A late-insertion approach to Levin and Rappaport Hovav (1995): The causative alternation and change-of-state roots

Abstract
This paper consists of two main sections. First, I critically evaluate Levin and Rappaport Hovav (1995)'s lexical-semantics-based analysis of CHANGE- OF-STATE verbs and their relation to the CAUSATIVE ALTERNATION concluding that the lexical-semantic approach is empirically unmotivated and therefore LEXICAL SEMANTIC REPRESENTATIONS in the lexicon constitute an unnecessary complication to the grammar. In the second section, adopting their proposal which divides change-of-state verbs into INTERNALLY-and EXTERNALLY-CAUSED EVENTUALITIES (ibid.), I propose a LATE-INSERTION approach (Halle and Marantz, 1993, *et seq*) for roots participating in the Causative Alternation. Though the claims I make are limited to languages which indicate verbal adicity morphologically (the properties of interest are most transparent in these languages), the result is an analysis more closely aligned with the contemporary syntactic findings of the MINIMALIST PROGRAM (Chomsky, 1995 and 2001, among many), in particular its instantiation as DISTRIBUTED MORPHOLOGY (DM) (Halle and Marantz, 1993 and Embick and Noyer, 2007).

Keywords: lexical semantics, change-of-state unaccusatives, the Causative Alternation, late-insertion, internally and externally-caused eventualities

Part 1

1. Introduction

In the introduction to their influential monograph on unaccusative verbs, Levin and Rappaport Hovav (1995) (LRH) declare the scope and goal of the hypothesis they defend:

> (W)e call regularities in the association of arguments bearing certain semantic roles to particular syntactic expressions *linking regularities*. The striking similarities in the linking regularities across languages strongly suggests that they are part of the architecture of language (LRH: 1)…(T)he goal of the book is to provide support for Perlmutter (1978)'s UNACCUSATIVE HYPOTHESIS that unaccusativity is syntactically represented but semantically determined … indeed the impressive similarity between verbs selected by unaccusative diagnostics cross-linguistically suggest that there are important semantic facets to the distinction (LRH:30).

By associating their hypothesis with Perlmutter's Unaccusative Hypothesis (1978), the core of the UNIVERSAL ALIGNMENT HYPOTHESIS (Perlmutter and Postal, 1984), and suggesting the "linking" of LEXICAL SEMANTIC REPRESENTATIONS to Argument Structure is a by-product of the architecture of language, LRH make the cross-linguistic intent of their claims explicit.

LRH use the CAUSATIVE ALTERNATION to make their case. For LRH, this syntactic diagnostic discriminates those unaccusatives which have underlyingly transitive

Lexical-Semantic Representations, their '*change-of-state*' class, which participates, from their underlyingly intransitive classes, '*inherently directed motion*', '*existence*', and '*appearance/disappearance*', which do not participate in the alternation. They additionally motivate their dichotomy with morphological evidence from a variety of languages.

In this paper I find empirical reason to be critical of LRH's claim for the semantically-determined syntactic representation of unaccusativity and their use of the Causative Alternation. With four languages that employ morphological-marking to similarly indicate verbal adicity, I propose a non-lexicalist approach to change-of-state unaccusatives.

2. The Causative Alternation

> In English, verbs that participate in this alternation show transitive and intransitive uses such that the transitive use has roughly the meaning 'cause to V-intransitive'…the semantic relationship between the two variants is reflected in the fact that the subject of the intransitive variant and the object of the transitive variant bear the same semantic role (LRH: 79)

The crucial relationship expressed by the Causative Alternation is necessarily defined by the semantic relationship between intransitive subjects and transitive objects.

LRH argue for:

> (A) fundamental division within the class of unaccusative verbs that is motivated with respect to the causative alternation... (V)erbs of existence and verbs of appearance [*and presumably verbs of inherently directed motion, author*], although bona fide unaccusatives, do not participate in the causative alternation. This property is not characteristic of only English, but is typical of a variety of languages (LRH: 119)

For LRH "those intransitives that do not participate in the Causative Alternation are inherently monadic predicates, whereas the alternating verbs are inherently dyadic causative predicates" (LRH: 83). But in Japanese, all four unaccusative classes identified by LRH participate in the Causative Alternation. Problems with the Causative Alternation as a diagnostic for underlying transitivity become obvious, leaving one to consider a closer look at their central claims is necessary. First, let's consider the Causative Alternation in Japanese:

A. Change-of-State

1a. Isu-ga koware-ta.

chair-NOM break-PAST

'The chair broke'

b. Gorira-ga isu-o kowashi-ta.

gorilla-NOM chair-ACC break-PAST

'The gorilla broke the chair.'

Intransitive: *kow-are-ru* = (**ROOT-INTRANS-NON-PAST**)

Transitive: *kow-as-u* (ROOT-TRANS-NON-PAST)

2a. Kaminoke-ga kawai-ta

hair-NOM dry-PAST

'(Her) hair dried'

b. Kanojo-ga kaminoke-o kawakashi-ta

She-NOM hair-ACC dry-PAST

'She dried (her) hair'

intransitive: *kawak-u* / transitive: *kawak-as-u*

B. Inherently Directed Motion

3a. Takushi-ga genkan-ni tsui-ta.

taxi-NOM front door-GOAL arrive-PAST

'The taxi arrived at the front door.'

b. Untenshû-ga takushi-o genkan-ni tsuke-ta.

driver-NOM taxi-ACC front door-GOAL arrive-PAST

'The taxi driver brought (his) taxi to the front door.'

intransitive: *tsuk-u* / transitive: *tsuk-e-ru*

4a. Satsujin yogisha-ga kôchisho-ni hait-ta

murder suspect-NOM jail-LOC enter-PAST

'The murder suspect entered the jail

b. Keisatsu-ga satsujin yogisha-o kôchisho-ni ire-ta

police-NOM murder suspect-ACC jail-LOC enter-PAST

'The police put the murder suspect in jail'

intransitive: (*ha)ir-u*[1] / transitive: *ir-e-ru*

[1] The historical pairing is *iru* / *ireru*. The intransitive form *iru* is still found in the modern language such as extant idioms, e.g., *ki-ni iru* 'to like', and compounds, e.g., *iri-guchi* 'an entrance'. The modern form of the intransitive *hairu* was derived by combining the stem of the verb *hau* 'crawl' with the historic form *iru*, i.e., *hai-iru*, literally 'enter crawling' (Nakada, Wada, and Kitahara, 1983).

C. Existence

5a. Ichioku-en-ga ginkôkôza-ni nokot-ta.
one hundred million yen-NOM bank account-LOC remain-PAST
'100,000,000 yen remained in a bank account.'

b. Otôsan-ga ichioku-en-o ginkôkôza-ni nokoshi-ta.
father-NOM one-hundred million yen-ACC bank account-LOC remain-PAST
'My father left 100,000,000-yen in the bank account.'

intransitive: *nok-or-u* / transitive: *nok-os-u*

6a. Otôsan-ga mada ikite iru.
father-NOM still live-NON-FINITE be
'(My) father is still alive'

b. Watashi-no seikô-o miru made otôsan-o ikashite oki-ta-kat-ta.
I-GEN success-ACC see UNTIL father-ACC live-NON-FINITE keep-DESIR-PAST
'(I) wanted to keep (my) father alive until (he) saw my success.'

intransitive: *ik-i-ru* / transitive: *ik-a-su*

D. Appearance/Disappearance

7a. Kotozuke-ga kie-ta.
message-NOM disappear-PAST
'The message disappeared.'

b. Dareka-ga kotozuke-o keshi-ta.
somebody-NOM message-ACC disappear-PAST
'Someone erased the message.'

intransitive: *k(i)e-ru* / transitive: *ke-su*

8a. Eizô-ga gamen-ni araware-ta
picture-NOM screen-LOC appear-PAST
'A picture appeared on the screen.'

b. Purogurama-ga eizô-o gamen-ni arawashi-ta
programmer-NOM picture-ACC screen-LOC appear-PAST
'The programmer made a picture appear on the screen.'

Intransitive: *araw-are-ru* / Transitive: *araw-as-u*

All the verbs in the preceding examples are examples of the Causative Alternation as defined by LRH. The internal argument appears as the surface subject in the intransitive a-examples marked by the nominative *-ga*. These same arguments receive the accusative case-marker, *-o*, in the transitive b-examples. The dichotomy based on the Causative Alternation, argued for by LRH, is not valid for Japanese.[2]

Again LRH write:

> Verbs...that are morphologically related to transitive verbs, such as the Modern Hebrew verb *nimca* 'be found' (related to *maca* 'find') or its Russian and Italian counterparts *naxodit'sja* 'be found' and *trovarsi* 'be found' (related to *naxodit* 'find' and *trovare* 'find) cannot be related to them by the semantic relation that characterizes the transitive and intransitive variants such as *break* (1995: 123-4).

Although LRH seem to argue that verbs sharing common roots, but not sitting comfortably within their change-of-state class are not true participants in the Causative Alternation, this view seems parochial, taken from a predominantly English-centric viewpoint. Indeed, Japanese has the same pairing of unaccusative-lexical causative as Hebrew, Russian and Italian, i.e., *mitsukaru* 'be found' and *mitskeru* 'find', suggesting English is the exception, not Hebrew, Russian or Italian. Crucially, the subject of the intransitive *mitsukaru* corresponds to the object of the transitive *mitsukeru* in conformity with LRH's semantic criteria for genuine examples of the Causative Alternation, e.g., *Taikin-ga mitsukatta* 'A large sum of money was found' / *Karera-ga taikin-o mitsuketa* 'They found a large sum of money'.

Further data is cited by LRH, again clearly displaying the cross-linguistic intent of their claim and clarifying their view on the role played by morphology:

> Certain facts concerning the formation of causatives across languages presented by Nedjalkov (1969) are not surprising in light of our analysis of the adicity of alternating and nonalternating intransitive verbs. Nedjalkov looks at the morphological relation between causative and noncausative uses of the verbs *break* and *laugh* (as well as two other verbs) in sixty languages. Nedjalkov finds that in most of his sample, the transitive form of *break* is morphologically unmarked, the intransitive form being identical to the transitive form (19 out of 60 languages) or derived form this form (22 out of 60 languages). If verbs such as *break* are appropriately characterized as inherently causative verbs, then the monadic form is in some sense derived, and *indeed morphological marking has a function: it is needed to indicate the nonexpression of the external cause* (87-88) (emphasis, author)

Putting aside the 19 languages with zero-derived alternations, which LRH assume to be underlyingly transitive, the fact that 22 out of 41 languages have morphologically-

[2] While the Japanese data might seem to support Chierchia's (1989) claim that all unaccusative classes are underlyingly transitive, it is not the position I take.

derived intransitives, the other 19 languages displaying the reverse process or being morphologically indeterminate, provides no support for LRH's hypothesis about the underlying transitivity of *break*. Statistically, the difference between 22 and 19 in a sample size of 41 is not significant. In fact, it suggests a dichotomy.

Using unaccusative-lexical causative pairings from Japanese as a point of departure, I show that either transitive or intransitive forms may be syntactically underlying; the lexical-semantic criteria change-of-state unaccusative is not syntactically encoded one-to-one as LRH claim.

3. Japanese

As seen above, morphology is involved in the Japanese verbs participating in the Causative Alternation:

Table 1: Japanese Causative Alternation

Unaccusative	Lexical Causative
Class 1: *kawak-u* 'dry'	*kawak-as-u*
wak-u 'boil'	*wak-as-u*
ugok-u 'move'	*ugok-as-u*
Class 2: *war-e-ru* 'break	*war-u*
tok-e-ru 'melt, dissolve'	*tok-u*
yak-e-ru	*yak-u* 'burn'[3]

The Class 1 unaccusative verbs, *kawak-u* 'dry', *wak-u* 'boil' and *ugok-u* 'move' are Ø-derived. Their lexical causative partners, *kawak-as-u*, *wak-as-u*, and *ugok-as-u* display the morpheme, *-as-*, evidence that the underlying syntactic form is the intransitive.

Class 2 unaccusative verbs, *war-e-ru* 'break', *yak-e-ru* '(be) burn(-ed)' and *tok-e-ru* 'melt, dissolve' display an overt morpheme, *-e-*; their lexical causative partners are Ø-derived and therefore this class is basic in its transitive form.

Japanese has an impressive number of arbitrary morphological classes; Jacobsen (1992: 252-262) gives the number of classes as sixteen. Additionally, the majority of morphological classes morphologically-mark both the transitive and intransitive partners of a single root so there are complexities I cannot address in this paper[4]. However, the two morphological classes I use, where one of the alternating verbs is always Ø-derived, are satisfactorily transparent for the purposes at hand.

[3] Appearance of the gloss in the lexical causative column simply indicates that there is no mono-morphemic English gloss available for the unaccusative, which would be 'be burned'.

[4] See this author's work on Japanese lexical causatives and their often non-compositional nominalizations (2005), (2007) and (forthcoming) where a very different approach to some of these issues is adopted using DM's SINGLE ENGINE HYPOTHESIS (Marantz, 2001 and Arad, 2003).

4. Turkish

Turkish pairings of unaccusative-lexical causatives show similarities to Japanese, although the overt morphological-markers are predictably determined by the phonology of the root. Some lexical causatives are basic the unaccusative Ø-marked, a Class 1 pattern; others are the reverse conforming to the Class 2 pattern:

Table 2: Turkish Causative Alternation

Unaccusative	Lexical Causative
Class 1: *büyü* 'grow'	*büyü-t*
uyan 'wake up'	*uyan-dır*
kayna 'boil'	*kayna-t*
Class 2 : *kapa-n* 'close'	*kapa*
aç-ıl 'open'	*aç*
kır-ıl 'break'	*kır*

Class 1 shows Ø-derived unaccusatives; lexical causatives are formed by an overt morpheme. Class 2 shows Ø-derived lexical causatives paired with morphologically-marked unaccusative partners.

The morphological-marking for Class 1 can be idiosyncratic for some transitive verbs (Kornfilt, 1997), but no examples are contained in the data above. The morpheme used for morphological causatives are *–dVr*, but after a vowel-final root, *-t*. The productive unaccusative/passive morpheme also varies in accord with the phonology of the root and conforms to vowel harmony. Roots ending in a vowel affix *-n-*; stems ending in a consonant other than an *l* affix a vowel with *l*; roots ending in *l* affix *-Vn*.

Turkish also has a number of derived verbs, mostly deadjectivals, which participate in the Causative Alternation:

Table 3: Turkish Deadjectival Causative Alternation

Adjective	Unaccusative	Lexical Causative
ihtiyar 'aged'	*ihtiyar-l-amak* 'age'	*ihitiyar-l-at-mak*
az 'few'	*az-al-mak* 'diminish'	*az-al-t-mak*

These deadjectival verbs contain the unaccusative/passive morpheme *–l- /-Vl* in their intransitive versions. Together with this morpheme, the causative morpheme *–t- /-Vt-* creates the lexical causative, providing further examples of the Causative Alternation with morphologically simpler intransitives. Crucially, as is the case in Japanese, Turkish verbs participating in the Causative Alternation may be simple in the intransitive variant with their transitive partners derived.

5. Korean

Similar to the alternating pairs seen in Japanese and Turkish, some Korean unaccusatives are Ø-derived; their lexical causatives contain overt morphological-marking, examples of the Class 1 type. Some lexical causatives are Ø-derived; their intransitive-unaccusatives partners are overtly marked examples of the Class 2 type. The same pattern found above for Japanese and Turkish.

The morpheme *-(h)i*, and its allomorphs *-li*, *-si*, and *-ki,* is ambiguous. Class 1 verbs affix it to lexical causatives, Class 2 to unaccusatives:

Table 4: Korean Causative Alternation

Unaccusative	Lexical Causative
Class 1: *malu-da* 'dry'	*mal-li-da*
nok-ta 'melt'	*nok-i-da*
chuk-da 'die'	*chuk-i-da* 'kill'
Class 2: *tat-hi-ta* 'close'	*tat-da*
yel-li-ta 'open'	*yel-da*
tol-li-ta 'turn'	*toli-da*

6. Armenian

The data in this section is based on material contained in Megerdoomian's dissertation (2002) and personal communications. The Armenian data, like Japanese, Turkish, and Korean, above, creates an unambiguous picture of the morpho-syntactic dichotomy within change-of-state unaccusatives.

In Armenian, Class 1 verbs are typically de-adjectival. Their partners are created with the causative morpheme *-ats-*. Class 2 change of-state verbs create unaccusatives through the affixation of the passive/reflexive morpheme *-v-*:

Table 5: Armenian Causative Alternation

Unaccusative	Lexical Causative
Class 1: *coranal* 'dry'	*cor-ats-nel*
metzanal 'grow'	*metz-ats-nel*
yeRal 'boil'	*yeR-ats-nel*
Class 2: *k'ot'R-v-el* 'break'	*k'ot'Rel*
bats-v-el 'open'	*batsel*
k'oxp'-v-el 'close'	*k'oxp'el*

The conclusion that verbal morphology inexorably leads to is that, *pace* LRH, underlyingly intransitive verbs participate frequently in the Causative Alternation in Japanese, Turkish, Korean and Armenian.

7. Levin and Rappaport Hovav (1995)'s Proposal

LRH (1995) propose that all change-of-state verbs participating in the Causative Alternation, which necessarily include the Japanese, Turkish, Korean, and Armenian data discussed above, are underlyingly transitive; their intransitive partners in the Causative Alternation are derived by a "binding of the external argument in the mapping", resulting in its suppression (LRH: 108):

(1) a. **Intransitive** *break*

LSR: [[*x* DO-SOMETHING] CAUSE [*y* BECOME *BROKEN*]]

↓ |

Lexical binding: ∅ |

Linking Rules: ↓

Argument Structure: <y>

b. **Transitive** *break*

LSR [[*x* DO-SOMETHING] CAUSE [*y* BECOME *BROKEN*]]

Linking Rules: | |

↓ ↓

Argument Structure: x <y> (ibid: 108).

Since the data, cited in tables 1, 2, 3, 4 and 5, above, show that the intransitive partner of verbs that participate in the Causative Alternation is often basic, the transitive partner derived, this approach becomes difficult to maintain. Moreover, conceptually, this is an inelegant result. The primary motivation for a level of Linking between Argument Structure and Lexical-Semantic Representations is to provide a transparent mapping to surface arguments. Linking should comprise "regularities in the association of arguments bearing certain semantic roles to particular expressions." (LRH 95: 1). To account for the unaccusative partners of lexical causatives LRH postulate a "binding of the external argument in the mapping" as in 10a (ibid: 108). But allowing empty arguments to mediate at an additional "lexical-binding level" pushes the search for regularities in the association of Argument Structure and Lexical-Semantic Representations even further below the surface.

8. Generalizations

LRH propose a general semantic distinction that divides change-of-state verbs into EXTERNALLY CAUSED and INTERNALLY CAUSED EVENTUALITIES:

> The change-of-state that they [i.e., *internally caused eventualities, author*] describe are inherent to the natural course of development of the entities they are predicated of and do not need to be brought about by an external cause (LRH: 97).

LRH cite *bloom*, *decay* and *die* as examples of internally caused events (ibid):

> (A) distinction between verbs describing internally and externally caused eventualities… more accurately predicts which verbs do and do not participate in the Causative Alternation (ibid: 89).

What LRH suggest is an explanation for why English does not contain ***He decayed his teeth by neglecting them***, ***He bloomed a few Magnolias last year***, and ***He died his best friend***, despite the fact that all these verbs are unaccusative change-of-state verbs and are claimed to have underlying transitive lexical-semantic representations that should participate in the Causative Alternation. This is the extent to which LRH put their internally/externally caused proposal to use. In Turkish and Korean the same root is used for 'die' and 'kill' constituting a Causative Alternation. (See Korean, above)

The distinction seems irrelevant to participation in the Causative Alternation for Japanese, Turkish, Korean, and Armenian. What we do find, however, is that internally caused events seem to conform with Class 1 underlyingly intransitive verbs while externally caused events are Class 2 underlyingly transitive verbs, both participating in the Causative Alternation.

A review of the tables above shows that verbs glossed as 'boil', 'dry', 'die', and 'wake up' are Class 1; that is, internally-caused events. Those verbs with the glosses 'open', 'close', and 'break' are generally Class 2 externally caused events. There is, however, cross-linguistic variation. Japanese 'open' is basic in its intransitive for, i.e., *ak-u* 'open-$_{\text{INTRANS}}$' / *ak-e-ru* 'open-$_{\text{TRANS}}$' (cf. Armenian, Korean and Turkish).

The de-adjectival verbs in Armenian, and arguably in Turkish conform to internally caused events, being underlyingly intransitive. The Turkish examples in Table 3 show the intransitive/passive morpheme embedded inside the causative morpheme.

LRH cite the work of Pinker (1989) and Grimshaw (1994) who stress the fact that "there are events that are compatible with more than one cognitive construal" (LRH: 99). This is the primary source of cross-linguistic variability. Morphological data of Nedjalkov (1969) shows that *melt* is an example of a verb "compatible with more than one cognitive construal". Haspelmath (1993), in an even wider cross-linguistic context, discusses *melt* and *burn.* The variability of morphological marking cross-linguistically indicates that they are susceptible to being construed as either internally or externally-caused.

Zero-derived alternating pairs of the type found in English seem to be indeterminate as to their underlying Lexical Semantic Representations with no infallible diagnostic available. LRH argue that:

> The asymmetry in selectional restrictions is significant since it provides a guide to which variant is basic. The set of subjects for the intransitive use of a

> verb appears to be a subset of the set of possible objects for the transitive use of the same verb. (LRH: 86)

They cite the non-literal examples *He broke his promise* vs. **His promise broke* and *The book opened his mind* vs. **His mind opened* to uphold the underlying transitivity of *break* and *open*, respectively (ibid). It is not clear, however, if this is a valid diagnostic. Even *break* in English, which would seem to be a canonical externally caused event, has an intransitive subject not found as its transitive object, e.g., *The waves broke on the shore* (cf. **The ocean broke the waves on the shore*).

9. And now for something completely different …

Languages that use morphological-marking to indicate verbal adicity show a transparent dichotomy in the underlying syntax of their change-of-state verbs. To analyze this morpho-syntactic data I will adopt DISTRIBUTED MORPHOLOGY's (Halle and Marantz, 1993 *et seq*) LATE-INSERTION. The benefits are that postulation of a lexicon is avoided and syntactic principles alone, broadly construed, provide insight into the underlying syntax. At the same time proper morphological realization is made possible for the languages discussed above[5].

Additionally, I make use of internally and externally-caused events introduced by LRH. Though not all languages use morphological transitivity-marking and even for those that do the correspondences are not cross-linguistically invariable, correspondences are fairly robust.

While internal/external causation has the air of an intuitive rather than codified semantic concept, where the morphology provides unambiguous evidence, I will argue, it is a powerful proposal when put to appropriate use.

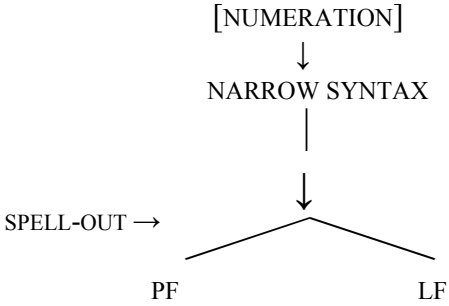
[5] See Embick and Noyer (2007) for an insightful discussion of why the burden is placed on those who would postulate a lexicon.

Part Two

1. A brief overview of Distributed Morphology

Distributed Morphology (DM) is a research program within the purview of the broader MINIMALIST PROGRAM (Chomsky, 1995 and 2001). DM adopts the syntactic findings of Minimalism while concerning itself additionally with, among other phenomenon, 1) the universal pool of abstract features needed to derive syntactic representations devoid of phonological pieces and 2) the post-Narrow Syntax phenomenon associated with SPELL-OUT/VOCABULARY INSERTION at the higher levels of the PF branch:

(2)



LATE-INSERTION is a concept crucial to the framework of DM. It claims that phonological pieces, VOCABULARY ITEMS, are provided to linguistic expressions only after narrow syntax ends and Spell-out begins at PF. Thus DM differs from other versions of the MP in that a Numeration (Chomsky, 1995), rather than containing lexical items and phonological pieces, comprises abstract features alone[6]. These abstract features may include [+/−PAST], [+/−PLURAL], and [+/−DEFINITE], to list a few.

2. Internal and external causation in roots

For DM, lexical categories, i.e., verbs, nouns and adjectives, do not exist as such, but are derived from categorically-unspecified ROOTS, which are supplied lexical category syntactically[7] (Marantz, 1997, 2001 and Harley and Noyer, 2001). Since the verbal adicity-markers are vocabulary items, their Spell-out is part of PF broadly construed. Internal and external-causation are properties of individual roots. Like conjugational classes in Latin, Spell-out may be partially determined by properties of a root. (See Embick and Halle (2004) for Latin)

Marantz (1997) and Harley and Noyer (2001) have attributed the concepts internal and external-causation to roots in order to explain various aspects of their behavior, in

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[6] In addition to abstract features which condition the insertion of abstract morphemes, DM recognizes roots. The two, respectively, are the equivalent to the traditional distinction between functional and lexical morphemes and referred to by Harley and Noyer (2001) as F-MORPHS (abstract morphemes) and L-MORPHS (roots), respectively.

[7] Recent work, the SINGLE ENGINE HYPOTHESIS (Marantz, 2001 and Arad, 2003), argues that the lexical categorization of roots is itself syntax, obedient to minimalist principles, e.g., MERGE and PHASE. I put interesting discussion aside for the simplicity of this paper. There are many differences between, abstract morphemes inserted according to the SUBSET PRINCIPLE and roots, which cannot inherently have abstract features of the type included in a Numeration. (See Harley and Noyer, 1999 and 2001 for some discussion) Some researchers have advocated the inclusion of phonologically-null, categorically unspecified roots in the Numeration. (See Embick and Noyer, 2007 for discussion) Minimally it can be said that the insertion of roots precedes the insertion of abstract morphemes during Spell-out (Embick and Noyer, 2001).

particular, the argument-taking properties of nominalizations. By attributing internal and external causation to roots, it allows for proper Spell-out of the adicity-markers and shows the underlying syntax of verbs.

Roots which surface as morphologically simple verbs in the intransitive/unaccusative form are internally-caused; conversely, roots that have morphologically simple transitive/lexical causatives are externally-caused. I capture this morphological property of roots by providing them a subscript for their respective underlying causal properties. An internally-caused root is represented as $\sqrt{}_{\text{INT}}$; an externally-caused root is represented as $\sqrt{}_{\text{EXT}}$. (See Embick and Halle (2004: 15) for the necessity of subscripts on roots)

Consider the Turkish verbs $\sqrt{}$*büyü* 'grow-$_{\text{INTRANS}}$' and $\sqrt{}$*kapa* 'close, shut-$_{\text{TRANS}}$' from Table 2, above. Since both are morphologically simple, they are represented as $\sqrt{}$*büyü*-$_{\text{INT}}$ and $\sqrt{}$*kapa*-$_{\text{EXT}}$. Similarly represented are the Japanese roots $\sqrt{}$*kawak*-$_{\text{INT}}$ 'dry' and $\sqrt{}$*war*-$_{\text{EXT}}$ 'break' and the Korean roots $\sqrt{}$*nok*-$_{\text{INT}}$ 'melt' and $\sqrt{}$*yel*-$_{\text{EXT}}$ 'open'.

Such subscripts capture the intuition that the verb *büyü* 'grow' does not require outside intervention in order for the event it represents to occur; *kapa* 'close, shut' as an underlying transitive, by contrast, requires the external intervention of a causer for the event to occur. Simply stated, the underlying syntactic form is always morphologically simple.

3. The Narrow Syntax of Change-of-State verbs

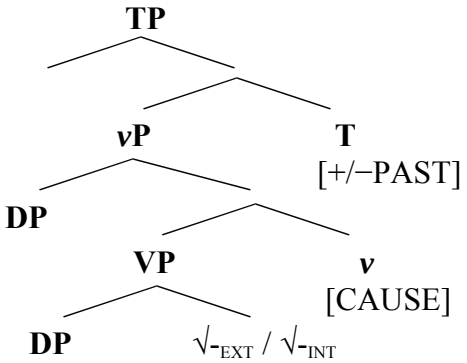
This section looks at the output of Narrow Syntax immediately prior to the late insertion of vocabulary items at Spell-out. Within DM, there have been several approaches to the syntax of the causative alternation in Japanese, all share many commonalities. Harley, 1995, 1996 and 2006; Miyagawa, 1998; and Pylkkänen, 2002 share the use of the abstract morphemes BECOME for the intransitive unaccusative verbs and CAUSE for the transitive lexical causatives.

The Numeration in a late-insertion analysis of change-of-state verbs would also contain these abstract morphemes. Their role is to distinguish unaccusative from lexical causative change-of-state verbs. For Pylkkänen (2002) and Harley (2006), the category-defining head *v* provides the verbal category to their complements, the categorically-unspecified roots.

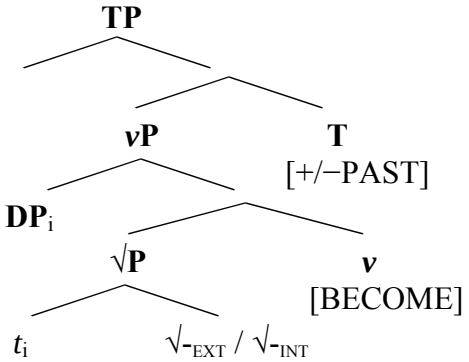
Turkish and Korean, like Japanese, are head-final languages which amalgamate the root with, at least, its transitivity-marking morphology and tense marker into a phonological word so the hybrid syntax used below is valid in its essentials for the three languages.

First let's consider the transitive form. Since I am only concerned with the late-insertion of abstract verbal morphemes, I avoid the internal structure of DPs, their abstract feature bundles and their movement, except in the case where the DP of the unaccusative raises outside of its VP-internal position:

(3) ***Externally-caused/ Internally-caused lexical causatives***



(4) ***Externally-caused/ internally-caused unaccusatives***[8]

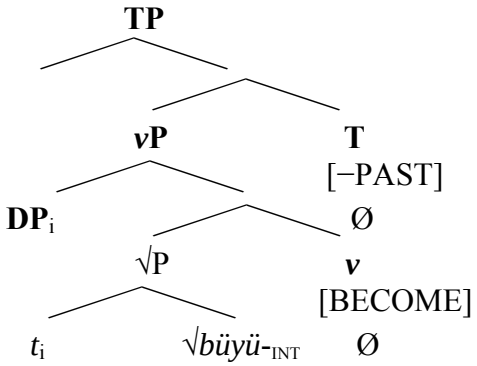


The claim here is that the trees in example (3) and (4), above, represent the point where Narrow Syntax ends and is passed on to PF for Spell-out.
Thus there are two basic narrow syntactic representations containing the external-causation and internal-causation subscripts which determine the proper late insertion of morphology, two transitive and two intransitive Spell-out types.

4. Exemplar: Late-Insertion of verbal morphology for change-of-state verbs
First, I use the Turkish root √*büyü* 'grow', discussed above, to demonstrate the morphology of late-insertion/Spell-out for internal causation. Keep in mind that roots from Japanese and Korean undergo the same late-insertion processes. Shown below in example (5) is the unaccusative structure with partial vocabulary insertion:

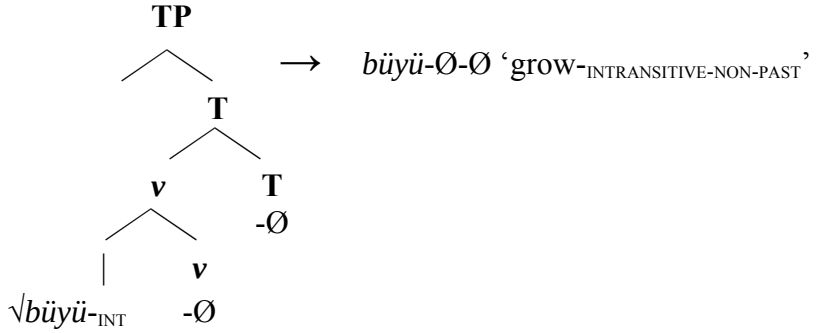
[8] This is Harley's unaccusative syntax containing a root phrase, √P, the complement of an unaccusative little *v*P (Harley, 2006: 31). (See Harley (ibid.) for its relation to Hale and Keyser (1993)'s analysis of internal subjects)

(5)



MORPHOLOGICAL MERGER (MM), proposed in Marantz (1984) and adopted by DM (Halle and Marantz, 1993, Bobaljik, 1995 and Embick and Noyer, 2001, among many) is the creation of a complex head by the combination of morphemes in the complement relation. MM of the verb *büyü* would be as follows:

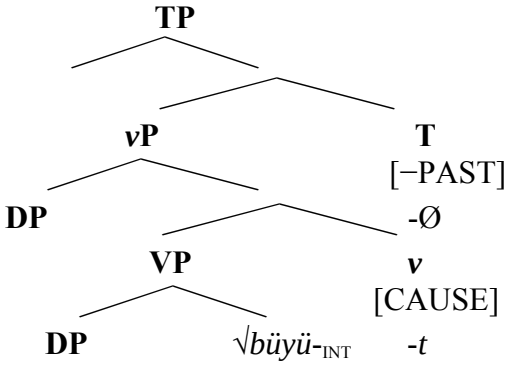
(6)



Thus the property underlyingly intransitive internally-caused verb is successfully read off from syntax and Spell-out alone.

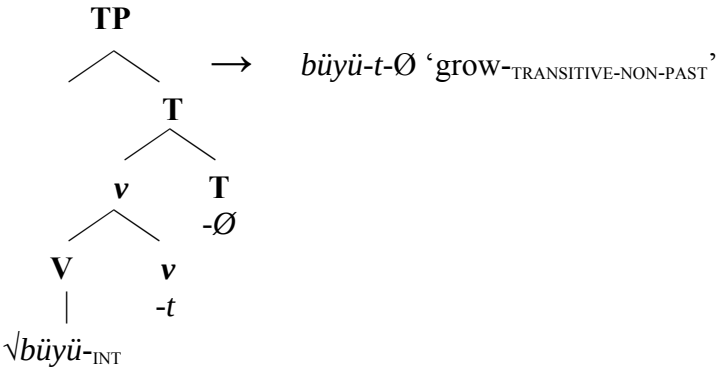
Example (7) shows partial vocabulary insertion for the internally-caused transitive which differs from the intransitive in containing a phonologically-overt marker of verbal adicity:

(7)



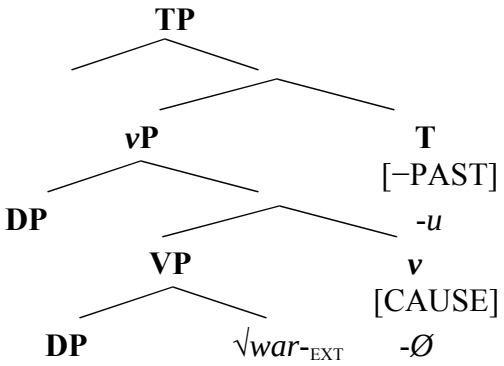
The complex heads assembled by MM produces the outputs predicted for internally-caused alternating verbs which overtly indicate the verbal adicity of their transitive partners:

(8)



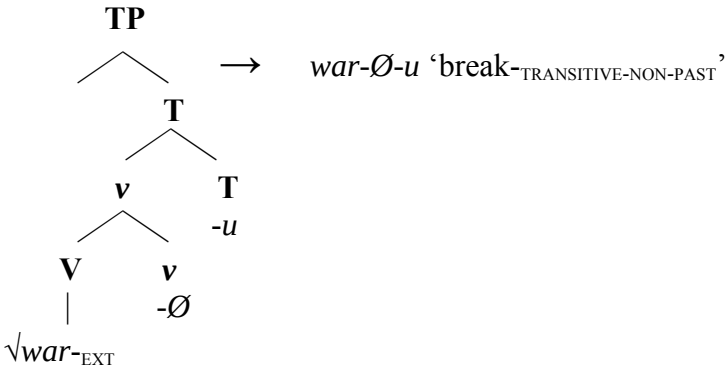
Finally, let’s look at the externally-caused event; here I use the Japanese root √*war*-$_{EXT}$ ‘break’. I start with the morphologically basic lexical causative in example (9):

(9)



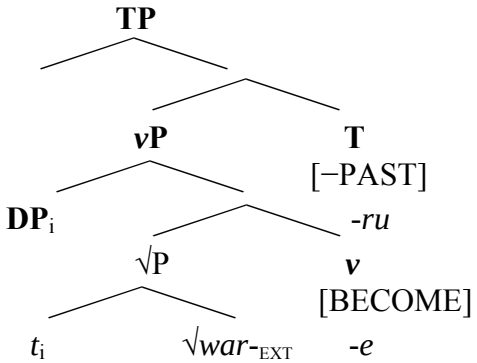
Again, MM assembles the output into a phonological word by the amalgamation of heads:

(10)



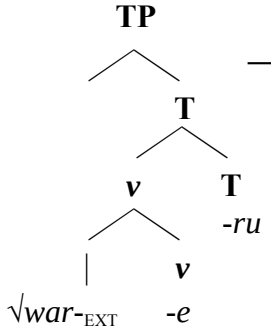
For the unaccusative overt phonological exponence is a property of external causation as in example (11), below:

(11)



MM assembles the heads into the proper verbal output, but this time the externally caused unaccusative contains the overt Spell-out of the adicity-marking morpheme:

(12)



→ *war-e-ru* 'break-$_{\text{INTRANSITIVE-NON-PAST}}$'

5. Summary

This paper began with a critical evaluation of Levin and Rappaport Hovav (1995). Their claim that the Causative Alternation is a diagnostic for the underlying transitivity of verbs is shown to be untenable on two counts. First I demonstrate that their underlying intransitive unaccusative classes participate in the Causative Alternation in Japanese in the same way as the postulated underlyingly transitive change-of-state class.

Next, I show that the languages Japanese, Turkish, Korean and Armenian, all languages that display the basic and derived underlying syntax of their unaccusative and lexical causative verbs morphologically, contain two morphological classes of change-of-state verbs. In other words, verbs claimed to be invariably underlyingly transitive by LRH consist of two classes, a basic unaccusative and a basic lexical causative morphological class. I argued that the determining factor is the semantic notion of internally and externally-caused eventualities introduced by LRH as part of their analysis of unaccusativity.

In part two, by adopting late insertion to address the data, I show that Lexical Semantic Representations projected from a lexicon to provide the Argument Structure of a linguistic expression advocated by LRH are misleading and unnecessary, in particular, for change-of-state unaccusatives. By adding a diacritic for internal /external causation to the roots, both the syntax and morphology can be handled efficiently using late-insertion. The result is the elimination of semantically-determined syntactically-represented lexical-semantic representations projected from the lexicon and the use of syntax alone, as understood by the Minimalist Program-DM.

Ultimately, any scientific enterprise frowns upon the multiplication of unnecessary entities. The analysis offered here suggests the use of Lexical-semantic representations projected from a lexicon in order to determine Argument Structures is such a case.

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