity and causation in lushootseed morphology. *Paper presented at the Canadian Linguistic Association Annual Meeting Brock University, Saint Catherine's, Ontario.*
- Dixon, R. M. W. (1993). *Ergativity*. Cambridge University Press, Cambridge.
- Dowty, D. R. (1979). *Word Meaning and Montague Grammar*. D. Reidel, Dordrecht.
- Dowty, D. R. (1986). The effects of aspectual class on the temporal structure of discourse, pragmatics or semantics. *Linguistics and Philosophy* 9.
- Coopmans P., Everaert M., and Grimshaw J. J. (eds.) (to appear). *Lexical Specification and Lexical Insertion*. The Hague: Holland Academic Graphics
- Chierchia, G., G. (1989). *A Semantics for Unaccusatives and its Syntactic Consequences*. ms. Cornell University, Ithaca, NY.
- Davis, H. (1996). Salish evidence on the causative-inchoative alternation. *Paper presented at the 7th International Morphology Meeting Vienna.*
- Davis, H. (1997a). Deep unaccusativity and zero syntax in st'át'imcets. In A. Mendikoetxea and M. Uribe-Etxebarria (eds.) *Theoretical Issues on the Morphology Syntax Interface*.
- Davis, H. (1997b). 'out of control' in st'át'imcets salish and event (de) composition. In A. Mendikoetxea and M. Uribe-Etxebarria (eds.) *Theoretical Issues on the Morphology Syntax Interface*.
- Hovav, M. and Levin, B. (1995). Morphology and lexical semantics. In A. Zwicky & A. Spencer. eds., *Handbook of Morphology* Blackwell, Oxford.
- Jackendoff, R. (1990). *Semantic Structures*. Massachusetts, Cambridge, MIT Press.
- K., Hale and J. Keyser (1993). On argument structure and the lexical expression of syntactic relations. In K. Hale & J. Keyser eds., *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger* Cambridge, Massachusetts, MIT Press.
- Levin, B. and M. Hovav (1995). Unaccusativity. at the syntax-lexical semantics interface. *Linguistic Inquiry Monograph 26* Cambridge, Massachusetts, MIT Press.

- Mattina, N. (1996). *Ph.D. Dissertation*. Ph. D. thesis, Simon Fraser University, Vancouver, B.C.
- Pustejovsky, J. (1987). The geometry of events. In C. Tenny ed., *Generative Approaches to Aspect MIT Lexicon Project Working Papers, Cambridge, Massachusetts*.
- Pustejovsky, J. (1991). The syntax of event structure. *Cognition* 41.
- Pustejovsky, J. (1995). *The Generative Lexicon*. Cambridge, Massachusetts, MIT Press.
- Reinhart, T. (1991). Lexical properties of ergativity. *Paper presented at the Workshop on Lexical Specification and Lexical Insertion University of Utrecht*.
- Smith, C. (1983). A theory of aspectual choice. *Language* 59.
- Tenny, C. (1987). *Grammaticalizing Aspect and Affectedness*. Ph. D. thesis, MIT, Cambridge, Massachusetts.
- Thompson, L. (1985). Control in salish grammar. In F. Plank (ed.) *Relational Typology, Trends in Linguistics (Studies and Monographs 28)*, Mouton.
- Thompson, L. and M. T. Thompson (1992). The thompson language. *University of Montana Occasional Papers in Linguistics No 8*.
- van Eijk, J. (1983). *A Lillooet-English Dictionary*. Mount Currie, BC.
- van Eijk, J. (1985). *The Lillooet Language: Phonology, Morphology, Syntax*. Ph. D. thesis, Universiteit of Amsterdam, To be published by UBC Press.
- van Hout, A. (1993). *Projection Based on Event Structure*. On M. Everaert & J. van Hout, A. (1996). *The Event Semantics of Verb Alternations: A Case Study of Dutch and its Acquisition*. Ph. D. thesis, Tilburg University.

Appendix: Key to St'át'imcets (van Eijk) orthography

American Phonetic Alphabet	van Eijk Practical Orthography
p	p
p̣	p̣
m	m
ṃ	ṃ
t	t
č,c	ts
č	ts'
š,s	s
n	n
ṇ	ṇ
χ	t'
ʈ	lh
l	l
ḷ	ḷ
k	k
ḳ	k'
k ^w	kw
ḳ ^w	k'w
x	c
x ^w	cw
ɣ	r
ɣ̣	r'
q	q
q̣	q̣
q ^w	qw
q̣ ^w	q̣w
χ̣	x
χ̣ ^w	xw
ʃ	g
ʃ'	g̣
ʃ ^w	gw
ʃ' ^w	g̣w
h	h
w	w

American Phonetic Alphabet	van Eijk Practical Orthography
ɰ	ɰ
y	y
ÿ	ÿ
z	z
ʒ	ʒ
ʔ	ʔ
æ	a
a	ao
ə	e
ʌ	v
i	j
ɛ	ii
u	u
ɔ	o

Part II

How Phrase Structure Encodes Events