

THE UNIVERSITY OF CALGARY

An Event Structure Analysis of Derived Verbs in English

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF ARTS

DEPARTMENT OF LINGUISTICS

CALGARY, ALBERTA

AUGUST, 1997

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0-612-24618-3

ABSTRACT

This thesis presents a case study of morphologically complex verbs in English formed by *-ify/-ize* affixation. In particular, we examine the argument structure and event structure properties of these verbs and outline a theory of where in the grammar these properties are derived. We observe that, while *-ify/-ize* verbs cannot be identified as having consistent argument structure properties, they do have a uniquely identifiable aspectual property, which is that they denote delimited events, in the sense of Tenny (1994). Hence, we propose an event structure analysis of the verbs in which we analyze the affixes as *EVENT AFFIXES* which serve as morphological markers of delimitation. Following recent proposals concerning the structural representation of events, we suggest that the affixes head an aspectual projection in the phrasal syntax labelled *FP-delimit*. Finally, we examine the implications of our proposal for a universal theory of event structure representation.

ACKNOWLEDGMENTS

That I have come this far in my academic career is the result of an abundance of support, encouragement and positive affirmations that I have received from many people in my life, for whom I will always be thankful.

I will begin with Elizabeth Ritter. Not only has she served as my thesis supervisor, she has served as a mentor. Through her boundless energy and enthusiasm for the field, her interest in my own work and progress, and her unceasing support (reading through never-ending drafts of every chapter), she has inspired me to WRITE! and given me the confidence and the courage to FINISH! I will never have enough words to express my deeply-felt gratitude.

I would like to heartily thank the other members of my thesis committee -- John Archibald, who encouraged me immensely in the beginning stages of this research (helping me with a pilot test that I tried out last year) and Amanda Pounder, who contributed to this work by challenging me with insightful questions and painstakingly editing this thesis.

Other people I would like to thank are Penelope Coddling for taking the time to discuss *crystallize* with me, Heidi Harley for talking with me about her work (and for writing such enjoyable papers), Vi for keeping me organized and the other members of the department, who have encouraged me over the years.

I am especially grateful to Eithne Guilfoyle, who, when I was an undergraduate student here, urged me to continue studying and learning.

To all my fellow students – in particular, Leah for being such a fantastic office mate, Susan and Julie for their words of encouragement, Grace for giving us much-needed breaks in her lovely home and Val for her positive energy -- Thanks for all of your support!

For financial support, without which this project would not have been possible, I have several sources to thank – the Department of Linguistics for the teaching and research assistantships, the Dean’s Office of the University of Calgary for the Special Masters Scholarship, the Government of Alberta for the Province of Alberta Graduate Scholarship, and finally, I gratefully acknowledge the support provided by SSHRCC grant #410-94-0478 to Elizabeth Ritter.

Last, but not least, special thanks go to my husband Wayne for putting up with my wacky behaviour over the past few years and for sustaining me with food while I worked in the late hours of the night (or early hours of the morning). To my precious brother Kenji, who lifted my spirits with all the emails from Hawaii. To my dad (the “wise white-haired man”) for sharing his humorous views about the English language. To my mom for her constant encouragement and prayers. And to God, who listened.

Dedicated to my Parents, who believed in me.

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CHAPTER ONE

Introduction:

Deriving the Properties of Morphologically Complex Verbs in English

1.0 PREAMBLE

Our domain of inquiry concerns the meaning of derived verbs, specifically those derived by *-ify/-ize* affixation. The question we seek to answer is ‘Where do the (uniquely) verbal properties of derived verbs come from?’ It is reasonable to assume that a derived verb inherits at least some of its semantic content from its nominal or adjectival stem. However, these verbs, like non-derived or primitive verbs, have particular semantic properties not associated with nouns and adjectives. Verbs belong to the grammatical category that expresses the action, state or process of a sentence (Gentner (1981), Frawley (1992) and Levin (in prep.)). In other words, verbs typically encode events, ‘a relatively temporal relation in conceptual space’ Frawley (1992:144). Encoded in the meaning of *verb*, therefore, is the notion of time. Furthermore, the eventuality that the verb denotes involves one or more semantic participants (or arguments), entities that either perform or are affected by the action, state or process named by the verb. These arguments appear as the grammatical subject and object in the syntax. A noun, on the other hand, refers to an entity; it is the thing that participates in the action denoted by the verb, and generally does not require participants of its own. An adjective typically denotes a state or attribute and as such, does require a semantic argument (it must be attributed of something). However, an adjective does not entail a temporal relation. Thus, verbs are uniquely distinguished from nouns and adjectives in that they entail an eventive (temporal) notion as well as a number of semantic participants.

The defining semantic properties of verbs are perhaps best introduced by examining the meaning of a simple, non-derived verb. Consider the example below illustrating the primitive verb *put*.¹

- (1) a. John put the book on the table.
 b. $PUT_{DEF} = [_{Event} CAUSE [_{Thing} x], [_{Event} GO [_{Thing} y], [_{Place} AT [_{Place} z]]]$
 c. (AGENT, THEME, GOAL)

(1b) illustrates that the meaning of the verb is decomposable into more primitive semantic predicates like CAUSE, GO and AT (Jackendoff (1974, 1990), Carrier and Randall (1993), Levin and Rappaport Hovav (to appear)). Each predicate requires the presence of one semantic participant, which is represented as a variable (either x, y or z). The variables in turn can be defined by the semantic role they play in the event. These semantic roles are listed in (1c). In our example, CAUSE specifies an AGENT argument (x), GO a THEME argument (y) and AT a GOAL argument (z). The AGENT is the entity that actively engages in the activity of putting. The THEME is the entity that undergoes the action, and the GOAL is the entity towards which the action is directed. The verb *put* in the above example, denotes an eventuality in which an AGENT causes an entity, the THEME, to undergo movement such that the THEME comes to be at a location or GOAL. Central to this definition then is the specification of the arguments, as well as the semantic predicates CAUSE, BE and AT, which specify the relations between the arguments.

¹ For ease of exposition, in order to illustrate the decomposition of the meaning of *put* into its component parts, we utilize here a type of predicate decompositional representation of meaning. This is for explanatory purposes only. It does not mean that we subscribe to a particular theory of argument projection in which such a representation is assumed to be present in the lexicon along with specified principles of mapping.

Like the primitive verb *put*, a derived verb also denotes the action of a sentence and thus functions to set up relationships between arguments. Consider the examples listed in (2) and (3) below which illustrate *-ify* affixation and *-ize* affixation respectively. Each example includes the morphological and semantic decompositions of the verb, as well its argument structures.

- (2) a. The linguistics student verbified the noun.
 b. $\text{verbify} = [[\text{verb}]_N \text{ify}]_V$
 c. $\text{verbify} = [_{\text{Event}} \text{CAUSE } [_{\text{Thing}} x], [_{\text{Event}} \text{BE } [_{\text{Thing}} y], [_{\text{State}} \text{VERB}]]$
 d. (AGENT, THEME)
- (3) a. The linguistics student pluralized the noun.
 b. $\text{pluralize} = [[\text{plural}]_A \text{ize}]_V$
 c. $\text{pluralize} = [_{\text{Event}} \text{CAUSE } [_{\text{Thing}} x], [_{\text{Event}} \text{BE } [_{\text{Thing}} y], [_{\text{State}} \text{PLURAL}]]$
 d. (AGENT, THEME)

The derived form *verbify* illustrated in (2) will get some of its meaning from the nominal stem *verb*. The Random House Dictionary defines a *verb* as ‘any member of a class of words [...] that function as the main elements of predicates’. Thus, when this noun undergoes a derivation to become a verb, it will preserve this basic sense in its new grammatical function. *Verbify*, by virtue of the fact that it is a verb, will have an eventive denotation, requiring an element of time as well as one or more entities to function as semantic participants. The event denoted in *The linguistics student verbified the noun*, requires two participants, one that does the action (the linguistics student) and one that undergoes the action (the noun). These participants are a requirement of eventive functions generally. The semantics of the individual event comes from the meaning of the stem.

Thus, *to verbify a noun* means ‘to cause an entity (a noun) to become the main element of a predicate (a verb)’.

What is striking about the derivational process is that it is able to take an element that denotes either an entity or attribute, which by definition lacks the defining characteristics of verbs, and output a functionally and semantically unique verb. In our examples (2) and (3), each stem form (*verb* and *plural*), is non-eventive. Neither the noun nor the adjective ‘takes place in time’, neither denotes an action or process, and consequently they do not require an interaction of semantic participants. Yet, with the addition of the suffix, all these verbal properties are acquired. The new word is a verb. Its meaning is decomposable into semantic predicates like CAUSE and BE which themselves specify a number of semantic participants. While the specific meaning of each derived verb may be derived from the meaning of the stem from which it was formed (in combination with pragmatic factors), the general eventive interpretation of the verb certainly cannot be.

In this thesis we investigate the sources of meaning of denominal and deadjectival verbs derived by the affixation of *-ify* and *-ize*, focusing in particular on where their eventive interpretation and argument structure come from. We shall suggest that derived verbs are formed in the syntax and that their semantic interpretation is compositionally determined. Hence, our analysis, while very specific in its focus, bears upon a more general theoretical debate in the linguistics literature concerning the nature of the lexical-syntactic interface. In order to set the stage for our investigation, therefore, we begin this chapter with a background discussion of this debate. Following this, we provide a brief overview of the verbs that we will consider and highlight the major theoretical assumptions that are relevant to our analysis.

1.1 On the Nature of the Lexical-Syntactic Interface

1.1.1 The PROJECTIONIST Approach

Over the past number of years a wealth of research, conducted in the areas of morphology, syntax and lexical semantics, has sought to characterize the relationship between the lexical and syntactic components of the grammar. Within the generative enterprise, it is commonly assumed that the syntactic structure of a sentence is projected from the lexical properties of its verbs and/or other predicates in accordance with the Projection Principle, given in (4).

- (4) Representations at each syntactic level (i.e., LF, and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items.

(=(38) p.29, Chomsky (1982))

Implicit in the Projection Principle is the assumption that the lexical representation of a verb is highly specified, encoding such information as the verb's meaning, the number of arguments it takes, and the thematic roles that are associated with each one. Hence, since the early 1980s, theorists have attempted to characterize the lexical competence held by native speakers with respect to the syntactic and semantic properties of lexical items. One concern, for example, lies in how to represent the relations between a predicate and its arguments (cf. Gruber (1976), Chomsky (1986), Grimshaw (1990), Jackendoff (1990), Levin (1992), and Levin and Rappaport Hovav (1997, and previous)). As well, the question of how the arguments in the semantic representation are mapped onto syntactic structure has been addressed (for example, see Carter (1976)-(1984), Baker (1988),

Carrier and Randall (1992, 1993), Tenny (1994) and Rosen (1995)).² It has been observed that certain arguments appear to map uniformly onto specific syntactic positions, and as a consequence, universal mapping principles have been proposed to account for this regularity. For example, Baker (1988) proposes the following Uniformity of Theta Assignment Hypothesis (UTAH), stated in (5).

- (5) Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

(=(30) p. 46, Baker (1988))

This hypothesis predicts that the θ -roles specified in the lexical entry of a given predicate govern what syntactic positions the arguments will occupy in the syntax. The verb *give*, for instance, lexically selects two internal arguments, a theme (the entity given) and a goal (the entity that the theme is given to). Observe in (6) that there are two alternative ways in which the thematic relations can be realized. Either the theme occupies the direct object position and the goal is introduced by a dative preposition, as in (6a), or the goal occupies the direct object position while the theme sits in the indirect object position, (6b).

- (6) a. John gave the book_{THEME} to Bill_{GOAL}.
 b. John gave Bill_{GOAL} the book_{THEME}.

Given the UTAH, then, both sentences must be derived from the same underlying syntactic configuration (cf. Larson (1988)). Crucially, for proponents of this research program, the syntactic behaviour of a verb and its arguments is a direct reflection of the lexical semantic

² See Levin and Tenny (1988) for a comprehensive collection of Carter's work in this area.

representation of the verb. Therefore, the goal of such work is to elucidate the organization of the lexicon. Following Levin and Rappaport Hovav (1997), we refer to these theories as “projectionist” theories.

1.1.2 The CONSTRUCTIONAL Approach

An alternative view has appeared recently that takes some of the burden away from the lexicon and places more emphasis on the role played by the syntactic structure itself (cf. Borer (1994), Ghomeshi and Massam (1994), Erteschik-Shir and Rapoport (1995), Goldberg (1995) and Ritter and Rosen (1997)). One of the driving forces of this view, referred to as the “constructional” approach, is the fact that many verbs can appear in a range of D-structure configurations. For example, some verbs display diathesis alternations such as the locative alternation shown in (7), or the causative alternation in (8).

- (7) a. The farmer loaded the hay on the wagon.
b. The farmer loaded the wagon with hay.

(=(2) p.176, Ghomeshi and Massam (1994))

- (8) a. The window broke.
b. John broke the window.

(=(13) p.122, Ritter and Rosen (1997))

These alternations in argument realization pose an empirical challenge to universal mapping principles like UTAH. Consider first the examples in (7). The sentences in (a) and (b) are considered to be semantic paraphrases; each describe the same event in which hay comes to be at a particular location. However, it has been observed that in fact (a) and (b) are only

near-paraphrases (cf. Rapaport and Levin (1988)). Each alternate expresses a slightly different interpretation, referred to as the part-whole effect; the argument that occupies the direct object position, whether it be goal or theme, is understood as completely affected by the action denoted by the verb. Thus, in (7a) the event denoted is one in which all the hay is loaded onto the truck (even though the truck may not be completely full), whereas in (7b) the event denoted is one in which the truck is completely full of hay (even though perhaps not all the hay was loaded). Crucially, this nuance in event interpretation is not specified by the verb, but is determined rather, by the position of the argument(s) in the structure (a fact discussed in depth by Ghomeshi and Massam (1994)). The alternation in (8) also presents a problem for UTAH in that the verb's ability to participate in the alternation depends heavily on the semantic properties of the argument(s) involved, as noted by Ritter and Rosen (1997:122). Observe that the verb *break* in (9) below cannot appear in the causative whereas in (10) it can only appear in the causative.

- (9) a. The storm broke.
 b. *The gods broke the storm.
- (10) a. *Her promise broke.
 b. Heather broke her promise.

Because verbs can appear in such variable syntactic configurations, adherents of constructional theories deny lexical representations some of their deterministic power, assuming, rather, the position succinctly stated by Ghomeshi and Massam (1994:178), that “syntactic structures can have semantic features associated with them [which] interact with components of meaning contributed by other parts of the grammar”.

1.1.3 The Morpho-Syntactic Debate

Related to questions concerning the lexical-syntactic interface, are questions concerning the place of morphology in the grammar. Those interested in the morpho-syntactic debate discuss whether morphology is an autonomous component, housed in an independent module such as the lexicon, or whether morphology (or at least inflectional morphology) is part of the syntactic component. Theories that assume the former are generally referred to as “Lexicalist” theories. The lexicalist approach essentially began with Chomsky’s (1970) *Remarks on Nominalization*, in which he argued that, while gerundive nominals in *-ing* (for example, *giving*) may be derived transformationally, other nominals (such as *gift*), are derived in the lexicon. This analysis represents a landmark in the development of generative morphology, as prior to *Remarks*, a “transformational” approach to word formation was assumed (for example, Lees (1960)). Generally speaking, theorists working under a lexicalist framework assume a grammatical distinction between morphology and syntax. The spirit of this framework is embodied in postulates such as the Word Structure Autonomy Condition of Selkirk (1982), stated below.³

- (11) No deletion or movement transformation may involve categories of both W-structure and S-structure.

(=(3.13) p.70, Selkirk (1982))

The move towards a “lexical morphology” coincides closely with the general development of theories of a highly structured lexicon, as discussed in 1.1.1 above.

³ The Lexicalist Hypothesis in fact exists in degrees; adherents either follow a “strong” version, which allows for no morphosyntactic relationships (all morphological properties are determined in the lexicon), or a “weaker” one, which concedes that certain morphological operations (for example, inflection) may take place in the syntax.

Alternatively, proponents of a non-lexical approach to morphology maintain that (at least some) morphological operations are operative in the syntax. (Most recently are proposals made by Baker (1988), Borer (1991) and Halle and Marantz (1994)). On this view, word formation is achieved by such syntactic processes as head movement and is not confined to the lexical component of the grammar. Such non-lexical approaches to word formation are compatible with the constructional approaches to meaning discussed in 1.1.2 in that a morphologically complex element would necessarily be interpreted post-lexically. In this framework, the lexicon is not the only module of the grammar in which meaning is determined or assigned.

1.1.4 In Support of a Constructional View of Meaning

Our goal in this thesis is to demonstrate that the meaning of English *-ify/-ize* affixed verbs is not determined solely by a highly structured lexicon, but rather, is arrived at compositionally in the syntax, thus supporting the constructional side of the lexical-syntactic debate. In our analysis, we establish that these English verbalizing affixes consistently derive verbs that denote delimited events, in the sense of Tenny (1994). We argue that therefore the most accurate characterization of such affixes is in terms of event structure. Following Travis (1991), Borer (1993), Erteschik-Shir and Rapoport (1995) and Ritter and Rosen (1997)), we assume that event structure information is encoded in syntactic structure and argue that the verbalizing affixes are themselves syntactic entities. As a consequence, *-ify/-ize* affixation must be viewed as a syntactic, rather than lexical, process.

1.2 The Verbs

As the goal of this study is to determine the derivation of verb meaning, we now introduce the relevant English verbalizing strategies that will be discussed throughout the rest of the thesis. Modern English speakers have several verb-forming elements at their disposal. We focus mainly on the two most productive suffixes, *-ify* and *-ize*; however, we also briefly mention the prefixes *en-* and *be-*, as well as the process of zero derivation (or conversion), as these other classes of derived verb are used for purposes of comparison.

1.2.1 *-ify/-ize* Derived Verbs

Urdang (1982) provides the following diachronic explanation of the affixes.

(12) ***-(i)fy***:

A verb-forming word-final element, derived through French *-fi(er)* from Latin *-fic(are)*.

(13) ***-ize***

A verb-forming word-final element, derived through Middle English *-is(en)*, Old French *-is(er)*, and Late Latin *-iz(are)* from Greek *-iz(ein)*.

While *-ize* ultimately finds its origins in Greek and *-ify* in Latin, either of them can be used to create new verbs from any adjectival or nominal stem in English, regardless of the

stem's origin. The following is a non-exhaustive list of data illustrating denominal and deadjectival verbs derived from both *-ify* and *-ize* affixation.⁴

(14) a. Verbs Derived from -ify:

N: acidify, classify, emulsify, glorify, horrify, mummify, personify, solidify, terrify, ...

A: amplify, clarify, diversify, falsify, fancify, Frenchify, humidify, intensify, prettify, purify, rigidify, simplify, ...

b. Verbs Derived from -ize:

N: anesthetize, anthologize, Christianize, criminalize, crystallize, fossilize, humanize, liquidize, magnetize, martyrize, memorize, moisturize, pressurize, terrorize, traumatize, ...

A: actualize, Americanize, caramelize, centralize, civilize, colorize, conceptualize, conventionalize, equalize, familiarize, fertilize, finalize, generalize, idealize, immunize, institutionalize, legalize, modernize, realize, slenderize, tenderize, ...

As can be seen, in either case the stem can name a substance, as in *acidify* and *crystallize*; a physical state, as in *humidify* and *tenderize*; or an abstract state, as illustrated by the minimal pair *terrify* and *terrorize*. Furthermore, although some variation in the definitions of these affixes is discussed in the literature (cf. OED, Marchand (1969), Urdang (1982)), one primary sense that seems to be characteristic of both is 'to make or do'. Hence, verbs derived from these affixes are sometimes classified as '(morphological) causatives' with the meaning 'some entity (x) causes another entity (y) to change state or location, come into

⁴ The data has been collected from various sources including: Levin and Rappaport Hovav (1994), Rosenberg (1995), the Random House Unabridged Dictionary, and the Oxford English Dictionary.

existence, etc.'. Recall the examples discussed in (2) and (3), given again in (15) and (16) below.

- (15) a. The linguistics student *verbified* the noun.
 b. [x cause y become *verb*]

- (16) a. The linguistics student *pluralized* the noun.
 b. [x cause y become *plural*]

(15) and (16) exemplify *-ify* affixation and *-ize* affixation respectively, that is, [_v[_Nverb]ify] and [_v[_Aplural]ize]. As indicated by the rough semantic paraphrases in the (b) examples, the function of the derived verbs in each sentence appears to be the same. In each event, a change in the referent of the internal argument is brought about as a result of the action of the derived verb.

1.2.2 *en-/be-* Derived Verbs

en-/be- prefixation is another way in which English speakers can derive verbs from nouns and adjectives. Marchand (1969:146) gives the historical form of *be-* as an unstressed form of the particle *by*, with the consequence that one of the functions of this prefix in OE was to provide a locative sense such as 'by, about or around'. However, the more usual meaning of *be-* prefixed verbs is listed as 'make (into) --' or 'furnish, cover, etc. with --'. Listed in (17) is a representative sample of denominal and deadjectival verbs derived by *be-* prefixation.

(17) Verbs Derived from *be-*:

A: becalm, bedim, befoul, belittle, benumb, ...

N: becloud, becripple, bedew, beflag, beflower, befog, befool, befriend,
begrime, beslave, ...

en-, on the other hand, is listed as originating from Middle English loans from French (Marchand (1969:162), with the predominant meanings 'put in --', 'make into --' or 'wrap in, wrap up'. Consider the examples listed in (18).

(18) Verbs Derived from *en-*:

A: enable, enfeeble, engross, enlarge, ennoble, enrich, ensure, ...

N: encage, encamp, encase, enchain, encircle, endanger, engulf,
enmesh, enrage, enshrine, ensnare, entomb, envision, ...

One property that is shared by *en-* and *be-*, but not by the suffixes discussed above, is the fact that these prefixes also attach to verbal stems. This property is illustrated in (19).

(19) *en-/be-* Verbs with Verbal Stems:*be-*: bedabble, dedash, bedaub, bedazzle, befuddle, beslobber, besmear, ...*en-*: enclose, enforce, entangle, encapsulate, embrighten, enliven, ...

Thus, while the subcategorization frame of the *en-/be-* verbal prefixes specifies that these elements may attach to V stems as well as A and N stems, the subcategorization frame of the suffixes *-ify/-ize* specifies that these elements attach only to A and N stems.

1.2.3 Zero-Derived Verbs

Zero derivation (or conversion) is a word formation process in which there is a change in the function of a stem, but no corresponding change in form, that is, unlike overt affixation, there is no morphology to indicate that a derivation has occurred. Questions concerning how to characterize this type of word formation has instigated widespread discussion, and several different approaches have been espoused in the literature. Many researchers conceive of zero derivation as the creation of a new lexical item by the concatenation of a phonologically null or “zero affix” analogously to overt affixation. This position is clearly outlined by Marchand (1969), who notes:

If we compare such derivatives as *legalize*, *nationalize*, *sterilize* with vbs like *clean*, *dirty*, *tidy*, we note that the syntactic-semantic pattern in both is the same: the adjectives are transposed into the category ‘verb’ with the meaning ‘make, render, clean, dirty, tidy’ and ‘make, render, legal, national, sterile’ respectively. In the *legalize*-group, the content element is expressed by the overt morpheme *-ize* while in the *clean*-group the same content element has no counterpart in phonic expression. As a sign is a two-facet linguistic entity, we say that the derivational morpheme is (phonically) zero marked in the case of *clean* ‘make clean’. We speak of zero-derived deadjectival verbs.

(Marchand (1969:359))

The postulation of zero morphemes has, however, been accused of being unjustified and not well-motivated. One of the major arguments accrued against the zero affix analysis is the problem noted by Pounder (ms.), that “one could end up with a proliferation of possible zeros”, both on the formal level as well as the semantic level. That is, zero morphemes could take the form of either prefixes or suffixes, and as well, each phonologically null semantic relation would also have to be represented by a unique zero. Furthermore, observes Pounder, given that the assumption of a zero affix is based on

parallels to overt affixation, then, zero affixes involving semantic relations which have no such overt parallel must be ruled out. The problem of formulating a precise characterization of this morphological strategy is ongoing (for further discussion of this topic cf. Marchand (1969), Beard (1986), Pounder (ms.), Lieber (1992) and Hale and Keyser (1993)). We do not discuss this issue further here, although we will suggest a structural analysis of zero derived verbs in Chapter Four.

In section 1.2.1 above, we noted that, while there may be some variation in the general meaning of *-ify/-ize* verbs, their primary sense seems to be ‘to make or do’. Similarly, we noted in 1.2.2 that ‘make (into) --’ is listed as one common interpretation of *en-/be-* derived verbs. The semantic classification of zero-derived verbs, in comparison, seems to be much more general in its scope. In their analysis of zero-derived denominal verbs, for example, Clark and Clark (1979) identify the following categories based on the role that the parent noun or stem plays in the event.⁵

| | | |
|------|-------------|---|
| (20) | LOCATUM: | butter, carpet, cover, name, paint, saddle, salt, stamp, water, ... |
| | LOCATION: | bank, box, closet, jail, land, pot, shelter, string, ... |
| | DURATION: | holiday, summer, winter, vacation,... |
| | AGENT: | butcher, model, referee, tutor, waitress, ... |
| | GOAL: | braid, bundle, coil, cube, knot, group, wrinkle, ... |
| | INSTRUMENT: | drill, glue, hammer, mop, paddle, shampoo, trap, ... |

⁵ Clark and Clark’s classification includes two additional categories, EXPERIENCER and SOURCE, that are not included in (20). As C&C provide only a handful of verbs for these categories, we assume that they are not productive. Missing as well from (20) is a “left-overs” category that C&C refer to as MISCELLANEOUS.

Locatum verbs are those whose stem comes to be in a location as a result of the action of the verb (*to blanket the bed*, is to ‘put a blanket on the bed’), goal verbs are those whose stem denotes the goal of the action of the verb, that is, it takes on a particular shape, form or role as a result of the action, and so on. It appears then that *-ify/-ize* suffixation and *en-/be-* prefixation form primarily goal verbs and locatum/location verbs, while zero derivation is more free; it creates verbs spanning a wider number of semantic domains. Crucially, however, zero derivation, like overt affixation, is extremely productive in forming denominal and deadjectival verbs, as shown by the following pairs.

| | | | | | | | |
|------|-------------|----|--------------|--|------------------|----|-------------|
| (21) | <u>Noun</u> | >> | <u>Verb</u> | | <u>Adjective</u> | >> | <u>Verb</u> |
| | blanket | | (to) blanket | | clear | | (to) clear |
| | mother | | (to) mother | | pale | | (to) pale |
| | hammer | | (to) hammer | | thin | | (to) thin |

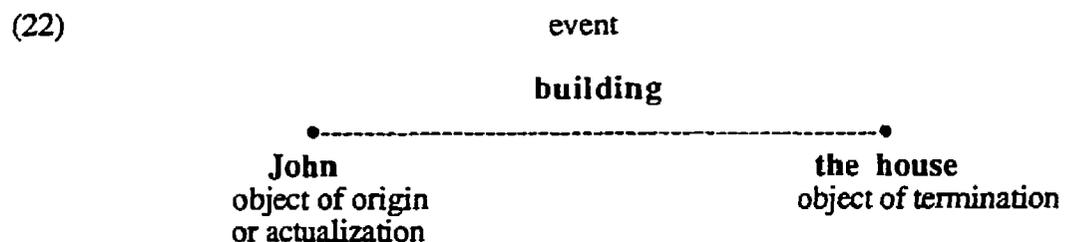
1.3 Theoretical Background

As noted in 1.1.3, our analysis of the meanings of derived verbs rests on the assumption that syntactic structure encodes event structure information. Therefore, in this section, we provide a brief overview of the semantic notions of aspect and event structure.

1.3.1 Events and Event Structure

It is necessary for us to operationally define what is meant by the notion “event”, as the way in which events are conceived differs within both the linguistic and philosophical literature. Higginbotham (1985:555), for example, following a neo-Davidsonian framework, defines an event as “a position E [that] corresponds to the “hidden” argument place for events”. This event argument is assumed to be represented in the thematic grid of

the verb (see also Kratzer (1994)). We assume that an event is the action represented by a predicate and all of the participants in it. Event structure is a decomposition of an event into a beginning point, a middle and an end. In van Voorst's (1988) conception, event structure is represented linearly on a time line wherein the subject launches the event by performing the action denoted by the verb and the object terminates the event by denoting its culmination. Thus, events are defined in terms of the entity that identifies the beginning and the entity that identifies the end. The former is the object of origin or actualization; the latter is the object of termination. A maximally specified event (that includes both the beginning point and endpoint) is illustrated schematically in (22). In a transitive clause like *John built the house*, the beginning point is identified with the subject and the endpoint is identified with the direct object; the event of building is complete when there is a house.



Observe that this schematic represents the event linearly. It is not obvious on this approach how the information contained in such a representation would translate into the syntactic configuration of sentences. Thus, more recent approaches to event structure have incorporated the insights of van Voorst into structural representations that demonstrate the eventive relationships of the verb and its arguments in a more transparent way (for example, Borer (1994) and Ritter and Rosen (1997)). We shall return to a discussion of the structural representation of events in Chapter Four.

1.3.2 Lexical Aspect

The representation in (22) gives the structure of a maximally specified event. However, individual events can have different internal shapes or contours. The manner in which an event proceeds is generally referred to as its aspect or aktionsart.⁶ Aspect is a semantic term which refers to a range of phenomena concerning an event's internal temporal structure. It is distinguished from tense in that, while tenses serve to relate the time of a situation described to the time of speaking or some other temporal reference point (as in past, present and future tenses), aspect describes properties of the event itself – such things as whether the beginning point, middle or end of an event is included, whether the event is iterative or durative or whether or not it has an inherent endpoint.⁷ Since Vendler (1967), much of the work on aspect has focused on establishing typologies of lexical verbs.

⁶ Strictly speaking, aspect is differentiated from aktionsart. For example, Brinton (1988:3) defines aspect as 'the speaker's viewpoint or perspective on a situation' and aktionsart as 'the intrinsic temporal qualities of a situation'. The difference between the two notions is also sometimes referred to as grammatical versus lexical aspect or viewpoint versus situation aspect. We use the term aspect as a cover term encompassing both aspect and aktionsart.

⁷ While aspect is conceptually distinguished from tense, both aspect and tense play a role in the encoding of events and consequently interact with each other. For example, as noted by Brinton (1988), the simple present (which is usually discussed within the context of tense) has significant aspectual properties. So, while we generally think of the event of "house-building" as being delimited (where the activity of building is necessarily terminated when there is a house, as in (22)), the simple present tense sentence, *John builds houses*, does not denote a delimited event. The simple present is most commonly used to express states (*Dustin loves Maggie*), generics (*Cows eat grass*), or general truths (*The sun rises in the East*), situations that are all ongoing or incomplete. Thus, events that are generally conceived as delimited can be modified by the choice of tense. While the contribution of tense is not insignificant, we ignore it for the purpose of our analysis of derived verbs as event affixes.

Listed in (23) below is the four-part classification of verbal aspect Vendler proposes (taken from Dowty (1979) who develops Vendler's ideas) and some of the verbs that are assumed to belong to each class.⁸

(23) Aspectual Classification:

| <i>States</i> | <i>Activities</i> | <i>Accomplishments</i> | <i>Achievements</i> |
|---------------|-------------------|------------------------|---------------------|
| know | run | paint a picture | recognize |
| believe | walk | make a chair | spot |
| have | swim | draw a circle | die |

Our concern is primarily with the categories activity, accomplishment and achievement. (Since states are non-eventive, we assume they have no event structure). The specific structures for each event type are given in (24) below (the vertical representation is adapted from Pustejovsky (1991), the linear representation is van Voorst's). (24a) depicts an accomplishment. An accomplishment is often thought of as a complex event comprised of a process plus a result (in which the result delimits the event) (Pustejovsky (1991)). Thus, in van Voorst's terms, an accomplishment is a "full" event in which both endpoints are specified. An activity is defined as a process (for example, Vendler (1967), Dowty (1979), Verkuyl (1989), Pustejovsky (1991)), which is an action of indefinite duration. It is thus nondelimited (or in van Voorst's terms lacking an object of termination). Illustrated in (24c) is an achievement, which is a punctual event that specifies a result but no process. (Thus, unlike accomplishments and activities, it has no duration).

⁸ Fundamental to the Vendler/Dowty classification is the assumption that these event types are maintained at the lexical level. It has long been recognized, however, that the aspectual interpretation of an event is often determined non-lexically, by the presence of aspectual particles, nominal arguments, PP goal phrases, or other linguistic material inside the verb phrase (cf. Brinton (1988), Levin and Rappaport Hovav (1988), Hoekstra (1992), Pustejovsky (1992, 1995), Tenny (1994) and Ritter and Rosen (to appear)). We return to this issue in Chapter 3. Our concern here is simply to provide a preliminary background on the notion of event structure.

EVENT AFFIXES, elements that contribute event information, rather than argument structure information (as Williams and Lieber suggest). We find some syntactic evidence for this argument in the fact that *-ify/-ize* affixes occur in complementary distribution with other aspectual elements in English, namely, the resultative particle *up* and the prefixes *en-* and *be-*.

1.4.3 Chapter Four: The Syntactic Representation of Events

In this chapter, we propose a syntactic representation of event structure in which the affixes occupy the head of an eventive functional phrase in the syntax. Thus, the creation of an *-ify/-ize* affixed verb is essentially the creation of delimited event structure. As delimitation is a property of syntactic phrase structure, then, we argue, so too must be the formation of delimited verbs. We then extend this analysis to account for the eventive properties of verb-*up* constructions as well as the *en-/be-* prefixed verbs.

1.4.4 Chapter Five: Extensions of Event Affix Hypothesis

We conclude the thesis by discussing some of the implications of our proposal for a general theory of causative formation. We examine the syntactic representation of causative constructions in English in relation to Japanese in an effort to show that a constructional account of event interpretation may have a universal application.

semantics which relies on lexical representations such as that in (1) is unsatisfactory. We examine the argument structures of morphological causatives derived by *-ify/-ize* affixation, and show that the argument structures are not fixed, but rather are syntactically and semantically variable. Given the conjecture that the affixes are “meaningful” units which derive the semantic properties of the verb (including its argument structure), one is forced to choose between two equally undesirable strategies in order to account for the variation: either affixal polysemy, whereby one affix is listed as having multiple functions, or multiple homophonous affixes are listed. We propose a more economic alternative -- that the affixes are semantically underspecified, with the consequence that the syntactic arguments found in morphological causative constructions cannot be licensed solely from the lexical assignment of thematic roles. The verbalizing affix, then, is not the semantic “head” of the derived word (at least not in the sense that has been adopted by such researchers as Williams (1981) and Lieber (1992)). This has implications for the theory of the lexicon and the semantic interpretation of derived lexical items in the grammar.

2.1 Traditional Approaches to Word Formation: The LEXICAL AFFIX Hypothesis

As noted in Chapter One, many proponents of generative theory subscribe, in one form or another, to a lexicalist view of word formation, which assumes a strict separation of lexical and syntactic information (the LEXICALIST HYPOTHESIS, first proposed in Chomsky (1970)). Individual proposals differ in the precise demarcation assumed between information contained in the lexicon and that which can be derived by general (i.e., syntactic) principles. Proponents of a “strong lexicalist” hypothesis, for example, do not allow for any morphosyntactic relationships. On this view, word formation is an independent component in the lexicon with which the syntax cannot interact (Lieber (1981), Williams

(1981), Selkirk (1982)). Proponents of a “weak lexicalist” hypothesis place idiosyncratic and unproductive relations in the lexicon, but allow for the generation of productive word formation (WF) relations by general syntactic principles (cf. Lieber (1992)).

Fundamental to most lexicalist theories of word formation, though, are the notions, firstly, that derivational affixes are classified on a par with lexical stems (thus having all of the information specified in their lexical entries that stems do), and secondly, that complex words have “heads” just as in syntactic theory phrases have heads. A verbalizing suffix like *-ize* then, is, on this approach, considered to be a “bound verb” (Lieber (1992)), and furthermore, to be the head of the word (Williams (1981a)). Thus, the affix determines the categorial and other information of the complex word (such as its argument structure properties). The precise characterization of the word-head, however, has been the subject of some dispute amongst generative morphologists.

2.2 A Strong Lexicalist Approach (Williams (1981))

An advocate of the strong lexicalist hypothesis, Williams (1981) assumes derivational morphology to be subject to exclusively lexical principles. Thus, while Williams presumes word structure to contain a head, he maintains that word-head identification is fundamentally different from phrasal-head identification. He proposes that the syntactic head of a phrase can be identified by the fact that it occupies one less bar level than the phrase. A morphological head, on the other hand, must be identified contextually (Di Sciullo and Williams (1987)), as the rightmost member of the word (viz. the Righthand Head Rule (RHR)). Thus, suffixes, but not prefixes are heads, as only a suffix can

(generally) determine the category of a word.¹ On this view, new words are derived by morphological operations on argument structure. Verbalization is achieved by the addition of an external argument to the argument structure of the nominal/adjectival stem. Argument structure is represented as a minimally-ordered list located in the lexicon, for which the thematic role labels originally proposed by Gruber (1976) -- AGENT, THEME, GOAL, SOURCE -- are adopted. For example, the argument structure for the verb *hit* is represented as follows, with only the external argument (AGENT) distinguished.

(2) **hit:** (AGENT, THEME)

Affixation is seen as a morphological rule which alters argument structure. This alteration can take place in only one of two ways: either an existing external argument can become internalized or a new external argument can be added. Crucial to the rule of affixation is the assumption that the input stem or word has an argument structure, and that this argument structure serves as the target for the word formation process. In the case of *-ify/-ize* affixation, the affix is assumed to add one argument to the argument structure of the input word by the following rule.

- (3) **Internalize X**
- (a) Set the external argument of the input word "equal to" X in the output word.
 - (b) Add a new external argument

¹ Noted counterexamples to the RHR include the English prefixes *en-* and *be-* which appear to derive verbs from nouns and adjectives. Williams suggests that these elements are exceptional heads. In Chapter Three, we discuss an alternative analysis proposed by Olsen (1993) in which the prefixes are attached to zero derived verbs and thus are not heads.

Because the input word is assumed to lexically select an external argument, the affixation process is represented as a two-step operation: the external argument is first internalized, then a new argument is subsequently added. The execution of this rule on an adjectival stem is shown in (4).

- (4) **Internalize Theme:**
 modern_A (THEME) \Rightarrow modernize_V (AGENT, THEME)

Here the adjective *modern* is lexically specified as selecting an external THEME argument. As a result of *-ize* affixation, this THEME is demoted to internal argument status, whereupon a new external argument, an AGENT, is added. Consider the following pair of sentences.

- (5) a. The house_{THEME} is modern.
 b. We_{AGENT} modernized the house_{THEME}.

The house in (5a) is the external argument of which the adjective is predicated, and is thus represented structurally as the subject. As a consequence of *-ize* affixation in the lexicon, the external argument is internalized (to be realized as the syntactic object), while a new external argument is added (to become the syntactic subject). Williams's analysis does not ascribe a particular meaning to the affix itself (i.e., it is not inherently listed as "causative"); however, the affix affects the compositional semantics of the output word by modifying the argument structure of the input. The semantic function of each argument is identified by the thematic role it is assigned in the lexical representation of the predicate. It follows therefore that the meanings of the two sentences in (5) are related. (5a) specifies that there exists a house and that the house is modern. (5b) specifies that there exists a house and,

furthermore, that some entity acts upon the house such that it becomes modern (paraphrased, [y be *modern*] → [x cause y become *modern*]).²

In sum, Williams's analysis of word formation assumes a strong form of the lexicalist hypothesis in which *-ify/-ize* affixation is viewed as a lexical operation on argument structure. The suffixes function as the word-head (and hence affect the argument structure) because they are the rightmost element in the word.

2.2.1 Problems with Williams' Analysis

While the assumption that adjectives have an associated argument structure representation is relatively uncontroversial, this is not clearly the case for nouns. Hence, a real problem for Williams' approach is in the treatment of nominal stems. Consider for example the sentence below.

- (6) a. John_i is a fool_i.
 b. fool: (R)

Williams argues that nouns do have an external argument, labelled R for "referential". The coindexation in (6a) indicates that *John* is linked to the external argument (R) of *fool*, a relation he refers to as the predication relation. Thus, the external argument of *fool* is *John*.

² As shown in (i), the operation of *-ify* affixation is identical to the *-ize* operation outlined above. (ia) can be paraphrased as [y be *solid*] and (ib) as [x cause y become *solid*].

(i) a. The structure_{THEME} is solid.
 b. The builders_{AGENT} solidified the structure_{THEME}.

Much like verbalizing the adjectival stem then, verbalizing the noun presumably causes the external argument (and its referent) to internalize in order to allow for a new external argument. (7) illustrates how this works for the denominal verb *fool*.

- (7) a. John is a fool.
b. Bill fooled John.

The external argument of *fool* refers to *John*, so to internalize this external argument is to internalize *John*. A new external argument is then added to the sentence in (7b).

2.2.1.1 Variable Semantic Relationships

The problem is that the semantic relationship between the verb and the internalized argument appears not to be preserved (as it was in the deadjectival construction above, for example). While (7b) might be interpreted as Bill made a fool of John, consider the examples in (8) and (9) below.

- (8) a. Bill is a father. = [y a father]
b. John fathered Bill. ≠ [x cause y become a father]
- (9) a. Vera is a nurse. = [y a nurse]
b. Darlene nursed Vera. ≠ [x cause y become a nurse]

At issue here is the functional interpretation of arguments in the sentence pairs. (8b) does not mean that John turned Bill into a father, (9b) does not mean that Darlene turned Vera into a nurse. Williams's theory does not take into account these semantic distinctions. On his analysis, the argument of the base predicate receives a semantic role which is demoted

in the derived argument structure. Thus, the internal argument of the derived verb is expected to bear the same semantic relationship to it as it did to the nominal stem before the affixation process. However, in the sentences given in (8) and (9) it is the external arguments that bear the relevant semantic role (*John* is a father in (8b) and *Darlene* is a nurse in (9b)). Clearly, the internal arguments in (8) and (9) have acquired different semantic properties as a result of the conversion of the noun predicate to a verb, suggesting that the relationship between the internal argument and the denominal verb is not the same as the relationship between the external argument and the base noun. Even more problematic are sentences like the following.

- (10) a. John doctored the results.
 b. Andrew ferried the children to school.
 c. Leah parachuted into the jungle.

In these sentences, neither the internal nor the external argument of the derived verb bears a referential relationship to the stem (i.e., the subject NP *John* is not a doctor in (10a) nor is the object NP *the results*).

Thus far, we see that Williams' analysis faces a serious empirical challenge from denominal zero-derived verbs like $\text{father}_N \rightarrow \text{father}_V$. As the following examples illustrate, *-ify/-ize* affixed denominal verbs pose a similar challenge. Hence, the 'Internalize X' operation appears to be limited in its application to deadjectival verbs.

- (11) a. The rose_i is my apology_i.
 b. *I apologized the rose.
 c. I apologized.

- (12) a. Food_i is energy_i.
 b. *Bill energized the food.
 c. The food energized Bill.

Assuming that the external argument (**R**) of the predicate noun refers to, and is coindexed with, *the rose* in (11a), then on Williams's account, the derivation of *apologize* would trigger the internalization of this argument before adding a new one (and similarly in (12)). However, in neither of the above examples can the putative external argument of the noun internalize and become the thing acted upon by the derived external argument. (11b) is ungrammatical because the verb *apologize* never has an internal argument (cf. **John apologized Bill*), and (12b) is ungrammatical because, although *energize* does have an internal argument, it is not related to the external argument of the base noun. Bill does not energize the food, rather, the food energizes Bill. The ungrammaticality of these examples suggests that verbs derived from nouns via affixation of *-ify/-ize* do not internalize the external argument of the base noun.

2.2.1.2 Variable Adicity³

Another argument against Williams' lexicalist approach concerns the adicity properties of the derived denominal verbs. If we assume that nouns have an external argument to internalize, and affixation of *-ify/-ize* adds an external argument, then the output of the operation should be a transitive verb, as the stem would have one argument and the affix would also have one argument to contribute. The following data appear to support this.

³ The adicity (or valency) of a verb expresses how many arguments the verb takes. For example, a monadic verb takes one argument, a dyadic verb takes two arguments, and so on.

- (13) a. The man burglarized the safe.
 b. Children everywhere heroize Superman.
 c. Bill terrified/terrorized John.

Unfortunately, however, the general transitivity pattern of *-ify/-ize* affixed verbs is not consistent. While the derived verbs in (13) are transitive, the verbs in the following examples are intransitive.

- (14) a. John empathized (with the victims).
 b. *John empathized the victims.
- (15) a. John apologized.
 b. *John apologized Mary.

This is not what we would expect given what we have said so far. To complicate matters further, some derived verb forms appear as either transitive or intransitive depending on the semantics of the argument(s) with which they occur. The following sets of data are a case in point.⁴

⁴ Individual judgements concerning the use of these verbs may vary depending on how the event that is denoted is perceived. The judgements given in (16)-(19) concerning the technical use of *crystallize* and *ionize* were provided by Dr. Penelope Coddling of the Department of Chemistry, University of Calgary. The judgements of a chemist are included here because a chemist makes finer distinctions in the event types denoted by this technical terminology that illustrate clearly how the adicity properties of a verb are affected by the semantic properties of the arguments that it appears with. Similar distinctions are made in the general vocabulary.

- (16) a. The carbon crystallized.
b. *The chemist crystallized the carbon.
- (17) a. The sodium chloride ionized in the water.
b. *The chemist ionized the sodium chloride.

The verb *crystallize*, as it is used in (16a), is intransitive with a meaning roughly, [y become *crystal*]. As indicated by the ungrammaticality of (16b), it is not possible on this reading to transitivize it. The explanation for this fact rests with the referent of the argument, not with the interpretation of the verb itself. The event denoted by the sentence in (16) is one in which the substance carbon undergoes an event of crystallizing. Because of properties inherent to it, under the appropriate conditions, carbon will crystallize spontaneously in nature (i.e., it will undergo a crystallizing event without an external source to initiate it). In fact, carbon will only crystallize spontaneously. It is impossible for an external agent, for example a chemist, to cause this event. Hence, the verb *crystallize*, when appearing with an argument like carbon, can only be used intransitively and this is due to the inherent nature of the participant involved in the event. The same holds true for the ionization of sodium chloride, as indicated in (17).

The examples below, however, depict just the opposite situation.

- (18) a. The chemist crystallized the AZT.
b. *The AZT crystallized.
- (19) a. The chemist ionized the drug.
b. *The drug ionized.

In this case, the derived verbs are all transitive with the meaning roughly [x cause y become...]. The (b) examples show that with these theme arguments it is not possible for the verbs to appear intransitively. Again, this can be explained as a consequence of the semantic properties of the arguments. In (18), it is the chemical compound AZT rather than the substance carbon that undergoes the event of crystallizing. There is nothing in the nature of this compound, however, which enables (or requires) that it crystallize; therefore, it will only do so if an external participant causes the event. Thus, the availability of an external argument depends on the denotation of the internal argument. More generally, the syntactic properties depend on the event denoted, not just the verb.⁵

Now, it is reasonable to assume that the root nominal *crystal* is the same in both sets of examples above (as is the root *ion*). The question then is, what of the affixes? Must we posit, for example, *-ize*₁, *-ize*₂, ...*-ize*_n in order to account for the syntactic variability? This seems counter-intuitive considering that, for example, the action denoted by the verb *crystallize* is the same regardless of whether it is AZT or carbon that is undergoing the action. Put another way, there appear to be two verbs *crystallize*, one transitive, the other intransitive. The roots are semantically identical as are the derived verbs, the sole difference being one of argument structure. Inasmuch as the derived verb forms are

⁵These sorts of adicity alternations are evidenced in non-derived verbs as well. It has been noted by Ritter and Rosen (1997), for example, that the verb *break* appears in different syntactic frames depending on what is doing the breaking. Observe the grammaticality differences in the following examples (recall from the discussion of *break* in Chapter 1, section 1.1.2, that these types of alternations are precisely the reason given by Ritter and Rosen for assuming a constructional approach to event semantics).

- (i) a. John broke the vase.
b. The vase broke.
- (ii) a. Heather broke her promise.
b. *Her promise broke.
- (iii) a. *The gods broke the storm.
b. The storm broke.

similar, however, it is not obvious that this argument structure difference warrants individual lexical listings of each particular verbalizing affix.

2.3 A Weak Lexicalist Approach (Lieber (1992))

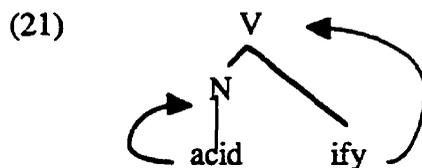
An alternative analysis of verb formation is offered by Lieber (1992), who assumes a much weaker version of lexicalist theory than does Williams. Rather than adhering to the strict view that word formation is determined by unique morphological rules, Lieber assumes that both words and phrases are generated by one general set of principles, that is, syntax and morphology are not separate components of the grammar. However, hers is still a lexicalist theory in that word structures are assumed to project from the lexicon (in accordance with the Projection Principle). Listed in (20) are the most important assumptions and claims made by Lieber in her analysis of derivational morphology.

(20)

- a. The lexicon lists all the idiosyncratic information about morphemes, both free and bound (thus including lexical stems as well as derivational and inflectional affixes).
- b. The lexical entry of each morpheme contains a phonological representation, a semantic representation (LCS), and where relevant, an indication of the syntactic category to which it belongs, as well as a Predicate Argument Structure (which gives the mapping between LCS and syntactic structure).⁶
- c. Bound morphemes further specify their morphological subcategorization.

⁶ Rather than a simple listing of arguments, Lieber proposes a more highly articulated representation of semantic structure (cf. Carter (1976), Hale and Keyser (1986, 1987), Rappaport and Levin (1988), Jackendoff (1987, 1990), Carrier and Randall (1989)). On this approach, a distinction is made between lexical-semantic and lexical-syntactic relations, referred to respectively as Lexical Conceptual Structure (LCS) and Predicate Argument Structure (PAS). LCS decomposes a verb's meaning into substructures containing primitive predicates like CAUSE, GO, COME TO BE IN A STATE, etc., whereas PAS contains only an ordered list of the verb's arguments.

As in other lexicalist theories, the meaning of a morphologically complex word is assumed to derive from the decomposition of the word into its constituent morphemes (stem + affixes). Thus, affixes are assumed to have meaning in the same way as full lexical items do. Lieber's is a weaker approach, however, as complex words are presumed to be formed according to the principles of X'-constituent structure as well as a general set of Licensing Conditions which serve to fix the position of the heads of both the words and phrases. Morphemes are inserted into unlabelled binary-branching trees according to the information specified in their lexical entries. Category and other morphosyntactic information is then percolated up into the phrase structure in accordance with two primary percolation conventions. The first pertains to the percolation of the features of the head morpheme and the second to the percolation of non-head features. The English verbalizing suffix functions as the head of the derived verb and will thus determine its morphosyntactic features. The derivation of an *-ify* affixed verb, with the percolation of the categorial features of the head morpheme, is illustrated in (21).



With Williams, Lieber assumes that the meaning of verbs derived by *-ify/-ize* affixation is accomplished by an operation on the argument structure of the stem. The two approaches differ only in that, while Williams assumes the affix to add an external argument (labelled AGENT), Lieber assumes the affix to add a CAUSE predicate. This difference stems from the fact that, while Williams assumes argument structure to consist of a simple listing of arguments that distinguishes only an external argument, Lieber assumes a more articulated,

predicate decompositional approach to argument structure (see footnote 5). On this view, variables in the Lexical Conceptual Structure (LCS) are linked to those in the Predicate Argument Structure (PAS) by a set of linking rules. Thus, the representation for the verb *put* is as follows.

- (22) **Put**
- a. LCS: [_{Event}CAUSE [_{Thing} x], [_{Event}GO [_{Thing} y], [_{Place}AT [_{Place} z]]]
- b. PAS: (x (z (y)))⁷

The LCS in (22a) denotes an event in which an entity, represented by the variable *x*, causes another entity represented by *y*, to undergo a change in location to *z*. The three arguments (*x*, *y*, *z*) in the PAS in (22b) correspond to the three variables in the LCS. Specific θ -roles are not necessary as the ordered argument array in the PAS is projected from the LCS. Crucial to this approach is the assumption that the primitive predicates that make up a verb's internal structure recur in the definitions of many verbs, and that different verbs can share LCS representations and thus have similar meanings (and, concomitantly, similar syntactic properties).

The verbalizing affixes *-ify/-ize* are assumed to be bound verbs, having all the properties of regular lexical verbs including lexical entries that specify syntactic category membership and argument structure. A verbalizing affix is able to change the LCS of the base by adding semantic material. Such changes may then in turn give rise to changes in PAS. In other words, changes in argument structures are a consequence of semantic changes at the

⁷ The PAS is ordered such that the outermost or least-embedded argument is external, and the innermost argument is internal.

level of LCS, and all arguments in the PAS must be licensed by an LCS predicate. Lieber proposes the LCS and PAS representation below for *-ize*.

- (23) **ize**]_{N,A} _____]v
 LCS: CAUSE [_{Thing} x], [BE LCS of base]]
 PAS: (x(...))

(23) specifies that *-ize* adds the semantic predicate CAUSE to the LCS of whatever noun or adjective it attaches to. This CAUSE predicate carries with it an argument position which in turn is mapped onto the external argument in the PAS of any verb formed with *-ize*. The LCS of the stem, in effect, merges with the LCS of the affix to produce the composite LCS of the resulting word. The examples shown in (24)-(26) below illustrate how this works for the same adjectival stem, *modern*, that was considered in (4) and (5) above.

- (24) a. The house is modern.
 b. They modernized the house.

- (25) **modern:** LCS: [_{State}BE [_{Thing} y] [_{State}MODERN]]
 PAS: (y)

- (26) **modernize:** LCS: [_{Event}CAUSE [_{Thing} x], [_{Event}BECOME [_{Thing} y], [_{State}MODERN]]]
 PAS: (x(y))

The adjective lexically selects the abstract predicate BE, which comes with one argument slot (25). The addition of *-ize* adds the abstract predicate CAUSE, and consequently another argument, so that the resulting word has two arguments (26). Because the external

argument is linked to the CAUSE predicate, it is interpreted as the CAUSER (a fact that causes problems for Lieber's analysis, as we shall see).

2.3.1 Problems with Lieber's Analysis

Lieber's theory of argument inheritance has some features in common with the argument operations approach proposed by Williams; both assume that the verbalizing affix operates on the lexically specified argument structure of the stem, with the end result that an external argument is added. The critical difference between Lieber and Williams is that, while Williams assumes a strict separation of morphology and syntax, Lieber derives the properties of words and sentences from the same basic principles of grammar. Crucially though, both are considered lexicalist theories on the assumption that affixes, like stems, are lexically listed with an argument structure representation, and thus, are able to function as the head of a word. As a consequence, Lieber's analysis suffers the same problems as Williams' analysis.

For example, assuming an argument inheritance approach to verbalization, it is not immediately obvious how the semantic structures for denominal verbs are derived. Consider the following derivation for the verb *hospitalize*.

- (27) a. **hospital:** [_N _____]
 LCS: [_{Place}]
- b. **ize:**]_{NA} _____]_v
 LCS: CAUSE [_{Thing} x], [BE LCS of base]]
 PAS: (x(...))

c. **hospitalize:**LCS: CAUSE [_{Thing} x], BECOME [_{Place}]

PAS: (x)

The representations in (27) point to a number of problems for the theory of argument inheritance as proposed by Lieber. While a noun has an LCS representation indicating approximately what its meaning is, the LCS has no primitive predicate associated with it, and consequently no PAS. The lexical representation of *-ize* is assumed to always specify a CAUSE predicate and an associated argument. The LCS that results from affixation of *-ize* to the nominal stem will still have only one predicate and consequently, only one argument. Hence, the merging of the two LCSs does not lead to a correct representation of the meaning of *hospitalize*. There is only one primitive predicate available to project an argument into PAS. The representation above would require the verb to have the following usage.

(28) *John hospitalized. (=John caused a hospital to come into existence?)

Another problem for Lieber's analysis concerns the assumption that *-ify/-ize* affixation creates verbs of particular lexical semantic classes. Proponents of semantic class theories claim that verbs fall into identifiable classes based on shared meaning components, and shared meaning components lead to shared syntactic behavior. Levin (1993) identifies and catalogues a substantial number of semantic classes of verbs whose members share similar syntactic properties. For example, one class she identifies is the "Orphan Verb" class, which she defines as verbs that can be paraphrased so that the noun stem is a predicative complement of the verb *make* (1993:184).

- (29) a. The accident orphaned the boy.
 b. The accident made the boy an orphan.

The noun stem names an entity. So, presumably, verbalization entails the addition of the CAUSE predicate (with consequent argument) such that (in rough semantic paraphrase) [y be *an entity*] → [x cause y be an entity]. Some orphan verbs created by *-ify/-ize* affixation are provided below.

- (30) a. The linguist verbified the noun.
 b. The linguist made the noun a verb.

- (31) a. Violence victimizes us all.
 b. Violence makes us all victims.

However, as the examples in (32)-(33) demonstrate, the meanings of the stem and affix alone are not sufficient to predict class membership.

- (32) a. The thief burglarized the safe.
 b. *The thief made the safe a burglar.
- (33) a. Jackson cannibalized the airplane.
 b. *Jackson made the airplane a cannibal.

As in (30)-(31), the denominal *-ize* verbs in (32)-(33) are transitive, but the derived verbs do not have the same semantic interpretation. The meanings of *burglarize* and *cannibalize*

are “x act like burglar” and “x act like cannibal”, rather than “make x a burglar/cannibal”. On this point, it might be countered that perhaps the verbs in (32)–(33) form a semantic class to the exclusion of those in (30)–(31). However, this seems counter-intuitive, as the noun stems *victim*, *cannibal* and *burglar*, which all denote people, seem a better choice for a class membership (as opposed to *verb* and *victim*). Yet, verbs derived from these stems do not display a consistent pattern.

2.3.1.1 -ize and the CAUSE predicate

There is an even more critical problem for Lieber’s analysis, however, which stems from her assumption that the function of the verbalizing affix is to add a CAUSE predicate. Because they often form verbs with the meaning ‘to make or do’ (recall discussion in Chapter One, section 1.2.1), *-ify/-ize* are sometimes referred to in the literature as “causative affixes” (for example, Levin and Rappaport Hovav (1995)). Hence, it is not surprising that Lieber would specify such a component of meaning in her investigation of the affixes. Crucially, though, not all *-ify/-ize* verbs are causative. Recall the verbs given in (16)–(17) above, repeated below in (34)–(35).

- (34) a. The carbon crystallized.
 b. *The chemist crystallized the carbon.
- (35) a. The sodium chloride ionized in the water.
 b. *The chemist ionized the sodium chloride.

These examples demonstrate that the addition of a causer to the event denoted is explicitly ruled out. Similarly, intransitive verbs like *apologize* (discussed in (15)) could not be adequately treated on Lieber’s analysis. Hence, we submit that it is problematic to suppose

that the affixes specify a cause component. Due to the inherent problems in both Williams' and Lieber's analysis, we further suggest that *-ify* and *-ize* do not contribute any argument structure information to the complex verbs they form. Thus, the fundamental notion embodied in the lexicalist approach to word formation, that the suffixes are the heads of the words they create, contributing the fundamental semantic and syntactic features of the word, is not borne out. While we assume that the lexical entry for the suffixes must contain information concerning their subcategorization properties, we do not assume any argument structure information; *-ify* and *-ize* are not "bound verbs" in the sense suggested by Lieber (1992).

2.4 Summary

In sum, we have seen that *-ify/-ize* affixation creates a range of verbs exhibiting both syntactic and semantic variability. We have also noted that this variability seems not to be predictable from the semantic representation of the affix, contrary to what has been argued by lexicalist theories. Affixation does not create verbs of a particular adicity, neither does it create verbs of a particular semantic class. For theories which adhere to the complementary ideas that (i) verbalizing affixes determine argument structure and (ii) arguments are projected from the lexicon, this is problematic and requires the postulation of multiple lexical listings for the verbalizing affix. Thus, even Lieber, who rejects the strong form of the lexicalist hypothesis by admitting general principles to derive both word and phrase structure, is unable to account for the data. The fundamental problem of the lexicalist approach is the assumption that the verbalizing affix has meaning in the same sense that lexical stems have meaning. This assumption is derived from the suggestion, first put forward by Bloomfield (1933), that there is a one-to-one correspondance between form and

meaning. Thus, each derivational affix is assumed to be biuniquely associated with a function. We have just seen counterevidence to this approach, however, in terms of the variability in the argument structure properties of *-ify/-ize* affixed verbs.

CHAPTER THREE

The EVENT AFFIX Hypothesis

In this chapter, we analyze the aspectual properties of *-ify/-ize* affixed verbs, observing that these verbs characteristically denote delimited events in the sense of Tenny (1994). We suggest that, therefore, the most logical approach to take in the analysis of the affixes is not in terms of argument structure, as was suggested by the approaches discussed in Chapter Two, but rather, in terms of event structure.

3.0 INTRODUCTION

In Chapter Two, we demonstrated that the argument structure properties of a complex verb in English cannot be derived solely from the putative argument structures of the constituent stem and affix, that is, that the meaning of the whole cannot be neatly broken down into the meaning of the component parts. It appears, rather, that something else, in addition to the meaning of the particular morphemes involved, contributes to meaning. In this chapter, we postulate that this additional component of meaning is syntactic event structure. We propose that *-ify* and *-ize* are semantically underspecified FUNCTOR elements and thus are unable to contribute any thematic information to the verb complex. Such being the case, it then follows that an *-ify/-ize* verb and its arguments must get an interpretation by some other means. Building on the work of Ritter and Rosen (1993), we suggest that the arguments of the derived verb receive an aspectual interpretation from the role they play in the event denoted. Furthermore, we claim that the affixes function to contribute the event structure that is necessary for this interpretation. Hence, we label them EVENT AFFIXES. The chapter is organized as follows. First, in section 3.1, we discuss the notions FUNCTOR PREDICATE and aspectual licensing, as they apply to our explanation of *-ify/-ize* affixed verb

constructions. In section 3.2, we discuss the notion of delimitedness as it is presented in Tenny (1994), and highlight some of the tests that are commonly used to identify delimited events. Then, in section 3.3, we use the tests discussed in 3.2 to demonstrate that *-ify/-ize* verb constructions are delimited. We propose the EVENT AFFIX HYPOTHESIS in which we claim that the affixes contribute to the semantic interpretation of the verb complex only insofar as they indicate the delimitedness of the event. In section 3.4, we provide motivation for our hypothesis by analyzing the relevant derived verb constructions vis-à-vis the aspectual particle *up* and the aspectual prefixes *en-* and *be-* in English. We show that these elements have the same function as, and occur in complementary distribution with, the verbalizing suffixes. We then conclude our discussion in section 3.5.

3.1 Functor Predicates and Aspectual Licensing

So far we have concluded that a highly specified lexical semantic representation for the verbalizing affixes *-ify* and *-ize* is unsatisfactory, as such a representation is unable to account for the variability in the derived verbs' argument structure properties. Therefore, in this section, we propose that the affixes are semantically underspecified in that they do not contain any thematic argument structure information. If the affixes are underspecified, then an alternative account must be given of how and where the arguments that appear in the derived verb construction are licensed. We provide an alternative account by extending the complementary ideas of functor predicates and aspectual licensing, postulated by Ritter and Rosen (1993).

3.1.1 A Preliminary Discussion of Argument Licensing

Since Chomsky (1986), it is generally assumed that each element in a sentence must be licensed, in that it must be related to another element in the sentence by a general principle. This has come to be known as LICENSING THEORY. Argument XPs are assumed to be licensed by θ -role assignment, which takes place (or is determined) in the lexicon.¹ The following examples illustrate some of the possible θ -role relationships that can exist between a verb and its arguments.

- (1) a. John_{AGENT} built the house_{THEME}.
 b. Sarah_{AGENT} kicked the ball_{THEME} into the net_{GOAL}.

In recent independent work, Grimshaw (1991) and Tenny (1994) examine a further dimension of argument interpretation, namely, the aspectual or eventive dimension. They both propose that arguments may bear α -(aspectual) roles as well as θ -roles. While Tenny focuses on the role that internal arguments play in the structure of an event, Grimshaw concentrates on the role of the external argument. Compare the sentences in (2) below, illustrating some of the possible α -roles of arguments, with those in (1). Here, we combine the CAUSER label used by Grimshaw and the MEASURE and TERMINUS labels employed by Tenny.²

¹ Williams (1980) also proposes a separate licensing mechanism for predicates, which is adopted by Rothstein (1990, 1991).

² See section 3.2 for further discussion of Tenny's use of the α -role labels MEASURE and TERMINUS.

- (2) a. John_{CAUSER} built the house_{MEASURE}.
 b. Sarah_{CAUSER} kicked the ball_{MEASURE} into the net_{TERMINUS}.

Crucially, α -roles do not replace θ -roles. As Tenny notes,

Aspectual role labels give us a very specific kind of information about the aspectual nature of the argument's participation in the event. This information is often subsumed in thematic role labels, but thematic role labels themselves lack the precision in definition for there to be a perfect mapping from aspectual roles to thematic roles.

(Tenny (1994:99))

One way to characterize this distinction is to say that the thematic dimension focuses on the action of the verb, while the aspectual dimension focuses on the endpoints of the event. Thus, θ -marked arguments are entities that directly participate in the action (for example, in the case of *build*, the AGENT is the entity that builds and the THEME is the entity that is built), whereas, α -marked arguments are entities that delimit the event (the CAUSER is the entity that instigates the building event and the MEASURE is the entity that defines its endpoint). It is often the case that agent and causer refer to the same entity. However, as we discuss in the following subsection, the causer of the event may, in some cases, not be the agent of the action.

3.1.2 Non-Thematic Arguments

Ritter and Rosen (1993) are the first in the literature to propose that not all verbs are able to assign θ -roles to their arguments (with the consequence that some arguments that appear in

the syntax are not thematically licensed). They analyze the English verb *have* and observe that this verb can have several different meanings in different contexts. In particular, they note the contrast shown in (3).

- (3) a. John had someone repair his car yesterday. \Rightarrow John is a causer
 b. John had someone steal his car yesterday. \Rightarrow John is an experiencer

They propose a unified analysis of *have* in which they claim that *have* has no independent semantic content; its various interpretations, they argue, are derived from the syntactic structure. They call verbs like *have*, that lack a lexically specified semantics, FUNCTOR PREDICATES. By way of illustration, let us consider (3a). This sentence is an example of the periphrastic causative construction (also referred to in the literature as the analytic or syntactic causative). It is formed by the co-occurrence of two separate verb forms (in this case, *have...repair*), which constitute a complex predicate in the syntax. Ritter and Rosen (henceforth R&R) demonstrate that the external argument in this type of construction is an indirect causer, and as such, does not participate directly in the action named by the main verb. For example, in (3a) John does not engage in the action of repairing. What John does is instigate an event in which the car is repaired. Hence, John marks the beginning point of the complex event. R&R utilize a van Voorst-style schematic to illustrate the addition of a precipitating cause or initiator to an otherwise saturated predicate. We provide the schematic representation of the predicate structure of sentence (3a), in (4) below.

- (4) John had Bill repair his car.

| | |
|------------------------------|--|
| <i>repair the car</i> | ●-----repair the car-----● |
| <i>have + repair the car</i> | ●-----cause-----●-----repair the car-----● |

The participants involved in the event denoted by the main verb are the NPs *Bill* and *the car*. *Bill* is the participant that engages in the action denoted by the verb (i.e., he is the agent of *repair*). Thus, R&R observe that the extra NP *John* is only indirectly involved in the repairing event. Rather than engaging in, or being affected by, the action of the verb, *John* simply instigates the action and hence is interpreted as the event initiator or causer. The function of *have* in this scenario is to provide the syntactic structure necessary for the insertion of the extra argument. Crucially then, this argument must be post-lexical as it is interpreted solely by the role it plays in the event denoted. R&R propose that, rather than being θ -selected by the verb, indirect causers like the one depicted in (4) are α -selected by the event. Thus, while most arguments bear both θ -roles and α -roles (cf. (1) and (2)), some arguments bear only α -roles.

3.1.3 *-ify/-ize* as Functor

We extend Ritter and Rosen's analysis of *have* to the verbalizing affixes *-ify* and *-ize*. We propose that like *have*, *-ify* and *-ize* are semantically underspecified functor elements that contain no argument structure information, and thus, are unable to assign thematic roles in the lexicon. Let us briefly reconsider the argument structure facts discussed in Chapter Two in light of this new proposal.

We noted that in the case of adjectives (which are assumed to lexically select an external argument), the affix appears to add a new argument, while at the same time, demoting an existing argument to internal argument position. The relevant example is repeated below in (5).

- (5) a. The house_{THEME} is modern.
 b. We_{AGENT} modernized the house_{THEME}.

Such cases are not problematic for the lexicalist theories of Williams (1981) and Lieber (1992), who assume that the affix adds an external causer argument. However, in some instances, the affix does not appear to add any arguments, as illustrated in (6) and (7).

- (6) a. The egg yolk was solid.
 b. The egg yolk solidified.

- (7) a. **solid:** [_{State}BE [_{Thing} y] [_{State} SOLID]]
 b. **solidify:** [_{Event}BECOME [_{Thing}y] [_{State} SOLID]]

In (7) the affix does not function to add an argument, but simply changes [_{State}BE] to [_{Event}BECOME]. We postulate that in fact the affix never adds an argument; it has no θ -roles to discharge. If there are any θ -roles to be assigned, they are assigned by the lexical stems to their arguments. Hence, in the case of *We modernized the house*, *the house* is thematically related to the adjectival stem *modern*. The external argument, however, is clearly not related to the stem, nor to the affix. The affix, we argue, functions to provide the eventive context in which the argument(s) can be interpreted. *We* is interpreted as the causer of the modernizing event, as shown in (8).³

³ It is not entirely clear at this point whether *we* also functions as the agent of *modernize*, however, this point is not critical for our analysis. What is crucial here is that the external argument is not a thematic argument of either stem or affix, and in the (potential) absence of a thematic licensing mechanism, is still able to receive an aspectual interpretation.

- (8)
- | | | | |
|-----------------|-----------|------------|--------------------|
| | <u>We</u> | modernized | <u>the house</u> . |
| θ-roles: | | | |
| | AGENT? | | THEME |
| α-roles: | | | |
| | CAUSER | | MEASURE |

The NP argument *the house* may be thematically related to the adjective *modern*, and hence, may bear a θ -role (for example, THEME). We assume the argument *We* is a causer in the sense of R&R and is assigned an interpretation based on the aspectual role it plays in the event denoted. Crucially, the affix itself does not add an argument; it simply provides an event context in which an argument may be interpreted.

This same analysis can be applied to the denominal constructions as well. The denominal verbs were a problem for both Williams and Lieber for the same reason that the intransitive deadjectival constructions in (6) and (7) were a problem. The variable adicity properties manifested by the constructions were left unaccounted for. Some examples of transitive and intransitive denominal verbs are given in (9) and (10).

- (9) a. The carbon crystallized.
 b. *The chemist crystallized the carbon.
- (10) a. *The patient hospitalized.
 b. They hospitalized the patient.

We suggest that these constructions can be given the same treatment as the deadjectival constructions. The affix does not add any arguments. It simply marks an event and in this derived event context, argument NPs may receive an aspectual interpretation.⁴

Having provided a preliminary discussion of the underspecified nature of the affixes, we now turn towards a more detailed account of the kind of information the affixes do contribute. In the following sections, we present evidence that *-ify* and *-ize* serve as markers of delimitation.

3.2 Delimitedness

The most comprehensive discussion of delimitedness to date is provided by Tenny (1994). Tenny defines delimitedness as, “the property of an event’s having a distinct and inherent endpoint in time” (1994:4). Of the four Vendler/Dowty aspectual classes -- accomplishment, achievement, activity and state -- only accomplishments and achievements are delimited.

(11) Aspectual Classification:

| <i>States</i> | <i>Activities</i> | <i>Accomplishments</i> | <i>Achievements</i> |
|---------------|-------------------|------------------------|---------------------|
| know | run | paint a picture | notice |
| believe | walk | make a chair | spot |
| have | swim | draw a circle | die |

⁴ We shall consider the variable semantic and syntactic properties of both deadjectival and denominal verbs in more detail in Chapter Four when we discuss the syntactic representation of events.

For example, in the sentence *John painted a picture*, John performs the activity of painting until a picture is completed; the completion of the picture marks the endpoint of the event (in contrast to a sentence like *John ran*, in which John can perform the activity of running for an indefinite period of time). Thus, the event denoted by *paint a picture* is an accomplishment. Like accomplishments, achievements also have a definite endpoint. In the sentence *John noticed the mistake*, the event ends once the mistake is noticed. Unlike accomplishments, however, achievements are perceived as occurring spontaneously, without a specifiable activity or process that leads up to the endpoint.

The fundamental characteristic of delimited events is that they specify an endpoint. The endpoint is generally associated with the internal arguments of the verb (cf. van Voorst (1988)). Tenny describes the direct internal argument as the element that ‘measures out’ the event. For example, the event denoted by the creation verb in (12a) is understood as progressing through various stages or increments of change and *the house* functions as the measure of that change. An indirect internal argument can also play a role in delimiting an event. In (12b), the event denoted by the change of location verb is seen as progressing through the displacement of the measure argument and *the garage* functions to terminate this displacement.

- (12) a. John built the house_{MEASURE}
 b. John drove his car_{MEASURE} into the garage_{TERMINUS}

These examples illustrate that both the direct internal argument (12a) and indirect internal argument (12b) can function to delimit the event.

3.2.1 General Tests for Delimitedness

As a result of their aspectual differences, each event type listed in (11) can be distinguished by the form of time adverbial it can take, and by the entailments it has in the presence of certain adverbial modifiers.

3.2.1.1 *in x time/for x time*

The time adverbials *in x time* and *for x time* are commonly used to distinguish between delimited and non-delimited events. For example,

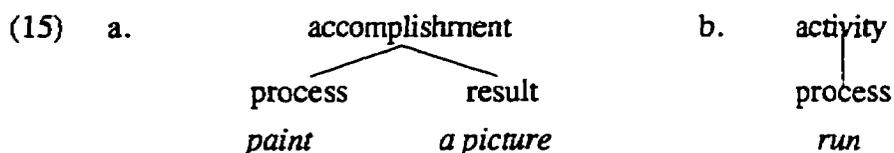
- (13) a. John painted the picture in an hour.
 b. John painted the picture for an hour.

- (14) a. *John ran in an hour.
 b. John ran for an hour.

The *in*-phrase is used to modify the endpoint of an event. Thus, it is compatible with accomplishments (13), but not activities (14).⁵

⁵ While achievements are also delimited, they cannot be identified by the same tests as accomplishments and must be treated separately. Hence, we postpone a discussion of achievements until section 3.2.2.

In (13a) John is understood as performing the activity of painting for an hour, after which time the picture is complete, thus ending the event. In (14a) John performs the activity of running for an hour, after which time he stops running, but, crucially, there is no sense in which the event was necessarily terminated by the attainment of a specified goal. As indicated further in (13b), accomplishments may sometimes co-occur with a *for*-phrase. However, the entailment that results from this modification is not the same as the entailment noted for activities. Dowty (1979:57) states that, for an accomplishment ϕ , if $x \phi$ ed for y time, then at any time during y , $x \phi$ ed is not true. The event *John painted the picture for an hour* does not entail that the picture is complete, only that John decided to stop painting. For an activity, on the other hand, if $x \phi$ ed for y time, then at any time during y it is true that $x \phi$ ed. The event *John ran for an hour* does entail that John ran. This difference in entailments can be explained by the complex structure of accomplishments as compared to the simplex structure of activities (a distinction proposed by Pustejovsky (1992)).



A *for*-phrase always modifies a process. Thus, if it occurs in an accomplishment structure like (15a), it will modify only a sub-part of the event; it crucially does not have scope over the result. If the *for*-phrase modifies an activity it modifies the entire event. An *in*-phrase, on the other hand, always modifies a result. Thus, an activity (by definition result-less) can never co-occur with an *in*-phrase.

3.2.1.2 Aspectual Modifiers: *stop*, *almost* and *finish*

The entailments of accomplishments and activities also differ when appearing as the complement of the aspectual verbs *stop* and *finish*, or when modified by the adverb *almost*.

- (16) a. John stopped painting the picture. \nrightarrow the picture was painted
 b. John stopped running. \Rightarrow John ran.

As indicated in the above examples, if *stop* selects an activity the entailment that ensues is that the event denoted by the verb did occur. Hence, the sentence *John stopped running* implies that John did perform the activity of running. However, if *stop* selects an accomplishment there is no such entailment. If *John stopped painting the picture*, it is not necessarily the case that a picture has been painted, only that John stopped the activity of painting. Similarly, when modified by the adverbial *almost*, activities and accomplishments have different entailments. *Almost* can modify either a process or a result. Therefore, because of the complex nature of its event type, an accomplishment has two possible entailments when occurring with this adverbial. In example (17a) below, if *almost* modifies the process part of the event, then the resulting entailment is that John did not begin painting (i.e., John almost began to paint, but did not). In the same example, if *almost* modifies the result part of the event, then the entailment is that John almost completed the painting of the picture. On the other hand, for the activity in (17b) (which comprises only a process) if *John almost ran*, there is only one possible entailment and that is that John did not begin the running event.

denotation, the *for*-phrase, which modifies a process, is not felicitous with an achievement, as illustrated in (19).

(19) *John noticed the mistake for 5 minutes.

(20) indicates that, like accomplishments, achievements may be modified by an *in*-phrase.

(20) John noticed the mistake in a few minutes.

(or) It took John a few minutes to recognize the mistake.

However, the entailments are not the same for achievements as they are for accomplishments. For an accomplishment, if x ϕ ed in y time, then it is true that during y time, x ϕ ed (hence, if *John painted the picture in an hour*, it is true that during that hour John was painting a picture). For an achievement, if x ϕ ed in y time, it is not true that during that time x ϕ ed (for example, *John noticed the mistake in five minutes* does not imply that during those five minutes John noticed the mistake, only that it took five minutes for John to achieve the result of noticing).

Furthermore, as illustrated in (21) and (22) below, achievements cannot occur as the complements of either *finish* or *stop* (the latter is only possible on an iterative reading, in which the event is interpreted as occurring repeatedly).

(21) *John finished noticing the mistake.

(22) *John stopped noticing the mistake.

Because the structure of an achievement lacks a durative or process component, it is best modified by a punctual adverbial, as in (23).

(23) John noticed the mistake immediately.

In sum, the primary difference between an achievement and an accomplishment is that, while an accomplishment is a complex event consisting of a process plus a result, an achievement consists of only the result and thus lacks duration.⁶ In section 3.3, we will demonstrate that *-ify/-ize* verbs are all delimited (i.e., they are all either accomplishments or achievements), but first we provide evidence that delimitation is a property of a predicate in the syntax. It need not be lexically specified with the verb, as the aspectual classes listed in (11) would seem to suggest.

3.2.3 Syntactic Delimiters: verb particles and resultative phrases

It has long been recognized that the aspectual interpretation of an event is affected by the presence of linguistic material inside the VP. For example, consider the sentences in (24) below.

- (24) a. John ran.
 b. John ran up a huge bill.
 c. John ran himself ragged.

⁶ However, as Tenny notes, duration is a relative term and therefore the line between accomplishment and achievement is not always clear.

- (25) a. John hammered the nail.
 b. John hammered the nail in.
 c. John hammered the point home.

The event denoted by the verbs *run* and *hammer* in (24a) and (25a) are activities, as indicated by the fact that they take a *for-phrase*, but are infelicitous with an *in-phrase*.

- (26) a. John ran for an hour/*in an hour.
 b. John hammered the nail for five minutes/*in five minutes.

However, this aspectual classification can be shifted from an activity to an accomplishment by the addition of a verb particle (24b)-(25b) or resultative secondary predicate (24c)-(25c). That the eventuality denoted has become delimited is indicated by the fact that they are felicitous with an *in-phrase*, as shown in (27).

- (27) a. John ran up a huge bill in an hour.
 b. John hammered the point home in an hour.

In traditional lexicalist theory, this fact is explained as being the result of a lexical process that allows verbs to switch from one lexical semantic class to another.⁷ However, as has been noted by Tenny (1994) and Ritter and Rosen (1997) among others, although a delimiting argument is always internal, not all internal arguments are delimiters. In

⁷ Cf. Levin and Rapoport's (1988) theory of Lexical Subordination or Rappaport Hovav and Levin's (1997) theory of Free Composition. They claim that a lexical activity can become a syntactic accomplishment by the addition of an argument which can serve as a measure or terminus for the event (but that an accomplishment cannot be turned into an activity by an analogous process).

sentence (25a) above, the event is an activity even though the verb takes an internal argument. Furthermore, the sentences in (28) below are ambiguous between an accomplishment and activity reading, as indicated by their co-occurrence with either an *in*-phrase or a *for*-phrase.

- (28) a. Jane brushed her hair for an hour/in an hour.
 b. John swept the floor for an hour/in an hour.

Finally, many verbs may be interpreted as either delimited or not depending upon the semantic properties of the internal argument they occur with, as indicated by the following contrast.

- (29) a. Bill played the piano for an hour/*in an hour.
 b. Bill played the sonata for an hour/in an hour.

In (29a), the NP argument *the piano* cannot be interpreted as an event measure, whereas *the sonata* in (29b) can. These examples demonstrate that the aspectual class of the predicate is not fixed by the lexical properties of the verb; it depends in part on the nature of other material that appears in the verb phrase. In particular, delimitation is not solely a lexical property of the verb. In the next section, we examine the aspectual properties of *-ify/-ize* affixed constructions using the entailment tests just discussed. (We return to a discussion of aspectual particles in section 3.4.)

3.3 An Aspectual Analysis of *-ify/-ize* Affixed Verb Constructions

Having determined the functional nature of the affixes, and defined the essential components of delimitedness (providing the necessary tests that help identify delimited events), we now turn to an aspectual analysis of *-ify/-ize* affixed verbs.

3.3.1 The Data

Verbs derived by *-ify/-ize* affixation demonstrate a fairly wide range of properties. Consider the sentences in (30) below.

- (30) a. The Egyptians mummified the body of King Tut.
 b. The actor memorized his lines.
 c. The carbon crystallized.
 d. John realized his mistake.
 e. Heather apologized.

At first glance, there appears to be no *prima facie* semantic reason for considering these verbs together as representative of a single unifying process. The events they denote may name a change of state or a change in location; the subject may be an experiencer or a causer; the verb may be transitive or intransitive. The one thing they do have in common, however, is that the events they denote are all delimited. Delimited events are characterized as having an inherent endpoint and, as noted by Tenny, in a prototypical transitive sentence, this endpoint is provided by the internal argument of the verb. In this section, we show that the internal arguments of *-ify/-ize* affixed verbs conform to Tenny's definition of delimiting arguments.

3.3.2 Accomplishments

The sentences in (30a) and (30b) exemplify the canonical accomplishment. They are repeated below in (31) and (32), along with their semantic paraphrases.

- (31) a. The Egyptians mummified the body of King Tut.
 b. [x cause y be *mummy*]
- (32) a. The actor memorized his lines.
 b. [x cause y be in *memory*]

For each event, an entity *x* engages in an activity or process which has an effect on another entity *y*, such that *y* undergoes a change of state or location. It is the completion of this change that terminates the activity of *x*, thereby delimiting the event. For example, the internal argument *the body of King Tut* in (31a) delimits the event of mummification by progressing through measurable degrees of change until it reaches a stage where it has acquired the properties of a mummy, at which time it can be said that the event has been accomplished. That the event is delimited can be demonstrated by employing the *for x time/ in x time* test.

- (33) The Egyptians mummified the body of King Tut in an hour/for an hour.

The fact that the *in*-phrase, which modifies the endpoint of the event, is compatible with the eventuality referred to in (33) confirms that the event is delimited. The examples below further demonstrate the delimitedness of the event.

(37) -ify/-ize Affixation:

- a. John crystallized the solution.
- b. Satan demonized the child.

(=(58)-(60) p. 59, Rosenberg (1995))

(38) Zero Derivation:

- a. John hammered the nail.
- b. John refereed the basketball game.

(=(53)-(54) pp. 56-57, Rosenberg (1995))

Fundamental to Rosenberg's analysis is the assumption that zero derivation and *-ify/-ize* affixation are two different verb-forming processes, and that this accounts for the semantic differences between the two derived verb types. However, derived verbs cannot always be classified as accomplishment or activity based on the word-formation process used to derive them. In the following subsection, we demonstrate that not all *-ify/-ize* affixed verbs are accomplishments, some are achievements. This fact supports our proposal that *-ify/-ize* verbs are delimited.⁸ We show that the problem with Rosenberg's analysis lies in her assumption that derived verbs belong to particular lexical aspectual classes.

3.3.3 Achievements

Recall that achievements differ from accomplishments in that they specify only the delimiting result. Lacking a process subevent, they are perceived as occurring

⁸ In Chapter Four, we further demonstrate that not all zero-derived verbs are activities.

spontaneously. The event denoted in sentence (30d), repeated here in (39), is an example of this.

(39) John realized his mistake.

Although there is no real measurable process that John goes through in the event of realization, the event does nevertheless have a terminus or result -- John delimits the event by undergoing a mental change of state in which a mistake becomes real in his mind. The delimitedness of the event denoted is indicated by applying the aspectual tests, as in (40).

- (40) a. John realized his mistake immediately.
 b. *John realized his mistake for an hour.
 c. *John finished realizing his mistake.
 d. *John stopped realizing his mistake.

These examples demonstrate that *realize* is an achievement. It cannot occur as the complement of either *finish* or *stop*, as indicated in (40c) and (40d), nor can it be modified by the process time adverbial (39b). It can, however, be modified by the punctual adverbial *immediately* (40a), indicating that in some cases *-ify/-ize* affixation must create achievements. Even more compelling are derived verbs that exhibit variable aspectual properties, as shown in (41) and (42) below.

- (41) a. The farmer fertilized his field in an hour/for an hour.
 b. The farmer stopped fertilizing his field.
 c. The farmer finished fertilizing his field.

- (42) a. The sperm fertilized the egg *for an hour/?in an hour/immediately.
 b. *The sperm stopped fertilizing the egg.
 c. *The sperm finished fertilizing the egg.

The verb in the first set of examples denotes an accomplishment, as indicated by the entailment tests. The same verb in the second set of examples denotes an achievement. These examples provide further evidence for the fact mentioned in section 3.2.3 that the aspectual classification of an event is determined, not by the lexical semantic properties of the verb alone, but by the syntactic predicate – the verb and the other elements in the VP. The aspectual interpretation of *fertilize* depends upon the internal argument it appears with, *fertilize the egg* versus *fertilize the field*. In the first case, the internal argument *the egg* cannot be partially fertilized; there is no measurable process that an egg goes through when it becomes fertilized. A field, on the other hand, can be partially fertilized; for example, a farmer can fertilize only half of his field. Hence, *fertilize the field* denotes both a process and a result. This observation is not captured by Rosenberg's assumption that *-ify/-ize* affixed verbs belong in a particular lexical semantic class.

3.3.4 Derived Intransitive Verbs

So far we have dealt only with transitive verbs whose grammatical object delimits the event by providing the necessary measure. However, not all *-ify/-ize* verbs are transitive, as illustrated by the following.

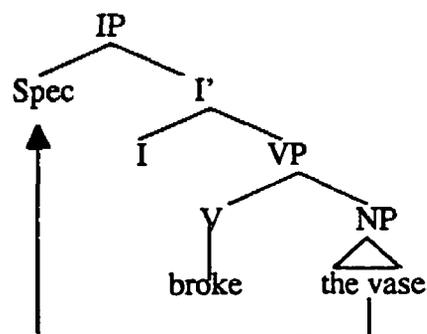
- (43) a. The carbon crystallized.
 b. The cherry tree fructified.
 c. The egg yolk solidified.

In this subsection, we demonstrate that examples such as (43) are unaccusative, which means that the surface subject is underlyingly a direct object, and hence is also able to function as a measuring argument. We first outline some of the properties of unaccusative verbs, as well as one test that is commonly used to diagnose unaccusativity. We then apply this diagnostic to the intransitive *-ify/-ize* affixed verbs.

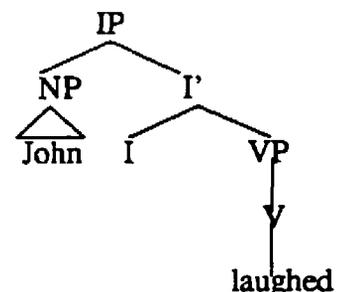
3.3.4.1 Unaccusativity

Since Perlmutter (1978), intransitive verbs are generally assumed to subdivide into two classes, the unergative class and the unaccusative class. One well-known fact about the unaccusative class is that the single argument of an unaccusative verb exhibits object-like properties, despite the fact that it appears as the subject in the syntax. This fact is most often attributed to its syntactic configuration. It is argued that the underlying syntactic structure of unaccusative verbs differs from that of unergatives in that, while the sole argument of an unergative verb is the external argument (a deep subject), that of an unaccusative is an internal argument (deep object). The surface subject of an unaccusative is thus assumed to be derived via NP movement of the internal argument out of the VP. The contrasting D-structure representations are given in (44) below (abstracting away from irrelevant detail).

(44) a. Unaccusative:



b. Unergative:



One construction that is commonly used as evidence of, and a diagnostic for, the structural differences depicted in (44) is the resultative construction. Levin and Rappaport Hovav (1995:34) define a resultative as ‘an XP which denotes the state achieved by the referent of the NP it is predicated of as a result of the action denoted by the verb’. As shown in (45), this XP is typically either an (a) AP or (b) PP.

- (45) a. Billie drank the barrel [_{AP} dry].
 b. The patient bled [_{PP} to death].

One well-known property of a resultative phrase is that it is object-oriented, that is, it must be predicated of the direct internal argument of the verb. It may not be predicated of an external argument. For example, in (45a), it is *the barrel* not *Billie* that is dry. Furthermore, as shown below in (46), a resultative may not be predicated of an indirect internal argument.

- (46) a. I shot him dead.
 b. *I shot at him dead.

Resultatives, then, because they must be predicated of a direct internal argument, are able to distinguish unaccusatives, which have an internal argument, from unergatives, which do not. As the following examples demonstrate, unergative verbs cannot co-occur with a resultative secondary predicate (47), while unaccusative verbs can (48).

- (47) Unergative:
- a. *The fans shouted [_{AP} hoarse].
 - b. *Patti worked [_{PP} to the bone].

- (48) Unaccusative:
- a. The patient bled [_{PP} to death].
 - b. The iceberg broke [_{AP} apart].

Further evidence for the structural distinction is the fact that if a non-subcategorized NP is added to an unergative verb, then it may occur with the resultative. Compare the examples in (49) to those listed in (47).

- (49) a. The fans shouted themselves hoarse.
- b. Patti worked her fingers to the bone.

In (49a), a false reflexive has been added to the clause and in (49b), an expletive body part has been added. False reflexive and expletive body part NPs are a syntactic device used to provide the internal argument necessary for the resultative predicate to occur (Simpson (1983), Levin and Rappaport Hovav (1995)). As the examples in (50) show, neither type of NP is a subcategorized argument of the verb.

- (50) a. *The fans shouted themselves.
- b. *Patti worked her fingers.

Their sole function is to provide an argument which the resultative may be predicated of. In other words, they transform a non-delimited event into a delimited one by adding a

measuring argument. This strategy cannot be used in cases where an internal argument already exists. Thus, unaccusative predicates cannot contain a false reflexive or expletive body part, as indicated in (51). However, as shown in (52), they readily accept a resultative secondary predicate.

- (51) a. *The patient bled himself to death.
 b. *The iceberg broke itself apart.

- (52) a. The patient bled to death.
 b. The iceberg broke apart.

This fact can be explained on the assumption that the surface subject of the unaccusative construction is in fact a derived one, functioning underlyingly as the NP object. In this context, the resultative is licensed by the trace of this moved NP. (This trace also blocks insertion of a non-thematic object such as a false reflexive or expletive body part).

- (53) a. The patient_i bled t_i [_{PP} to death].
 b. The iceberg_i broke t_i [_{AP} apart].

3.3.4.2 Unaccusative *-ify/-ize* Verbs

Returning to the verbs listed in (43), we can now demonstrate that these intransitive *-ify/-ize* affixed verbs are of the delimited unaccusative type by subjecting them to the resultative diagnostic just discussed. As illustrated in (54), the verbs can occur with a resultative phrase.

- (54) a. The carbon crystallized into diamond.
 b. The egg yolk solidified into a rubber mass.

That the event is measured out, is indicated by the examples in (55) – neither a false reflexive, nor an expletive body part can occur in the resultative.

- (55) a. *The carbon crystallized its molecular bonds into diamond.
 b. *The egg yolk solidified itself into a rubber mass.

The aspectual tests for delimitation further confirm that these constructions are delimited. For example, the fact that the verbs can be modified by an *in*-phrase suggests that the events they denote have an inherently specified endpoint.

- (56) a. The carbon crystallized in a year.
 b. The cherry tree fructified in a year.
 c. The egg yolk solidified in an hour.

Thus, we conclude that, like the transitive verbs discussed in sections 3.2.2 and 3.2.3, the intransitive verbs derived by *-ify/-ize* affixation denote delimited events. The single NP argument serves to measure out the event.⁹

⁹ *Apologize*: an apparent problem

The verb *apologize* in example (30e), repeated below, is also a derived intransitive verb. However, as the following examples indicate, this verb does not appear to be unaccusative.

- (i) Heather apologized.
 (ii) *Heather apologized to death.
 (iii) *Heather apologized (back) into his heart.

In sum, we have made use of the aspectual tests defined in 3.2.1 to demonstrate that *-ify/-ize* affixed verbs, both transitive and intransitive alike, denote delimited events, either accomplishments or achievements.¹⁰ The individual affixes are classified in the literature as verbalizing suffixes because they create verbs from nominal and adjectival stems.

The grammatical subject is not the affected argument (cf. *crystallize* and *humidify*). It denotes, not the object of termination, but rather the object of initiation. Thus, the verb has no internal argument to measure out the event. Nevertheless, as indicated by the entailment tests below, the event it denotes is a delimited one. (The sentence *Heather apologized* means something like “Heather made an apology”).

- (iv) Heather apologized to John for an hour/in an hour.
- (v) Heather finished apologizing to John.
- (vi) Heather stopped apologizing to John.

Further evidence that the event is delimited comes from the fact that a measuring argument, such as a cognate object or false reflexive, cannot be added. Recall that events that are already measured out (delimited) cannot occur with this alternative measuring option. The examples below with the transitive *-ify/-ize* verbs illustrate this fact.

- (vii) *John crystallized a beautiful crystal.
- (viii) *John terrified an awesome terror.

Thus, like other delimited verbs, the verb *apologize* is unable to appear with these optional measuring NPs.

- (ix) *Heather apologized an honest apology.
- (x) *Heather apologized herself hoarse.

The behavior of *apologize* suggests that it is an achievement. As the following examples illustrate, it has an iterative interpretation when occurring as the complement of *stop*, and is not ambiguous with the adverbial modifier *almost*.

- (xi) Stop apologizing!
- (xii) John almost apologized. \Rightarrow no apology was made

(xi) implies that an apology was made a number of times. To stop apologizing does not entail that an apology was left incomplete (cf. *stop painting the house*), or that an unbounded activity was ceased (cf. *stop running*). It means that another apology was not made. This is an entailment of achievements. Therefore, we conclude that the derived verb *apologize*, like *crystallize*, *humidify* and *solidify*, denotes a delimited event.

¹⁰ One small set of exceptions to this general observation, consists of the verbs *sympathize* and *empathize*. As the following examples indicate, these verbs are not delimited.

- (i) a. * John sympathized/empathized with Bill in an hour.
- b. * John finished sympathizing/empathizing with Bill.

Because the interpretation of these verbs is quite different from the rest, it is possible that their meanings are lexicalized.

However, because these affixes form only eventive verbs, specifically, delimited eventive verbs, we suggest that they be analyzed as **EVENT AFFIXES**. We define an event affix as a morphological means of marking delimitation; it contributes nothing else to the semantic interpretation. In the next section, we motivate our hypothesis by examining the behaviour of *-ify/-ize* affixed verbs in relation to two other aspectual markers in English, namely, the aspectual particle *up* and the prefixes *en-* and *be-*.

3.4 Motivating an **EVENT AFFIX** Hypothesis

3.4.1 Event Affixes and the Aspectual Particle *up*

In this subsection, we discuss English verb-particle constructions such as those in (57), which we argue provide one piece of syntactic evidence for our analysis of *-ify/-ize* as event affixes.

- (57) a. The officer wrote up the ticket.
 b. Monica looked up the number.
 c. The vandals slashed up my tires.

One particularly striking fact about these particles is that they are never used in conjunction with *-ify/-ize* affixed verbs. We claim that the reason for this complementarity, is that *-ify/-ize* and the particle *up* have the same function, to indicate the delimitedness of a given event. First, in section 3.4.1.1, we present some of the basic syntactic and semantic facts about verb-particle constructions. Then, in section 3.4.1.2, we discuss the relevancy of these constructions for our analysis of derived verbs.

3.4.1.1 Characteristics of the Verb-Particle Construction

Verb-particle constructions, with their unique semantic and syntactic properties, have generated much debate in the linguistic literature for the past several years. One fundamental concern in many studies of the verb-particle construction is delineating the distinction between it and constructions that resemble it, that is, the prepositional object ('pure' prepositions) and the adverbial prepositional phrase ('pure' adverbial) (for example, cf. Bolinger (1971), Fraser (1976) Keyser and Roeper (1992)). One of the most definitive characteristics used to identify the verb-particle construction is the ability of the particle and the object to alternate in transitive constructions. A true particle can appear on either side of the object noun phrase, whereas a preposition can only appear before the noun phrase, and an adverbial must appear after the noun phrase. The examples below illustrate these distinctions.

(58) Verb-Particle Constructions:

- a. The officer wrote up the ticket.
- b. The officer wrote the ticket up.

(59) Prepositional Object Constructions:

- a. Bill agreed to the terms.
- b. *Bill agreed the terms to.

(60) Adverbial Constructions:

- a. *I left behind the books.
- b. I left the books behind.

Regarding true particle-constructions like the one illustrated in (58), a further concern exists in characterizing the semantic function of the particle, as well as providing a syntactic account for the particle-object alternation exhibited in (58a) and (58b). With respect to the semantic properties of verb particles, there is a general perception that the particle contributes something to the aspectual interpretation of the verb.¹¹ For instance, Bolinger (1971), Kayne (1984), Hoekstra (1988) and Aarts (1989) note that some particles have a ‘resultative’ function. An example of a resultative particle is given in (61).

- (61) a. He ran the flag up.
 b. He ran up the flag.

Bolinger states that verb-particle constructions like *run up* denote an action and at the same time a result. For example, in the sentences *He ran up the flag* or *He ran the flag up*, there is a sense in which the flag is run in an upwise direction and that as a result the flag is “up”. However, it is also noted that particles do not always indicate a specific result. Consider now the following examples.

- (62) a. Monica looked the number up.
 b. Monica looked up the number.
- (63) a. The officer wrote the ticket up.
 b. The officer wrote up the ticket.

¹¹ In Chapter Four, we develop a structural analysis of completive *up* based on our analysis of *-ify/-ize* affixation, in which we address the issue of the particle-object alternation.

In the sentences *Monica looked the number up* and *The officer wrote the ticket up*, there is no sense in which *the number* or *the ticket* are “up”. These cases are referred to by Bolinger as ‘perfectives’ and by Fraser (1974) as ‘completives’. Brinton (1988) refers to this *up* as a marker of telic aktionsart used to indicate the endpoint of an action. She argues that it has no concrete lexical meaning, but contributes to aspectual interpretation by adding telicity or delimitedness to an otherwise durative situation. Similarly, Denison (1985:37) refers to *up* as the “aktionsart particle par excellence”, as it is the particle that occurs in the largest number of verb-particle constructions, and when used in the sense just described, is a ‘pure and otherwise colourless completive’. We therefore limit our discussion to just this particle, and only in this completive or telic sense.¹² Such a particle can convert an activity into an accomplishment, as illustrated in the following pairs of sentences.

- (64) a. Marion chopped the nuts.
 b. Marion chopped up the nuts.
- (65) a. Jim folded the tent.
 b. Jim folded up the tent.

That the particle serves to add an endpoint or goal to the situation described, is demonstrated by the entailment tests in the following examples.

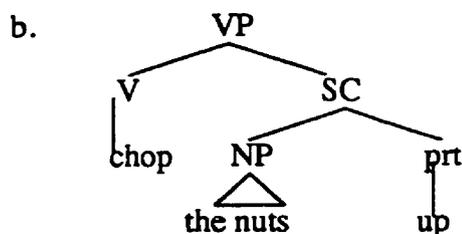
¹² Note that we are interested in just those examples of *up* constructions in which a delimited sense is imparted. There are other, idiomatic ways in which *up* can be used, which we do not discuss. Examples of these include *make up* (as in *Sarah and Bill made up*), and *put up* (as in *Sarah put up with Bill's overspending*). We postulate that idiomatic particle constructions must be given a separate analysis.

- (66) a. Marion chopped the nuts for five minutes/?in five minutes.
 b. Marion chopped up the nuts in five minutes/*for five minutes.
- (67) a. Jim folded the tent for ten minutes/?in ten minutes.
 b. Jim folded up the tent in ten minutes/*for ten minutes.

The events denoted in the (a) examples are ambiguous between a delimited and non-delimited reading; the construction may be modified by either a *for*-phrase or an *in*-phrase. However, as indicated in the (b) examples, the addition of *up* serves to enforce a delimited reading; the particle construction may not be modified by the *for*-phrase. Thus, the event interpretation is no longer ambiguous. In these examples, the addition of the particle does not add specific meaning, only the sense of completeness or delimitedness.

Hoekstra (1988) also recognizes the aspectual nature of such verb particles and proposes a small clause analysis for them. He postulates that *up* functions as the head of a resultative secondary predicate, as follows.

- (68) a. Marion chopped [the nuts up].



One critical point to Hoekstra's small clause analysis of particles is that it is not possible to have other complements besides the small clause complement. He cites the following examples as evidence for this.

- (69) a. The sleepers patted their sleeping bags [down].
 b. The sleepers patted their sleeping bags [flat].
 c. *The sleepers patted their sleeping bags [flat] [down].
 (under the resultative reading of both flat and down)

(=(59) p. 164, Hoekstra (1992))

Hoekstra's analysis thus predicts that resultatives cannot co-occur with aspectual verb-particle constructions, a prediction that is not borne out, as the following examples from Bolinger (1971) indicate.¹³

- (70) a. Marion chopped the nuts up.
 b. Marion chopped the nuts fine.
 c. Marion chopped the nuts up fine.

Hence, we conclude that, while the particle *up* in *chop the nuts up* does have an aspectual function, it does not (contra Hoekstra (1988)) head a resultative predicate. In the following subsection, we suggest a unified approach to completive *up* and the event affixes *-ify/-ize*.

¹³ Similarly, notice that example (69c) becomes grammatical if the particle (*down*) and resultative (*flat*) are switched, as illustrated in (i) below.

- (i) a. * The sleepers patted their sleeping bags flat down.
 b. The sleepers patted their sleeping bags down flat.

This contrast in grammaticality is puzzling on the assumption that both elements head a resultative secondary predicate; both constructions should be equally bad. In Chapter Four, we develop a syntactic analysis in which the particle is positioned higher in the structure than the resultative.

3.4.1.2 A Unified Approach to *up* and *-ify/-ize* Affixation

In this subsection, we show that aspectual *up* has the same function as, and occurs in complementary distribution with, the verbalizing affixes *-ify/-ize*. First, we examine pairs of derived verbs in which the same lexical stem may undergo either *-ify/-ize* affixation or zero derivation. We show that, in general, when such pairs occur, the zero-derived forms have a non-delimited interpretation, whereas the *-ify/-ize* affixed verbs have a delimited one.¹⁴ We then demonstrate that for the non-delimited zero-derived verbs, aspectual *up* can often be added to produce a delimited reading. However, *up* cannot be added to an *-ify/-ize* verb in a similar manner. Finally, we show that *-ify/-ize* affixed verbs behave like verb-*up* constructions in that they can co-occur with a resultative secondary predicate.

To begin, consider the sentences in (71) below. These examples illustrate a pair of verbs derived by zero derivation in the first instance and *-ize* affixation in the second.

- (71) a. John motored down the highway. = activity
 b. John motorized the wheelchair. = accomplishment

To *motor down the highway* means roughly ‘to move along the highway by means of a motor vehicle’. In this case, the verb specifies a manner of travelling, but no inherent endpoint is implied. On the other hand, to *motorize a wheelchair* means ‘to provide a wheelchair with a motor’ and in this case the event denoted does have an inherent endpoint,

¹⁴ Note that this observation would seem to support Rosenberg’s claim (noted in section 3.3.2) that zero-derived verbs are activities and *-ify/-ize* verbs accomplishments. However, in Chapter Four we will show that while zero derivation often produces activities, it does not always do so, and we will provide a structural explanation of this fact.

that is, the wheelchair has a motor in it. The different aspectual properties of the verbs are indicated below by applying the usual tests.

- (72) a. John motored down the highway for days/*in days.
 b. *John finished motoring down the highway.
 c. John stopped motoring down the highway. \Rightarrow John did motor down the highway
- (73) a. John motorized the wheelchair *for an hour/in an hour.
 b. John finished motorizing the wheelchair.
 c. John stopped motorizing the wheelchair. \nRightarrow John did motorize the wheelchair

The examples in (72) illustrate that the event denoted by the verb *motor* is non-delimited. It cannot be modified by an *in*-phrase (as an *in*-phrase modifies an endpoint), it cannot occur as the complement of *finish*, and when occurring as the complement of *stop*, the implication is that the event denoted by the predicate did take place, an entailment of activities. The examples in (73) illustrate that the verb *motorize* is delimited. It can occur with the *in*-phrase, as well as the complement of *finish*, and, as with other accomplishments, when occurring as the complement of *stop*, there is no entailment that the event denoted by the predicate occurred. These examples demonstrate that the same lexical item can sometimes serve as the base for both zero derivation and *-ify/-ize* affixation, and that in cases of *-ify/-ize* affixation, the event denoted will be delimited. Other examples of verb pairs that manifest this alternation are provided below.

- (74) a. winterize (a vehicle) vs. winter (in Colorado)
 b. vaccuumize (the test tube) vs. vacuum (the carpet)

- c. weatherize (the decking) vs. weather (the storm)

Non-delimited zero-derived verbs can often obtain a delimited reading by the addition of aspectual *up*, sometimes with the same or similar meaning as an *-ify/-ize* affixed variant. Consider examples (75)-(77) below. In each case, an adjectival stem is combined with *up* in the (a) examples and *-ize* in the (b) examples.

- (75) a. A quick meeting was all that was needed to clear up the situation.
 b. A quick meeting was all that was needed to clarify the situation.
- (76) a. The ornate furnishings fancied up the room.
 b. The ornate furnishings fancified the room.
- (77) a. The near-fatal accident sobered up Larry.
 b. The near-fatal accident soberized Larry.

It is striking, however, that the *-ify/-ize* affixed variants cannot co-occur with the particle, as the following examples demonstrate.

- (78) a. *A quick meeting was all that was needed to clarify up the situation.
 b. *The ornate furnishings fancified up the room.
 c. *The near-fatal accident really soberized up Larry.

We argue that these data can be explained by assuming that *-ify/-ize* and *up* perform the same delimiting function, and therefore, occur in complementary distribution. Finally, consider the sentences in (79) below. These examples demonstrate that *-ify/-ize* verb

constructions, like the verb-*up* constructions analyzed in section 3.4.1, can co-occur with a resultative secondary predicate.

- (79) a. The carbon crystallized.
 b. The carbon crystallized into diamond.

We interpret these dual facts -- (i) that *-ify/-ize* and *up* cannot co-occur and (ii) that either can co-occur with a resultative -- as evidence that the two types of aspectual elements have the same delimiting function, and hence, occur in complementary distribution. In the next subsection we examine the aspectual nature of the English prefixes *en-* and *be-*, demonstrating that, as with *up*, these prefixes occur in complementary distribution with *-ify/-ize*.

3.4.2 The Prefixes *en-* and *be-*

Several morphological studies have appeared recently concerning the status of these verbal prefixes (cf. for example, Scalise (1988), Lieber (1992) and Olsen (1993)). Some examples of these prefixes are given below.¹⁵

- (80) a. [fog_N] > [be [fog_N]_V] 'to envelope in fog'
 b. [able_A] > [en [able_A]_V] 'to make able'

The critical issue in these studies is how to characterize the prefixes. As was noted in the previous chapter (section (2.1)), many morphological theories now incorporate the notion

¹⁵ Similar analyses have been undertaken for the Dutch and German prefixes *be-*, *en-* and *ver-*, for example, Wunderlich (1987), Hoekstra (1992) and Neeleman and Schipper (1992).

of 'head' in the structure of complex words. Recall that, under Williams' (1981) Righthand Head Rule (RHR) given in (81), prefixes cannot be heads.

(81) **Righthand Head Rule**

The head of a morphologically complex word is the righthand member of that word.

(Williams (1981:248))

The problem, then, derives from the observation that certain prefixes (like those in (80) above) appear to change the lexical category of the base and thus function as heads. This observation has led some researchers to posit a process of conversion to occur prior to the affixation of the prefix. It can then be assumed that the prefixes do not change the category of the base. For example, building on the work of Scalise (1988) and Neeleman and Schipper (1992), Olsen (1993) proposes the following Verbal Base Hypothesis (VBH).¹⁶

(82) **Verbal Base Hypothesis**

be-, and en- attach only to verbs.

{ be-, en- } + [verb]

* { be-, en- } + [adjective]

* { be-, en- } + [noun]

(Olsen (1993:9))

One argument for the possibility of the VBH is that the same prefixes that purportedly derive verbs from nouns and adjectives are also found on stems that contain overt verbalizing suffixes, as illustrated in (83).

¹⁶ Olsen (1993) also includes the prefix *de-* in her analysis, but as *de-* adds some additional semantic material to its base, we do not include it in our examination of event affixes.

- (83) a. live en+live+en
 b. dark be+dark+en
 c. capsule en+capsule+ate

Even if one does not assume the strong position taken by Olsen, (that the prefixes attach only to verbs), these examples do nonetheless illustrate that it is not necessary to assume that the prefixes must attach to nouns and adjectives; they may also attach to verbs. However, the VBH is made stronger by the fact that conversion of N/A stems to V is independently motivated for English, as seen in (84).

- (84) a. cloud_N > cloud_V
 b. thin_A > thin_V
 c. saddle_N > saddle_V

Significant for our purposes is the fact that, like *-ify/-ize* verbs, English *en-/be-* prefixed verbs are delimited, as the examples in (85) and (86) show.

- (85) a. The hunter ensnared the rabbit in an hour/*for an hour.
 b. The Red River engulfed the town in a day/*for a day.
- (86) a. The steam befogged all the mirrors in five minutes/*for five minutes.
 b. The costumer bewigged the cast in an hour/*for an hour.

The fact that the verbs can take an *in*-phrase, which modifies the endpoint of an event, suggests that the events they denote are delimited. Furthermore, the verbs cannot appear with a *for*-phrase with the intended reading that an activity was engaged in for x time. The

only available interpretation for the *for*-phrases in the above examples, is that the result of the action continued for x time. For this reason, Olsen postulates that the prefixes perform an aspectual function.

Further evidence that *en-/be-* verbs are delimited comes from the fact that they cannot co-occur with the aspectual particle *up*. Witness the examples in (87) and (88).

- (87) a. John tangled up the wires.
 b. John entangled the wires.
 c. *John entangled up the wires.
- (88) a. The steam fogged up the windows.
 b. ?The steam befogged the windows.
 c. *The steam befogged up the windows.

We have already noted the inability of *-ify/-ize* affixed verbs to co-occur with the particle *up*. This, we argue, is a significant fact about these particular affixes, especially in light of the fact that *up* can occur with other types of derived verbs such as those derived by *-en* suffixation and zero derivation. Compare (87) and (88) with the examples in (89) and (90) below.

- (89) a. These windows really lighten the room.
 b. These windows really lighten up the room.
- (90) a. The new florescent bulbs really light the room.
 b. The new florescent bulbs really light up the room.

As the examples in (91) indicate, however, neither *be-* nor *en-* prefix can co-occur with *-ify/-ize* affixed verbs. We propose that this ban on the co-occurrence of *en-/be-* with *-ify/-ize* results from the fact that these affixes play the same delimiting role.

- (91) a. *The chemist becrystallized the AZT.
 b. *The linguistics student enverbified the noun.

3.5 Summary

To summarize, we noted that the defining property of *-ify/-ize* verbs, *en-/be-* verbs and verb-*up* constructions, is that the events they denote are all delimited. We further noted that co-occurrence restrictions exist between these elements, for example, while *en-/be-* can co-occur with other verbalizing suffixes like *-en/-ate*, they cannot co-occur with *-ify/-ize*. We thus concluded that, like *-ify/-ize*, *en-* and *be-* must be aspectual affixes. We propose that *-ify/-ize*, *en-/be-* and *up* are all functor elements that serve as markers of delimitation. At this point we echo the words of Baker (1988), “that when two similar effects are observed, it is worth the effort to look for a common cause”. As this is one of the primary goals of the Principles and Parameters Theory, and as we are developing our analysis within this theory, we now propose to give these functor elements a unified structural treatment. In the next chapter, we develop a structural analysis of *-ify/-ize* affixed verbs that is consistent with the observations made in this chapter.

CHAPTER FOUR

The Syntactic Representation of Events

In this chapter, we develop a structural account of *-ify/-ize* affixation. We propose that the relevant affixes (what we have termed **EVENT AFFIXES**) head a functional projection in the syntax. Complex verb formation is derived by movement of a lexical stem into this functional projection through a process of **INCORPORATION**.

4.0 INTRODUCTION

Let us begin by briefly recapitulating the proposals made in Chapter Three. First, we posited that the English affixes *-ify* and *-ize* are semantically underspecified functor elements that contain no thematic argument structure information. We suggested that, rather than contributing thematic information, these affixes have an aspectual contribution to make. Specifically, we hypothesized that they serve as markers of delimitation, and thus, should be analyzed as event affixes. Then, we provided motivation for our hypothesis by demonstrating that *-ify* and *-ize* have the same function as, and thus cannot co-occur with, two other types of aspectual markers in English, the particle *up* and the prefixes *en-* and *be-*.

In this chapter, we suggest that the delimiting elements be given a unified structural treatment that accounts for the semantic and distribution facts noted in Chapter Three. In section 4.1, we provide a preliminary discussion of the theoretical background necessary for the development of our analysis. In section 4.2, we develop a syntactic account of *-ify/-ize* affixation in which we argue that the affixes head an aspectual functional projection labelled **FP-delimit**. In section 4.3, we extend our analysis to account for the other

delimiting functors, aspectual *up* and the *en-/be-* prefixes. Finally, in section 4.4, we show how our structural account of verb formation provides an explanation of the semantic properties of zero-derived verbs. In section 4.5, we provide some concluding remarks.

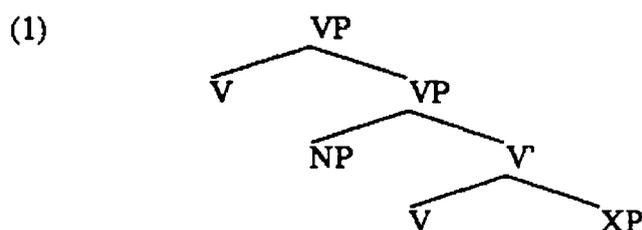
4.1 Theoretical Background

We first discuss the origins of phrase-structural approaches to event structure, beginning with the proposal by Hale and Keyser (1993) that verbal projections reflect aspectual structures, then, summarizing some of the arguments put forward by Borer (1993) and Ritter and Rosen (1997) for consigning aspectual information to functional, not lexical, projections in the syntax. Following that, we synthesize these proposals in order to derive the clausal architecture that we posit for the various event structure(s) in English.

4.1.1 L-Syntactic Event Structure (Hale and Keyser (1993))

Hale and Keyser (1993) (henceforth H&K) conceive of event structure as the l-syntactic projection of verbal templates. They propose that a verb decomposes into more primitive lexical components, each of which is identified with a particular notional type and canonical structural realization. Adjectives (A) are assumed to denote states or attributes and therefore must be predicated of something. Consequently, H&K assume that adjectives project a Spec position in which an argument may be generated. Prepositions (P) denote interrelations which, by definition, involve at least two entities. Hence, a preposition requires both a Spec and complement position to be projected. Nouns (N) denote instances or entities and so project a bare NP (no Spec or complement), as this denotation does not require a relation with another element. Finally, verbs (V) denote events in that they are generally dynamic or associated with change. Specific event structures, then, are assumed

to be the result of an abstract verb taking as its complement the projection of one of the other lexical categories. If a V takes as its complement the projection of another V, a causal relation is assumed (a relation H&K describe as a matrix event that “implicates” a subordinate event). Depicted below is the structure H&K assume represents the causative relation.



Each lexical item in the tree shown in (1) has some elementary notional content. The upper V governs a lower V, setting up a semantic causal relation. If XP=AP, then the lower V governs an A, setting up a change of state relation (specifically, an event implicates a state). If XP=PP, then the lower V governs a P, setting up a relational change (for example, a change in location). The argument NP is assigned a semantic interpretation based on its relation in the structure projected. Here, the NP occupying the Spec of the lower VP is interpreted as the affected argument or theme. The external argument or agent (not shown) is assumed to occupy the Spec position of a higher projection, presumably Spec of IP. Note here that the individual thematic notions, AGENT and THEME, do not exist as independently defined θ -roles, but are simply convenient labels used to identify semantic relations set up in particular structural configurations. In H&K’s words, “thematic terminology reflects the relational status of the NP in [a given] Spec position” (H&K (1993:70)). Fundamental to H&K’s proposal is the assumption that these semantic relations, while structurally encoded, are lexically determined. Hence, they term such

representations “I-syntactic” to indicate that these are structural configurations that are a property of the lexicon.

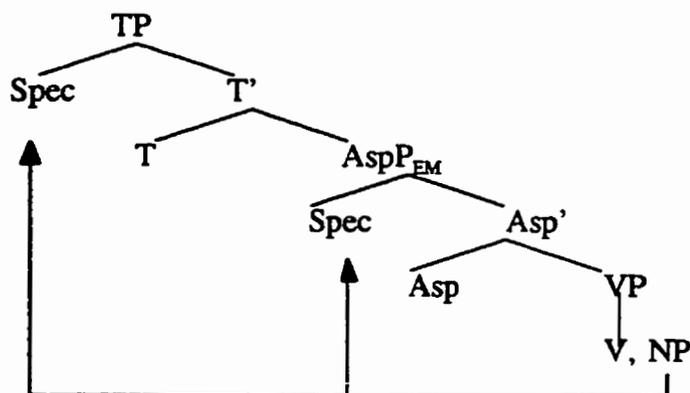
4.1.2 The Role of AspP (Borer (1993))

One prominent reaction against the idea that event information is a projection of (or exhaustively determined by) the lexical entry of a verb, is found in Borer (1993). She provides evidence from verbs in Italian, Dutch and Hebrew which suggests that the classification of a verb as either unaccusative (delimited) or unergative (non-delimited) “is not as stable and lexical-entry dependent as it is occasionally presented” (p. 20). Verbs that are generally classified as unergative can, under the right conditions, be interpreted as unaccusative. In other words, the single argument of a given intransitive verb in these languages is variable; it may be interpreted as a delimiting argument or not.¹ From these findings, Borer concludes that the lexical entry of verbs contains no information concerning the syntactic linking of arguments. The interpretation of an argument is determined by its position in the clause structure, that is, an argument becomes what it is by virtue of where it is. Unlike H&K’s approach, an NP is assumed to be integrated into hierarchical structure by moving into the specifier of a functional aspectual projection, either AspP_{EM} or AspP_{OR}. An NP in the Spec of AspP_{EM} will be interpreted as an EVENT MEASURE (in the sense of Tenny (1994)), whereas an NP in the Spec of AspP_{OR} will be interpreted as an EVENT ORIGINATOR.² The representation that Borer assumes for unaccusatives is given in (2), and the one for unergatives in (3).

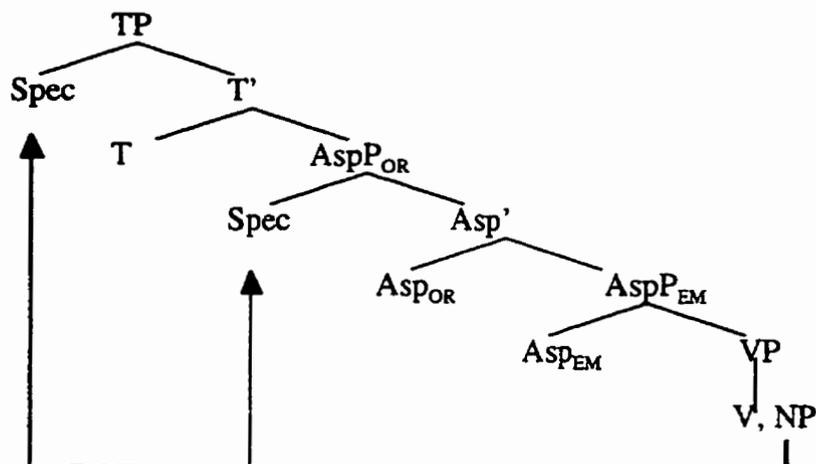
¹ For discussion of such variable behaviour verbs and the motivation for giving them a syntactic analysis, see Borer (1993).

² Borer’s assumption, that NP arguments move to the specifier of a F(unctional) P(rojection), receives some motivation from the fact that such movement has been independently proposed for case reasons (Chomsky (1992)). However, while Borer concurs that case is assigned to the

(2) Unaccusative Structure (Delimited)



(3) Unergative Structure (Non-Delimited)



On this approach, lexical projections are not hierarchically ordered; the single argument of the intransitive verb is not specified as external or internal. As a consequence of this unordered listing of arguments, the phrase structure of the verb does not include any internal structure. In the delimited structure in (2), the argument NP moves up into the Spec position of the aspectual functional projection AspP_{EM}, and, while in a Spec-Head

Spec of an FP, she does not assume that this is the reason for movement. Rather, on her approach, movement is motivated purely for aspectual considerations.

relation with the head of AspP_{EM} , receives an event measure interpretation. In the non-delimited structure in (3), AspP_{EM} is not specified, and the argument NP moves into AspP_{OR} , to receive an originator interpretation.

Thus, assuming event information is contained in the clausal syntax (as opposed to I-syntax) allows an explanation for why one and the same verb can be interpreted as delimited in one structure and not in another: in order for an event to be interpreted as delimited, it must have a measuring argument, and an argument is only interpreted as a measure if it moves into the Spec of an Asp_{EM} head. The postulation of aspectual projections also accounts for such distinctions in transitive constructions as that between the predicates *play the sonata* (which is delimited) and *play the piano* (which is not). In the first case, the argument NP moves into the Spec position of a specified AspP_{EM} and receives an event measure interpretation, and in the latter, the argument does not move into a specified AspP_{EM} .³ It is not obvious how such a distinction would be characterized on an I-syntactic approach. H&K assume that each lexical category has a canonical structural configuration. Hence, both playing events would be represented as a V taking a bare NP complement; the aspectual distinction would not be represented structurally. Instead, H&K would have to assume two lexical listings for the verb play -- *play*₁ and *play*₂. Such an assumption, however, would miss obvious generalizations that hold between the different uses of this verb.

³ Because Borer assumes that accusative case is also assigned in Spec,AspP_{EM} , even non-delimiting arguments must move there in transitive constructions. The difference, however, is that the projection is unspecified and thus does not assign an EVENT MEASURE role to the argument in its Spec.

4.1.3 Syntactic D-Events (Ritter and Rosen (1997))

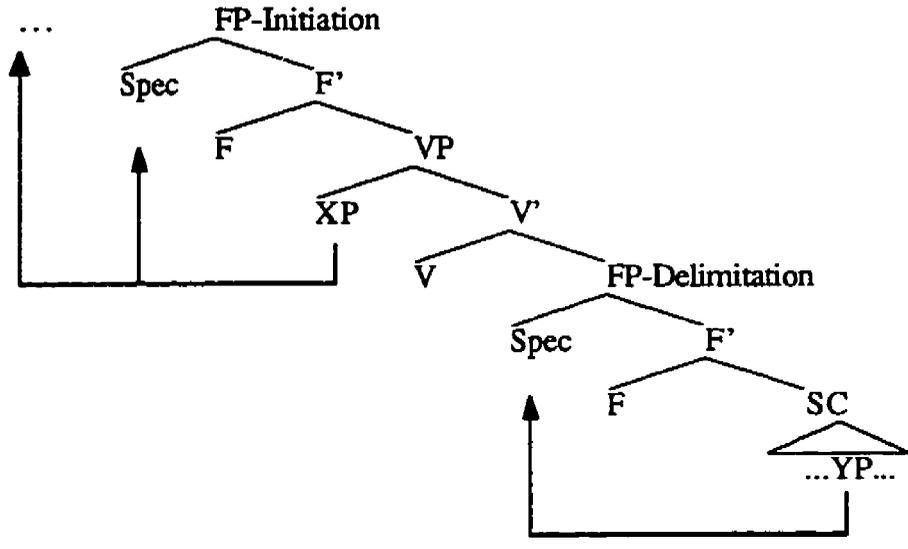
Building on Borer's work, Ritter and Rosen (1997) also assume event information to be syntactically encoded by the projection of aspectual FPs. Like Borer, they assume the notion of "event" to be defined purely in terms of syntactic structure. An NP receives an aspectual role (either DELIMITER or INITIATOR) by being in a Spec-Head relationship with the appropriate functional head.⁴ However, while Borer assumes that each aspectual phrase ($AspP_{em}$ and $AspP_{or}$) may be independently specified, R&R assume that only the delimiting FP is independently specified; the initiating FP is defined relative to the delimiting FP. Thus, if there is only one specified FP, it is the lower delimiting FP. Depending on whether or not the lower FP is projected, the upper FP may have one of two functions. In the presence of a delimiting FP, it will function to assign an INITIATOR role to an argument in its Spec. If no delimiting FP is present, it will assign a default role of TOPIC to an argument in its Spec (cf. Erteschik-Shir and Rapoport (1995)). One general corollary of this assumption is that in order for an event to be syntactically encoded, it must be delimited (i.e., it must have an inherent endpoint). Hence, R&R use the term "D-event" to distinguish syntactic event structure, as defined by the organization of aspectual FPs, from all other eventualities.⁵ The structural configuration assumed for a transitive D-event is represented in (4).

⁴ R&R's DELIMITER equals Borer's EVENT MEASURE, their INITIATOR equals Borer's ORIGINATOR. To avoid terminological confusion at this point, we summarize some of the common labels given to aspectual roles by various researchers in the literature.

| | | |
|--------------------------|------------------------------------|-----------------------|
| Ritter and Rosen: | INITIATOR | DELIMITER |
| Borer: | ORIGINATOR [OR] | EVENT MEASURE [EM] |
| van Voorst: | OBJECT OF INITIATION/ACTUALIZATION | OBJECT OF TERMINATION |
| Tenny: | -- | MEASURE/TERMINUS |
| Grimshaw: | CAUSER | -- |

⁵ Ritter and Rosen thus modify the original Vendler/Dowty classification of event types by analyzing activities as non-eventive, as shown in (i) below.

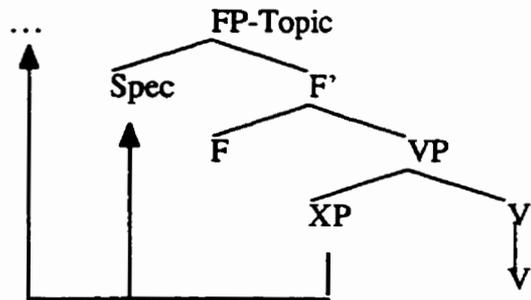
(4) Accomplishment:



In this structure, both aspectual FPs are projected. An NP moving into the specifier of the lower FP will be assigned the DELIMITER role, and, because of the presence of this delimiting FP, an NP moving into the specifier of the higher FP will be assigned an INITIATOR role. If, however, the event is not delimited, then the lower FP will not be projected. If the lower FP is not projected, then the upper FP plays no aspectual role. The event, then, is not a syntactically encoded D-event. As indicated in (5), an activity which is not delimited (for example, *the audience laughed*), will not have a syntactic event structure. There is no delimiting FP to give the construction an eventive interpretation. Hence, the single argument NP moves into the Spec of the upper FP and receives a default topic interpretation.

| | | | | | | | | | | | | | | | | | | |
|----------------|------------------|---|--------------|------------------|----------------|-------|-------------|----------|--|----------|--|--|--------------|------------------|----------------|-------|-------------|--|
| (i) | a. | Ritter and Rosen: | b. | Vendler/Dowty: | | | | | | | | | | | | | | |
| | | <table border="0"> <tr> <td style="text-align: center;"><u>Event</u></td> <td style="text-align: center;"><u>Non-Event</u></td> </tr> <tr> <td style="text-align: center;">Accomplishment</td> <td style="text-align: center;">State</td> </tr> <tr> <td style="text-align: center;">Achievement</td> <td style="text-align: center;">Activity</td> </tr> <tr> <td></td> <td style="text-align: center;">Activity</td> </tr> </table> | <u>Event</u> | <u>Non-Event</u> | Accomplishment | State | Achievement | Activity | | Activity | | <table border="0"> <tr> <td style="text-align: center;"><u>Event</u></td> <td style="text-align: center;"><u>Non-Event</u></td> </tr> <tr> <td style="text-align: center;">Accomplishment</td> <td style="text-align: center;">State</td> </tr> <tr> <td style="text-align: center;">Achievement</td> <td></td> </tr> </table> | <u>Event</u> | <u>Non-Event</u> | Accomplishment | State | Achievement | |
| <u>Event</u> | <u>Non-Event</u> | | | | | | | | | | | | | | | | | |
| Accomplishment | State | | | | | | | | | | | | | | | | | |
| Achievement | Activity | | | | | | | | | | | | | | | | | |
| | Activity | | | | | | | | | | | | | | | | | |
| <u>Event</u> | <u>Non-Event</u> | | | | | | | | | | | | | | | | | |
| Accomplishment | State | | | | | | | | | | | | | | | | | |
| Achievement | | | | | | | | | | | | | | | | | | |

(5) Activity:



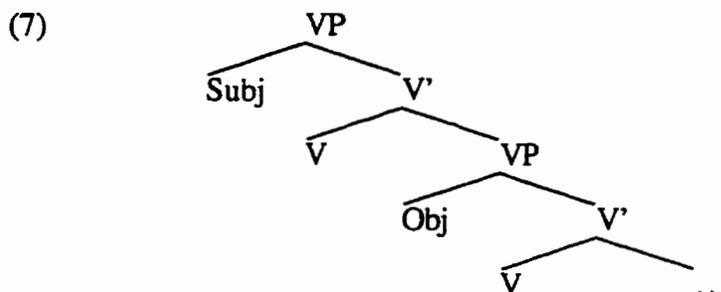
Crucial for this analysis is the assumption that without delimitation there is no syntactically encoded event. Thus, the initiating FP is dependent upon the delimiting FP for its interpretation; it is impossible to have an initiating FP without first having the delimiting FP. Such a requirement of event structure is able to capture the observation noted in the literature (cf. Hale and Keyser (1993) and Levin and Rappaport Hovav (1995)), that it is impossible to causativize an unergative verb. Witness the examples in (6).

- (6) The audience laughed.
 *The comedian laughed the audience.

The reason for the ungrammaticality of (6b), R&R claim, is that optional causers are arguments that receive no θ -role from the verb. Rather, their interpretation is based on their aspectual role as event initiator. However, an unergative verb does not project a syntactic event structure; in their terms, it does not project the delimiting FP. Without this delimiting FP, it is impossible to interpret the higher FP as initiating. Hence, the added “causer” argument is unable to receive an aspectual interpretation.

4.1.4 The Organization of Clause Structure

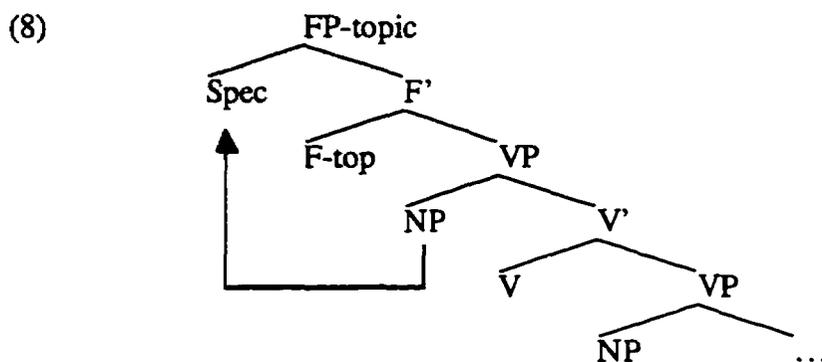
Synthesizing the information discussed so far, we assume that aspectual information is syntactically represented. With Hale and Keyser, we assume that particular event types are encoded by specific structural relationships. With Borer, we assume that it is the aspectual FPs in clausal syntax, rather than lexical projections in l-syntax, that provide the relevant event information. With Ritter and Rosen, we assume that only delimited events are represented by the syntactic composition of FPs. We essentially adopt an approach to verbal projection (espoused by such theorists as Travis (1991), Guilfoyle (1993), Koizumi (1993), Kratzer (1994) and Harley (1995), among others), in which subject and object arguments are generated in the specifiers of separate heads. In particular, we adopt Koizumi's (1993) version of the "Split-VP Hypothesis" which states that the VP of a transitive verb (that is, with an external argument) contains at least two heads, each of which discharges an argument in its Spec.



The NP generated in the Spec position of the higher VP is interpreted as the agent, while the NP in the lower Spec is the theme. Hence, thematic relationships are characterized as resulting from the relationship between a lexical head and an item in its Spec.⁶ With

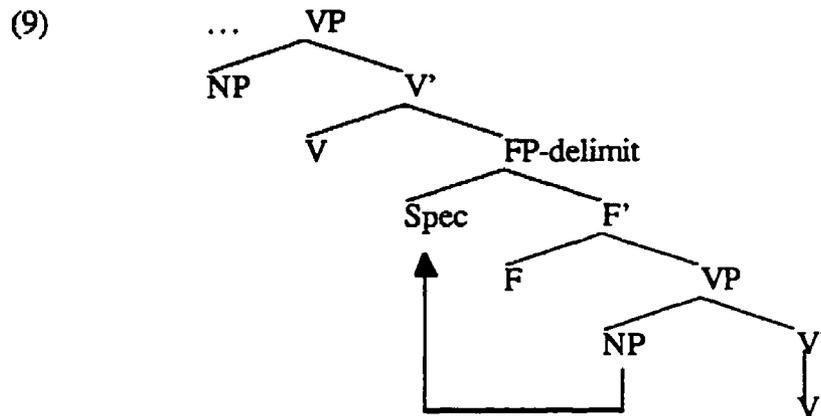
⁶ In the case of the relational lexical category projecting a PP, thematic relationships are obtained between a head and an item in both Spec and complement position.

Erteschik-Shir and Rapaport (1995) and Ritter and Rosen (1997), we assume that a subject argument may move further up the tree into a default functional projection that assigns a topic interpretation to an argument in its Spec. Therefore, in a transitive structure such as the one shown in (8), the NP generated in Spec of upper VP (and interpreted as an agent) moves into Spec of FP to be interpreted as the topic.



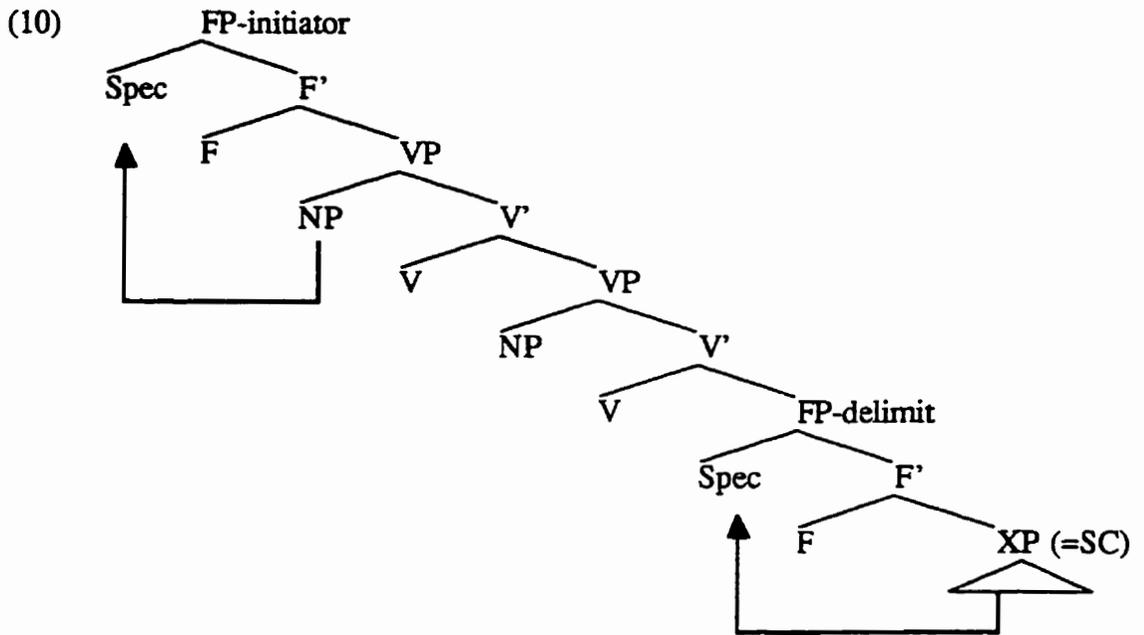
In an intransitive unergative structure, only the upper VP is projected and its sole argument may move into Spec of FP-topic.

If the event denoted is delimited, then the delimiting FP is projected. FP-delimit is assumed to dominate the delimiting material. Hence, if the internal argument of a transitive verb functions as delimiter (example, *play the sonata*), the FP projects between the two VPs as shown in (9) below. (Cf. the inner Asp of Travis (1991), the Ω P of Koizumi (1993) and the inner TP of Collins and Thráinsson (1996)).



In this case, the internal argument is generated in the Spec of the lower VP (and there receives a thematic interpretation) and then subsequently moves into the Spec of the dominating FP to receive a delimiter interpretation. This structure captures Tenny's observation (noted in section 3.3.1.1) that an argument may be interpreted on both a thematic dimension and aspectual dimension, and that while the two interpretations often do overlap, they do not always coincide. For example, an argument NP may be interpreted as a theme on the thematic level, but not necessarily as a delimiting argument at the aspectual level. In an intransitive unaccusative structure, only the lower VP is projected and its sole argument moves into the Spec of the delimiting FP that dominates it.

A non-delimited event, in which the internal argument does not function as the measure, can receive a delimited interpretation if a resultative secondary predicate is added. We assume that resultatives head a small clause in the syntax and its subject functions to delimit the event. Hence, in this case the delimiting FP projects, not above the lower VP (as in (9)), but above the resultative small clause, as shown in (10).



Finally, we assume with Ritter and Rosen that, in the presence of the lower FP, the higher FP will be interpreted as the event initiator. The external argument thus moves from the Spec of the higher VP into Spec of FP-initiator.

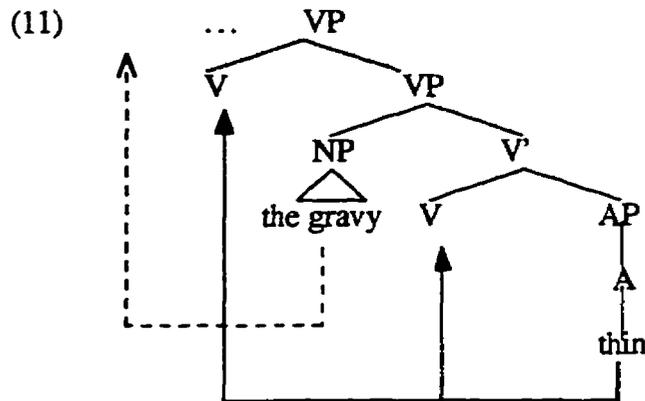
4.2 A Syntactic Analysis of *-ify/-ize*

Having discussed some of the reasons for assuming a syntactic analysis of event interpretation, and outlining the basic clausal architecture that we assume, we now develop a structural account of *-ify/-ize* affixation. We have already posited that *-ify* and *-ize* are event affixes because they contribute a notion of delimitedness to the event denoted. Assuming that event structure is a syntactic phenomenon, it follows that the interpretation of *-ify/-ize* verb constructions is determined in the syntax. In this section, we propose that the event affixes head a delimiting FP in the syntax.

4.2.1 Derivation by Incorporation

We claim that the derivation of *-ify/-ize* affixed verbs is accomplished by head movement of the lexical stem from its base position within the VP into the head of the delimiting FP, the position associated with event information. Henceforth, we identify this FP as the eventive FP. Our analysis builds on the work of Hale and Keyser (1993), who, following Baker (1988), assume that G(rammatical) F(unction)-changing processes are a side effect of the syntactic movement of a word-level element, a process of INCORPORATION.⁷ For example, H&K analyze zero-derived denominal and deadjectival verbs of the type represented by *laugh, saddle, shelve, thin*, as deriving from this incorporation process. An example of the derivation for *thin* (as in *the gravy thinned*), is shown in (11) (cf. Hale and Keyser (1993:44)).

⁷In essence, then, our claim is that word formation can take place at sentence-level syntax. Of course, as noted in the Introduction, this stance is not uncontroversial and the morpho-syntactic debate is ongoing within the linguistics literature. Hence, a word in support of such a stance is in order here. In Chapter Two, it was shown that highly specified lexical semantic representations are not able to explain the argument structure properties and syntactic behaviour of derived verbs. It was argued in Chapter Three, therefore, that the interpretation of the the verb must take into consideration the arguments (participants) and adjuncts (modifiers) that are involved in the event that the verb denotes, and hence must occur post-lexically. Also noted in Chapter Three is the observation that the vast majority of *-ify/-ize* affixed verbs denote delimited events. These observations, while providing unequivocal support for an event structure analysis of the affixes, do not actually force the formation of words in the syntax (or, alternatively, exclude the possibility of lexical derivation). It is possible that, while eventive interpretation does take place in the syntax, the formation of the verb occurs in the lexicon. Nevertheless, we choose to implement a version of syntactic word formation because it provides a simple and economic explanation of the observed facts. In this chapter we show that complex verb formation is explainable using independently-motivated syntactic principles such as head movement, and, in keeping with the fundamental tenets of principles and parameters theory, we assume that, given a choice, an approach that utilizes a smaller set of highly constrained principles is preferred.

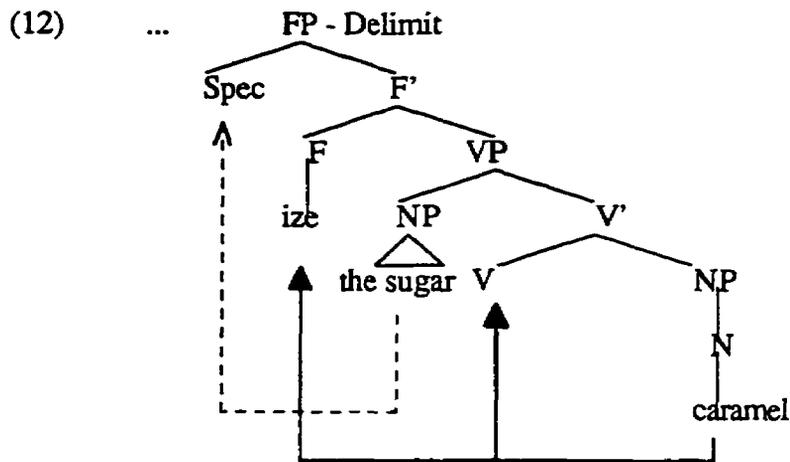


Here, the head A *thin* is shown to incorporate into an abstract governing V, followed by movement of the internal argument *the gravy* into subject position (presumably Spec,IP). The A denotes a state and the V, a dynamic event. Thus, when the A incorporates into V, a change of state is denoted. The internal argument in Spec,VP is interpreted as the affected argument or theme. This type of head movement, like other types of movement, is assumed to leave coindexed traces, and thus, to be constrained by general syntactic principles such as the Empty Category Principle (Chomsky (1986)).⁸

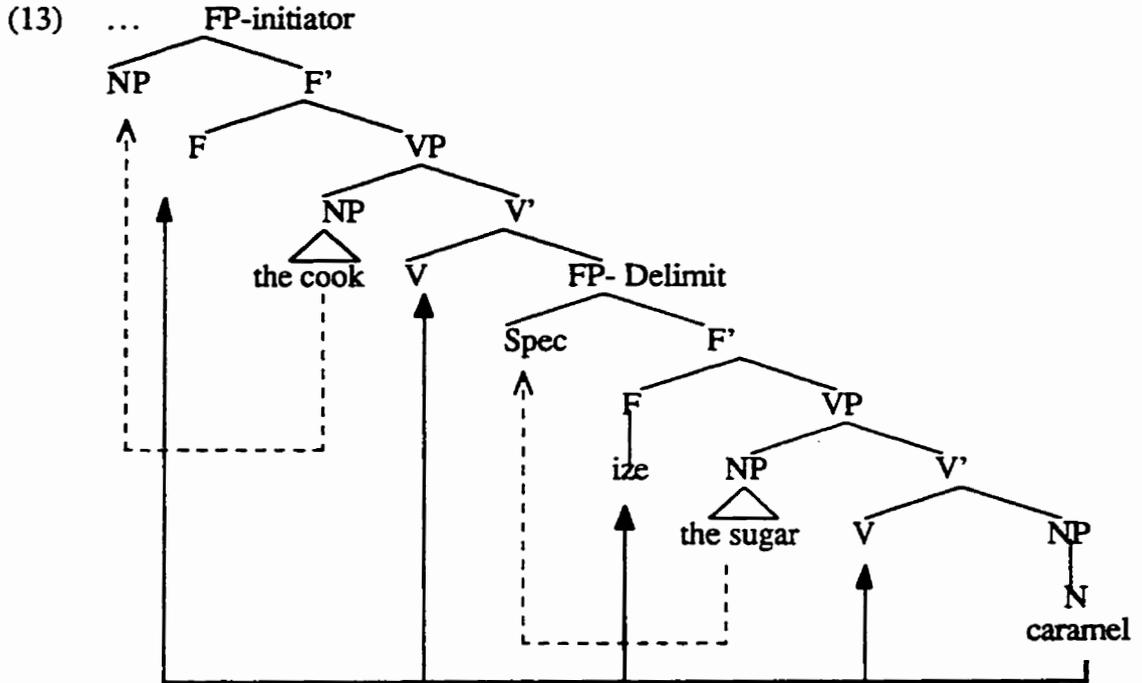
In a manner similar to that in (11), we propose that an *-ify/-ize* verb is created by a process of incorporation. On our analysis, an N/A stem first incorporates into an abstract governing V, and then moves further up the tree, adjoining to the affix in the head of the delimiting FP. To illustrate, consider the following structure that we propose for the verb *caramelize*, as in *the sugar caramelized*.

⁸ **Empty Category Principle (ECP)**

The ECP states that traces must be properly governed. Proper government is achieved by either θ -government (government by a θ -marking head) or antecedent government (government by a co-indexed c-commanding antecedent). Head movement is subject to the ECP and can be satisfied by proper antecedent government.



The nominal stem *caramel* moves first into the abstract governing V before moving up into the functional head, leaving coindexed traces at each step. This incorporation process is followed by movement of the argument NP *the sugar* from its base position inside the VP into the Spec of FP. Once in a Spec-Head relation with this functional projection, *the sugar* receives the α -role DELIMITER (à la Ritter and Rosen). Our analysis mirrors that of H&K in adopting an incorporation analysis of verb formation, and that of Borer/R&R in relegating event information to the syntactic FPs. Thus, we assume (contra H&K) that incorporation takes place in the clausal syntax, rather than in *l*-syntax. In the event depicted in (12), no causer is specified, therefore, the event is understood as occurring “spontaneously”. In other words, the structure specifies that the sugar caramelizes without specifying how that result is achieved. The function of the affix here is not to add a “causer” argument, but rather to add the delimiting structure that is necessary for the interpretation of a (D-)event. Once a delimiting FP is projected, it then becomes possible to interpret the higher FP as initiating, and an argument in its Spec as event initiator, as illustrated below.



In this structure, the external argument is generated in the Spec of a higher VP and moves into the Spec of FP-initiator to be interpreted as the initiator of the event. Our analysis of *-ify/-ize* affixation is thus able to account for the fact that all *-ify/-ize* verbs are delimited, but not all *-ify/-ize* verbs are initiated (i.e., causative). We argue that the affixes function to project the delimiting FP necessary for an event interpretation (therefore, if there is an *-ify/-ize* affix, then there must be a D-event). The fact that we call the affix an **EVENT AFFIX** is reflected directly in the structure; it heads the eventive FP. Within the context of this FP, it is possible to interpret an argument in the Spec of the upper FP as the initiator.

4.3 Extending the Analysis

4.3.1 The Representation of Aspectual *up*

In section 3.4.1 of the previous chapter, we noted that one common function of the English particle *up* is to add an endpoint or goal to the situation described. As a consequence, this particle can be used to enforce a delimited interpretation on an otherwise durative (or potentially durative) situation. We used the following examples to illustrate this point.

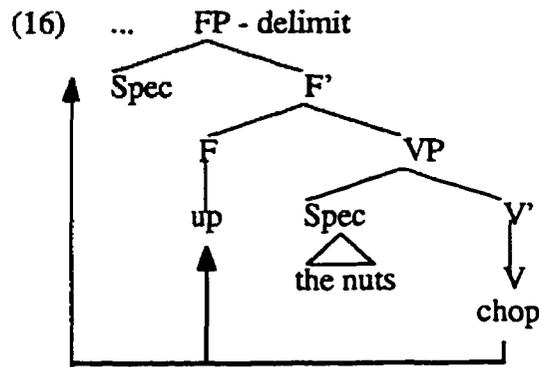
- (14) a. Marion chopped the nuts for five minutes/in five minutes.
 b. Marion chopped up the nuts in five minutes/*for five minutes.

As (14a) indicates, *chop the nuts* can alternatively be interpreted as delimited (the nuts are chopped in five minutes) or non-delimited (the nuts are chopped for five minutes). However, as shown in (14b), *chop up the nuts* is unambiguously delimited; it can only be modified by the *in*-phrase.

We further noted that *up* cannot be used in conjunction with an *-ify/-ize* affixed verb (even though it can be used with other derived verb forms such as *lighten up*). This co-occurrence restriction is demonstrated in (15).

- (15) a. *The chemist crystallized up the solution.
 b. *Doubleday anthologized up the story.
 c. *The sperm fertilized up the egg.

In this section, we take advantage of the structural analysis suggested for *-ify/-ize* to account for the semantic and syntactic properties of *up*. We maintain that *up*, being an aspectual functor like the event affixes, serves to head the eventive FP. We propose the following preliminary structural representation for the predicate *chop up the nuts*.

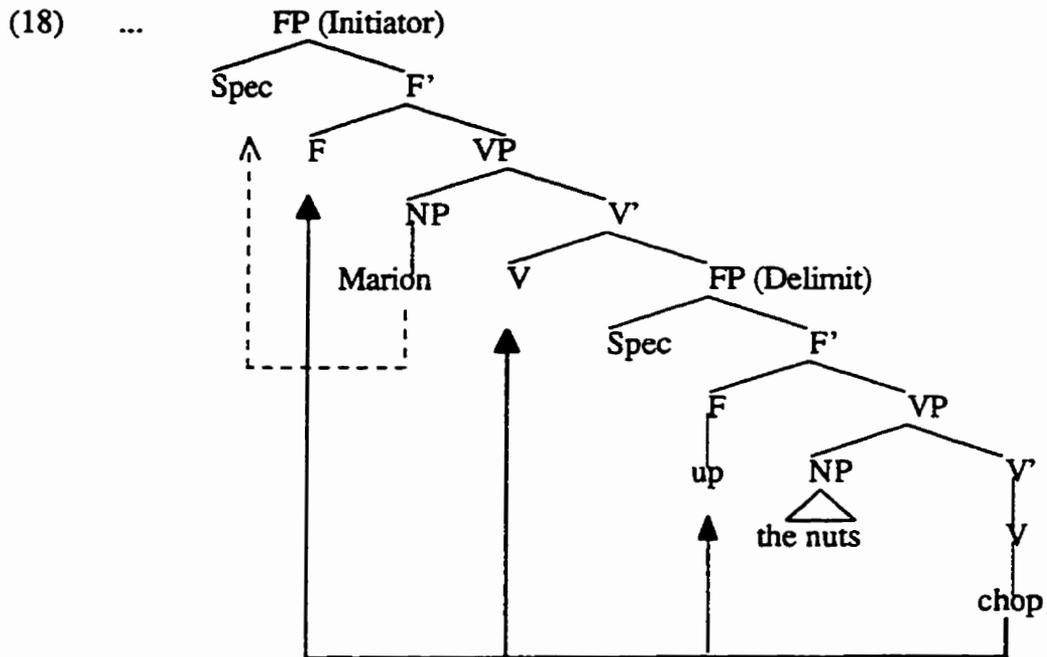


The fact that *up* cannot co-occur with an *-ify/-ize* affixed verb is then given a reasonable explanation; they would both occupy the same structural position, head of delimiting FP.

At this point, it may be recalled that one of the defining characteristics of the verb-particle constructions is the fact that the NP object may either follow the particle or precede it, as exemplified in (17).

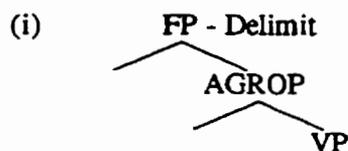
- (17) a. Marion chopped up the nuts.
 b. Marion chopped the nuts up.

The apparent free variation in the order of the particle and NP has remained a topic of lively debate in the linguistic literature (for example, see Erteschik-Shir (1979), Kayne (1984), Aarts (1989), Johnson (1991), Keyser and Roeper (1992), Koizumi (1993) and Collins and Thráinsson (1996) for discussion). We adopt a modified version of Koizumi's analysis, as this is the only one that attempts to account for the aspectual properties of the particle. With Koizumi, we assume that the verb must move up in the tree via head movement, and the object NP may move by a process of "object shift". Thus, the underlying order we assume for the sentence *Marion chopped up the nuts* is that represented in (16), repeated in (18) below with the upper VP included.



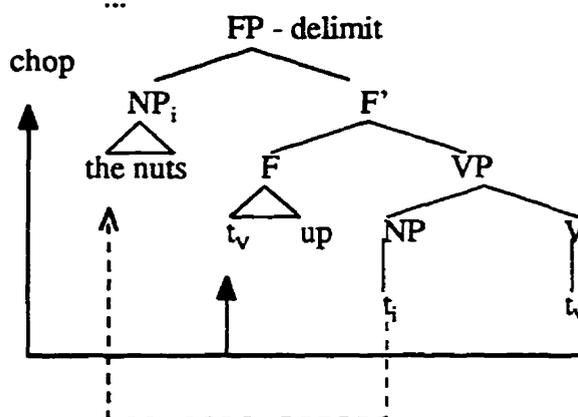
The verb moves successive cyclically up the tree, first to the head of the eventive FP, where it adjoins to the particle that is generated there. Then, it strands the particle in its base generated position and continues its journey upward. The optional movement of the NP is what accounts for the alternative word order. Specifically, the verb-particle-NP order is derived by movement of the verb into the head of a functional category, and the verb-NP-particle order is derived by further movement of the NP into the specifier of this functional category. (19) illustrates the derivation we assume for the word order in which the NP appears before the particle.⁹

⁹ With Koizumi, we assume that the NP may move into the specifier of an intervening object agreement phrase (AGROP) in order to check its case features. Hence, the structure of the predicate may actually be,



(19) a. Marion chopped the nuts up.

b.



As the above structure indicates, to derive the order *chop the nuts up*, the object NP moves into the Spec of FP following verb movement into its head.¹⁰ In this position, the NP receives the DELIMITER role. Such an analysis implies that the differing word orders result in differences in semantic interpretation. We observe that in *chop the nuts up*, the nuts are understood as being completely chopped. In other words, a more complete interpretation is obtained.¹¹

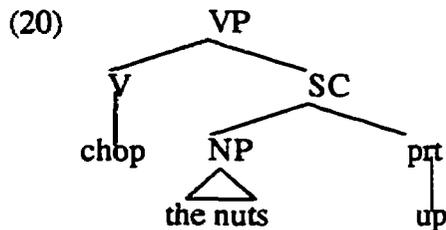
For ease of exposition, however, we do not include AGROP in our representations.

¹⁰ Koizumi's analysis is developed in the framework of Chomsky's (1992) Minimalist Program. On this analysis of the alternation, overt object raising is attributed to the "strength" of an NP feature in the event head (which he labels Ω), and English is assumed to have both Ω with a strong NP feature and Ω with a weak NP feature. If Ω with a weak NP feature is projected then the V-prt-object order results. If Ω with a strong NP feature is projected then the alternative V-object-prt order results. His analysis base-generates the particle with the verb, and moves this verb complex to Ω . On our account, the particle is base-generated in the F head. Thus, assuming a Minimalist approach, we would have to suppose that the particle itself can be alternatively strong or weak.

¹¹ Note that in both cases, the event is delimited, that is, all the nuts are chopped. However, there is a further sense in *chop the nuts up*, in which not only are all the nuts chopped, but they are completely chopped up into small pieces. Admittedly, this distinction is fairly obscure, however, that it does exist is suggested by the contrast in the following sentences.

- (i) a. She chopped up the nuts, leaving some of them only partly chopped.
 b. ?She chopped the nuts up, leaving some of them only partly chopped.

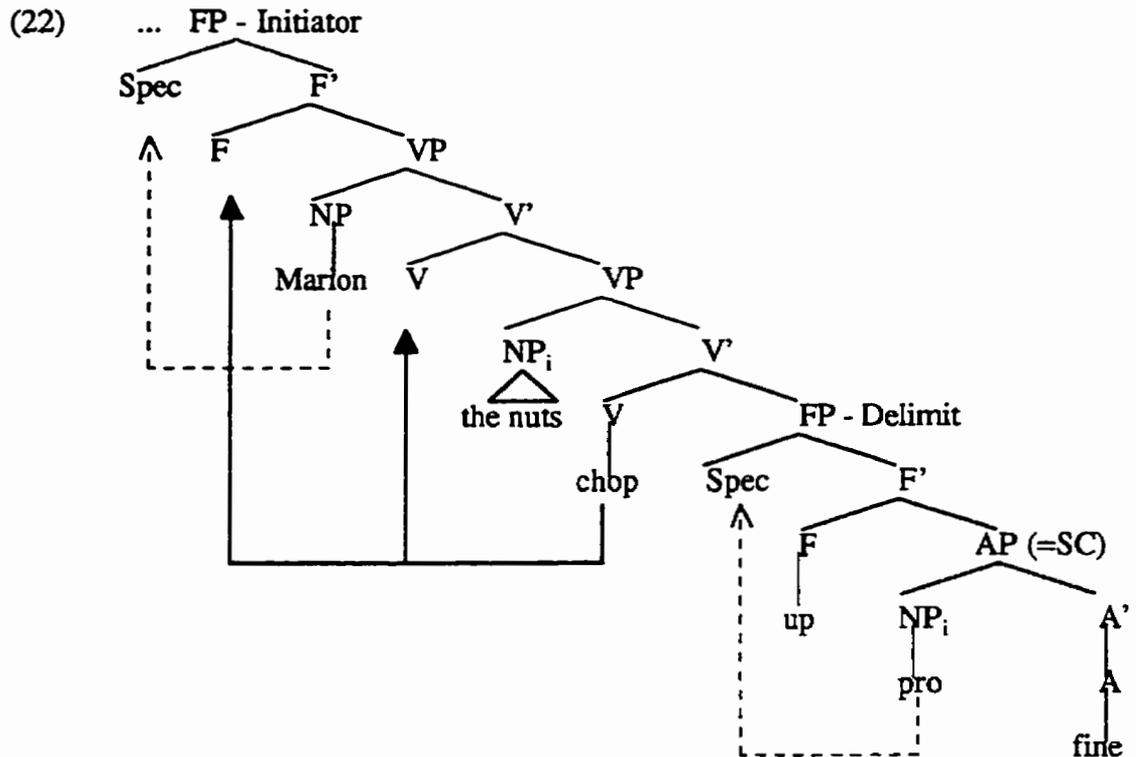
That *up* should be given a structural analysis that reflects its aspectual function is also suggested by Hoekstra (1988). Recall that on his account, *up* is depicted as heading a resultative secondary predicate, as follows.



However, we argued against this analysis as it would predict that *up* would not be able to co-occur with other resultatives, and as the examples in (21) show, in fact *up* can occur with other resultatives.

- (21) a. Marion chopped the nuts up fine.
 b. Sophia sliced the tomatoes up into wedges.

On our approach, resultative secondary predicates and aspectual *up* are not given a unified treatment. Resultatives are argued to head a SC, whereas aspectual *up* is argued to head the delimiting FP that projects above the SC. Hence, *up* (and consequently also *-ify/-ize*) is able to occur with resultatives. We assume the following structural representation for the sentence in (21a).



In this structure, *up* occurs as the head of the eventive FP, whereas the resultative predicate occurs lower in the tree, as the S(mall) C(ause) complement of F. Notice that, within the SC, we assume the existence of a *pro* subject coindexed with the NP subject of VP. This analysis captures the intuition that, while the NP denoted by *the nuts* is the affected object of the verb *chop*, it is also interpreted as the entity that ‘is fine’ as a result of the chopping, as indicated in (23).¹²

¹²The positioning of a null pronominal in the subject position of a resultative SC has been posited by Ritter and Rosen (to appear), among others. For example, R&R provide the sentence in (i) with a PRO subject. As (ii) indicates, however, in such cases, PRO appears to be in complementary distribution with an overt NP (a problem for the PRO Theorem, which states that PRO must be ungoverned).

- (i) John walked [PRO to the store].
 (ii) John walked [him to the store].

(23) chop the nuts_i up [pro_i fine]

By assuming the structure depicted in (22), we are able to provide a straightforward account of the fact noted in Chapter Three, section 3.4.1.1, that the sequence *up fine* illustrated in (24a) is grammatical, while the reverse order *fine up* shown in (24b) is not.

- (24) a. Marion chopped the nuts up fine.
 b. *Marion chopped the nuts fine up.

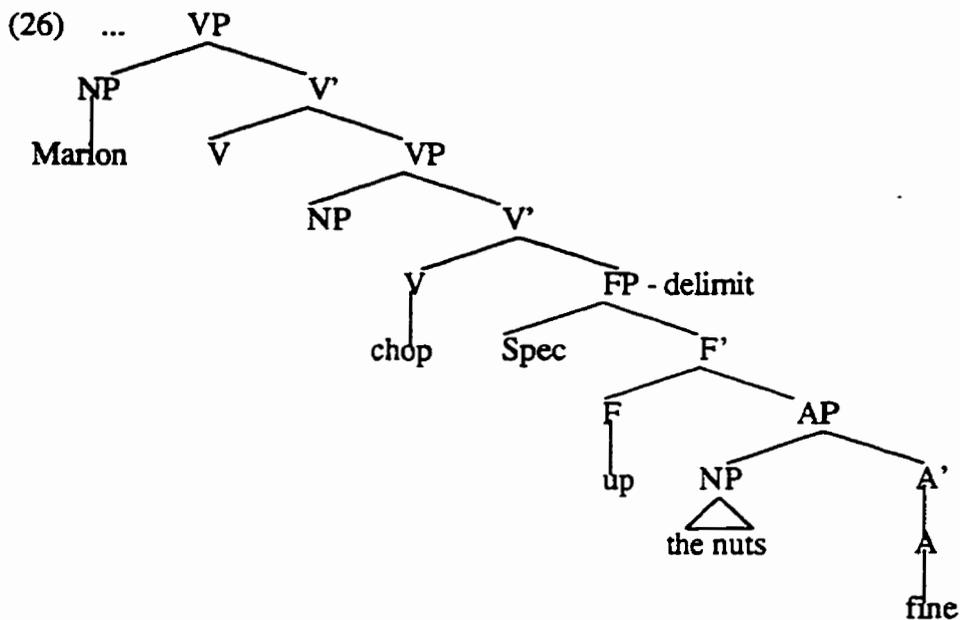
Furthermore, our analysis is also able to account for the grammaticality distinctions noted in (25).

- (25) a. Marion chopped up the nuts.
 b. *Marion chopped up the nuts fine.

These examples illustrate that when the construction appears with a resultative (*fine*), the object NP may not appear after the particle. Our structure in (22) easily captures this fact because the object NP *the nuts* is generated higher in the tree than the particle and therefore must precede it. Given the structure we propose, the only possible way to achieve the (ungrammatical) verb-particle-NP-resultative word order, would be to generate *the nuts*

From (i) and (ii) it would appear that PRO can appear in governed positions. As a possible solution to this problem, we follow Borer (1989), who proposes to eliminate the need for ungoverned PRO. On this approach, the null element that occupies the subject position of infinitivals, gerunds and small clauses is the empty pronominal (small) pro, which does not have to be ungoverned.

directly in Spec of AP so that it appears lower in the clause than the particle, as indicated in (26) below.



However, this option is ruled out because then the object would not be able to be interpreted as a thematic argument of the verb. Consequently, we would not be able to distinguish between NP objects that are “true” objects of the verb from NP objects that are only indirectly related to the verb, but are “true” objects of the resultative, a distinction Carrier and Randall (1992) refer to as transitive resultatives (27a) vs. intransitive resultatives (27b).

- (27) a. The gardener watered the tulips flat.
 b. The joggers ran their Nikes threadbare.

In the first sentence, *the tulips* is the object being watered as well as the object that is flat. In the second sentence, *the Nikes* is not the object being run in any sense, but is the object

that becomes threadbare as a result of the running. Thus, we assume that only in the first instance is the NP object generated in the projection of the verb (with a concomitant *pro* in Spec of the AP small clause). In the second case, the NP is generated in the Spec of the AP. The phrase *chop the nuts up fine* is analogous to *water the tulips flat*; in both cases the NP is directly related to the verb. Hence the NP is generated in the Spec of a verbal projection.

In sum, by assuming a syntactic approach to event structure interpretation, we are able to give a structural account of the co-occurrence restrictions that hold between *-ify/-ize* and *up*, and at the same time provide an account of the lack of such restrictions on resultative predicates with either *up* or *-ify/-ize*. We conclude that *-ify/-ize* affixed verbs cannot co-occur with the particle *up* because both *up* and *-ify/-ize* serve to head the delimiting FP. In the next subsection, we provide a similar account for the *en-/be-* prefixes that were discussed in 3.4.2.

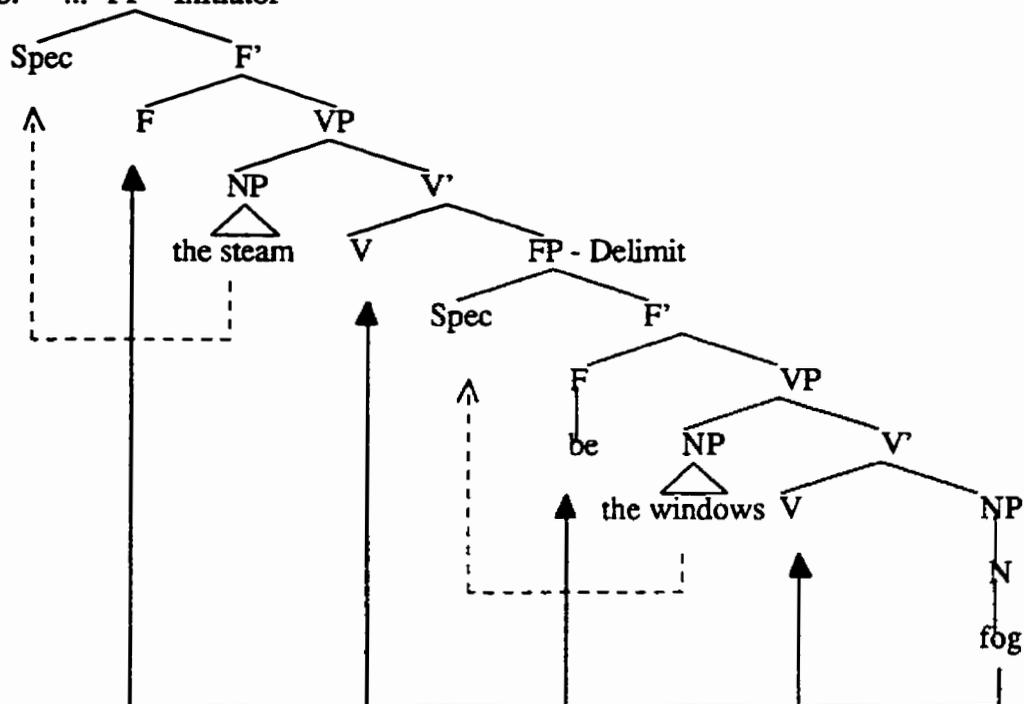
4.3.2 The Representation of *en-/be-*

In the previous chapter, we noted that *en-* and *be-* verbs share certain semantic and syntactic properties with *-ify/-ize* verbs and verb-*up* constructions, and suggested that as a result, they should be included in the inventory of delimiting elements and given the same structural treatment. Therefore, we now propose that these aspectual prefixes are yet another example of delimiting functor that occupies the head of the eventive FP. Consider the example in (28a) illustrating the verb *befog*. We postulate the syntactic configuration depicted in (28b) as representing the derivation of this verb.¹³

¹³ While our discussion focuses on the representation of *befog*, we assume that the same conclusions can be drawn for *en-*verbs like *entangle*, *enchain*, *enrage*, etc.

(28) a. The steam befogged the windows.

b. ... FP - Initiator



In this example, the N stem *fog* moves up into the FP headed by *be-*. As well, the internal argument *the windows* moves out of the VP into Spec of FP to be interpreted as the delimiting argument. *The windows* delimits the event by achieving the state of 'fogginess'. Observe that while aspectual *up* can be used with the denominal verb *fog* (29a), it cannot be used in conjunction with the *be-*verb, as indicated by the ungrammaticality of (29b).

(29) a. The steam fogged up the windows.

b. *The steam befogged up the windows.

Again, we account for the fact that the *be-*verb construction cannot co-occur with the aspectual particle *up*, by assuming that the two delimiting elements would occupy the same structural position in the event structure.

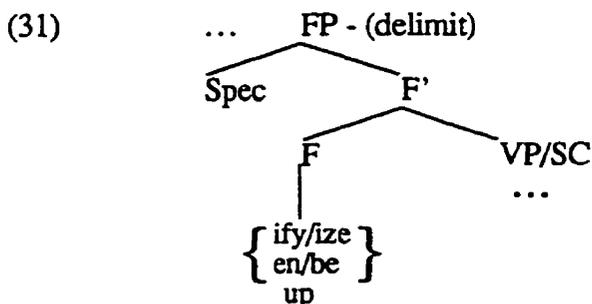
However, like the verb-*up* constructions, some *en-/be-* verbs can occur with the resultative secondary predicate, as indicated in (30).

- (30) a. The steam befogged the windows frosty white.
 b. ?The steam fogged the windows up a frosty white.

We assume that the structure of (30a) has the aspectual prefix *be-* generated in the head of delimiting FP while the resultative predicate heads a small clause complement of F (cf. the configuration given in (22) for *chop the nuts up fine*, which shows aspectual *up* in the head of delimiting FP).

4.3.3 Summary

To sum up this section, we have concluded that, like the event affixes *-ify* and *-ize*, the particle *up* and the prefixes *en-* and *be-* are best analyzed as aspectual functors that head a delimiting phrase in the syntax. Such an analysis, we argue, permits an explanation of the co-occurrence facts that obtain between these items on the one hand, and resultative secondary predicates, on the other. In general, the structural configuration that we assume to be characteristic of these elements is given below.



4.4 Zero Derivation

Up to now, we have recognized that there is an alternative derivational strategy for complex verb formation (zero derivation), but have not committed ourselves to any particular analysis of it. Recall that zero derivation is a word formation process in which there is a change in the function of the stem, but no corresponding change in form.¹⁴ Therefore, unlike overt affixation, there is no morphological marking to indicate that a derivational process has occurred. Zero derivation is, however, extremely productive in forming denominal and deadjectival verbs, as shown by the following verb pairs.

| | | | | | | | |
|------|-------------|----|--------------|--|------------------|----|-------------|
| (32) | <u>Noun</u> | >> | <u>Verb</u> | | <u>Adjective</u> | >> | <u>Verb</u> |
| | blanket | | (to) blanket | | clear | | (to) clear |
| | mother | | (to) mother | | pale | | (to) pale |
| | saddle | | (to) saddle | | thin | | (to) thin |

In 3.3.2, we mentioned that Rosenberg (1995) also proposes an aspectual analysis of *-ify/-ize* and zero-derived verbs. Adopting the Vendler/Dowty aspectual classification (activity, accomplishment, achievement and state), she makes the dual claims: (i) *-ify/-ize* verbs are accomplishments, and (ii) zero-derived verbs are activities. Part of our discussion in section 3.3 involved demonstrating that not all *-ify/-ize* verbs are accomplishments, some are achievements. From this we proposed that the fundamental property shared by all of these derived verbs is that of delimitedness. In this section, we focus on the second of

¹⁴ Exactly how to characterize this form of word formation is an ongoing issue, as reflected in the many different approaches espoused in the literature. Some view it as the affixation of a “null suffix” analogous with overt forms of suffixation (for example, Marchand (1969)). Others view it as a “process” that is not dependent upon the notion of a null affix (for example, Pounder (ms.)). How one views the process often determines how one labels it. Hence, we find such labels as zero derivation, conversion, functional shift, and so on. In this thesis, we use the terms zero derivation and conversion interchangeably, as they seem to be the ones most commonly used.

Rosenberg's claims. Consider again the examples Rosenberg uses as support for her hypothesis.¹⁵

(33) -ify/-ize Affixation:

- a. John crystallized the solution.
- b. Satan demonized the child.

(=(58)-(60) p. 59, Rosenberg (1995))

(34) Zero Derivation:

- a. John hammered the nail.
- b. John refereed the basketball game.

(=(53)-(54) pp.56 & 57, Rosenberg (1995))

- c. John buttered the bread.

We claim that the difference between zero-derived verbs and *-ify/-ize* derived verbs is that while *-ify/-ize* verbs must be delimited, zero-derived verbs may (but need not) be delimited. Further, the reason for this discrimination is rooted in the structural configuration of events. To begin, we first determine that, while some zero-derived verbs are non-delimited (and hence amenable to Rosenberg's claim), this is not a general rule; there are many examples where this is not the case. We then develop a structural analysis of the various zero-derived verbs, building on the event structure representations we proposed in sections 4.2 and 4.3.

¹⁵ (34) shows that Rosenberg uses the verbs *butter*, *hammer* and *referee* to demonstrate that zero-derived verbs are activities (i.e., non-delimited). While we concur with Rosenberg that a number of zero-derived verbs do denote non-delimited events, some of these examples are problematic. We reject the verb *butter*, arguing that in fact the event denoted by this verb is delimited (cf. the discussion of *saddle*, examples shown in (48)-(49)). *Hammer* is problematic because it is not clear that this verb is derived from a noun (see footnote 16).

4.4.1 The Aspectual Properties of Zero-Derived Verbs

First we show that at least some zero-derived verbs are indeed non-delimited and hence, reasonably classified as activity verbs. Consider the examples below.

- (35) a. John refereed the game for an hour.
 b. ?John refereed the game in an hour.
 c. John stopped refereeing the game. \Rightarrow John did referee
 d. John almost refereed the game. \Rightarrow John did not begin refereeing
 e. John finished refereeing the game.

The aspectual tests applied in (35a)-(35d) indicate that the eventuality denoted by the predicate *referee the game*, is of the non-delimited, activity type. The contrast between (35a) and (35b) shows that *referee* is best modified by the *for*-phrase, not the *in*-phrase, as is common of activities. In (35c), the entailment implied if *John stopped refereeing the game*, is that John did perform the activity of refereeing. (35d) demonstrates that when modified by the adverb *almost*, there is only one resulting entailment, again, a property of activities. As shown in (35e), however, the verb can occur as the complement of *finish*, a general indicator of accomplishment status. (Here, the aspectualizer *finish* seems to coerce a delimited interpretation).¹⁶ In general, these tests support Rosenberg's claim, that *referee*

¹⁶ The fact that generally non-delimited events can receive a delimited interpretation was noted in Chapter Three. Rosenberg also discusses this property of activities. Adopting the feature system proposed by Olsen (1993), she accounts for this property as the result of an operation that changes an unmarked telic feature on the verb [telic] to a marked one [+telic]. Crucially, on her analysis, zero-derived verbs are activities in their basic sense, but an accomplishment reading can be imposed on them by other sentential constituents and pragmatic context.

denotes an activity.¹⁷ Other zero-derived activity verbs are given in (36). Here, we employ the *for x time/in x time* modifiers to indicate that they are non-delimited.

- (36) a. We vacationed in Hawaii for a week/*in a week.
 b. Sarah policed the area for a few days/*in a few days.
 c. John and Bill skied the slopes for a day/*in a day.

Consider the following examples, however.

- (37) a. Laura pickled the eggs.
 b. The pilot landed the plane.
 c. Jennifer saddled the horse.
 d. The cook thinned the gravy.

¹⁷ Zero derivation presents a unique challenge to morphological analyses in that the direction of the derivation is not always clear. Rosenberg assumes that *hammer_v* is derived from *hammer_N*. However, Kiparsky (1982) rejects this assumption; in the specific case of *hammer*, he argues that the opposite is true. *Hammer*, and other forms like it, are argued to be verbal in their basic sense. As evidence, he notes that 'the noun is merely the most typical instrument used for the activity; the verb itself does not require any particular instrument'. Hence, one can "hammer" something with a rock, a shoe, a stick, or any other appropriate object. With true denominal verbs, on the other hand (for example, *tape*), 'the noun is necessarily involved as an instrument in the activity'. Hence, one cannot "tape" something with a pin or a staple. Further examples of the two types zero-derived form discussed by Kiparsky are provided in (i) and (ii) below.

(i) $\frac{X_v}{\text{hammer, brush, paddle, whistle, saw, anchor, comb, wedge...}} > \frac{X_N}{\text{...}}$

(ii) $\frac{X_N}{\text{tape, rivet, chain, button, pitchfork, bicycle, screw, staple, hacksaw, snowplow, ink...}} > \frac{X_v}{\text{...}}$

Pounder (p.c.) counters that this is a natural development for the denominal verb, that is, to have first its literal meaning and then an acquired semantic extension. She points out that it is difficult to conceive of the verbs *comb* and *hammer* without first having the appropriate device. Therefore, she speculates that a derivational direction exists wherever speakers are likely to make it, which sometimes means that both V>N and N>V are present. The crucial point here, however, is that when analyzing zero-derived verbs, it is necessary to keep these distinctions in mind, so that what is being analyzed is indeed a verb derived from a noun or adjective and not the other way around.

- (40) a. Jennifer saddled the horse in ten minutes.
 b. Jennifer finished saddling the horse.
- (41) a. The cook thinned the gravy in five minutes.
 b. The cook finished thinning the gravy.

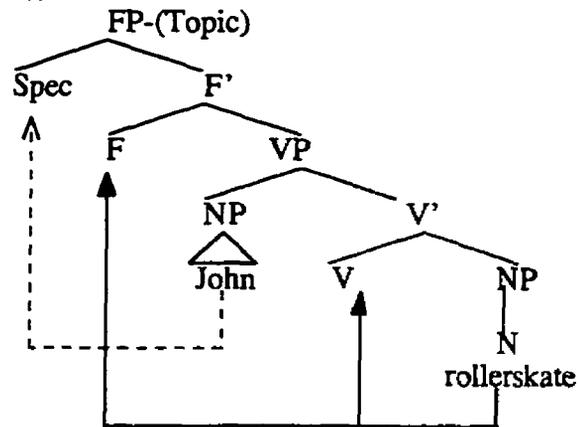
The tests indicate that *pickle*, *saddle* and *thin* are all accomplishments, as they can appear with the *in*-phrase as well as the complement of *finish*. Thus, while many verbs formed by zero derivation are activities (35)-(36), many are not (37)-(41). It appears, then, that Rosenberg's claim concerning zero-derived verbs is not supported by the facts. Zero-derived verbs do not fall neatly into one lexical aspectual class. In the next section, we extend the ideas developed in 4.2 and 4.3 to account for the variable aspectual behaviour of these verbs.

4.4.2 A Syntactic Analysis of Zero Derivation

Before we proceed in our analysis of the possible structural configurations of zero-derived verbs, let us recall the assumptions that we laid out at the beginning of 4.2. First, we assume that event information is structurally encoded. Second, we assume that it is the syntactic projection of aspectual FPs that provides this event information. Third, we assume that only D-events have a syntactically encoded event structure. Given these assumptions, we begin our analysis of zero-derived verbs by analyzing the structure of a derived unergative. Recall that an unergative is an intransitive verb whose sole argument is external and thus cannot be used to measure out or delimit the event. We depict this structure as follows.

(42) a. John rollerskated.

b. ...



This is an example of a denominal zero-derived verb that is formed by the incorporation process proposed by Hale and Keyser, and adopted in our analysis of *-ify/-ize* affixation. In this structure, the abstract V takes an NP complement whose head incorporates into it before moving up higher in the tree. Because it is not a D-event, no EventP is projected. The sole argument of the verb is generated in the Spec of VP and is interpreted as the agent of the action. It may then further move into Spec of FP to be interpreted as the topic. Consider now the the denominal verb given in (43).¹⁹

(43) He pitchforked the manure in the barn.

This sentence is ambiguous between an activity reading and an accomplishment reading, as indicated by the aspectual tests employed in (44).

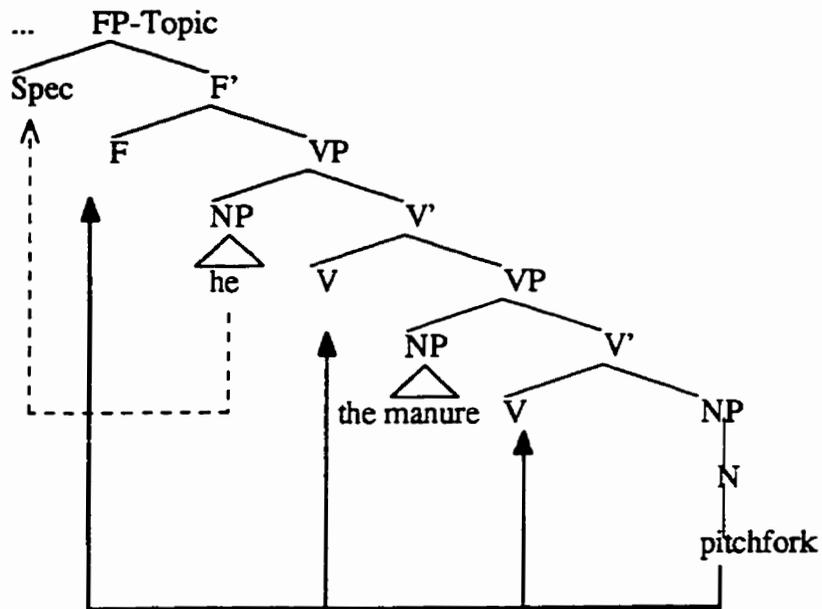
¹⁹ That *pitchfork* is unambiguously a denominal verb, is illustrated by the following infelicitous sentence (provided by Kiparsky (1983)). See footnote 16.

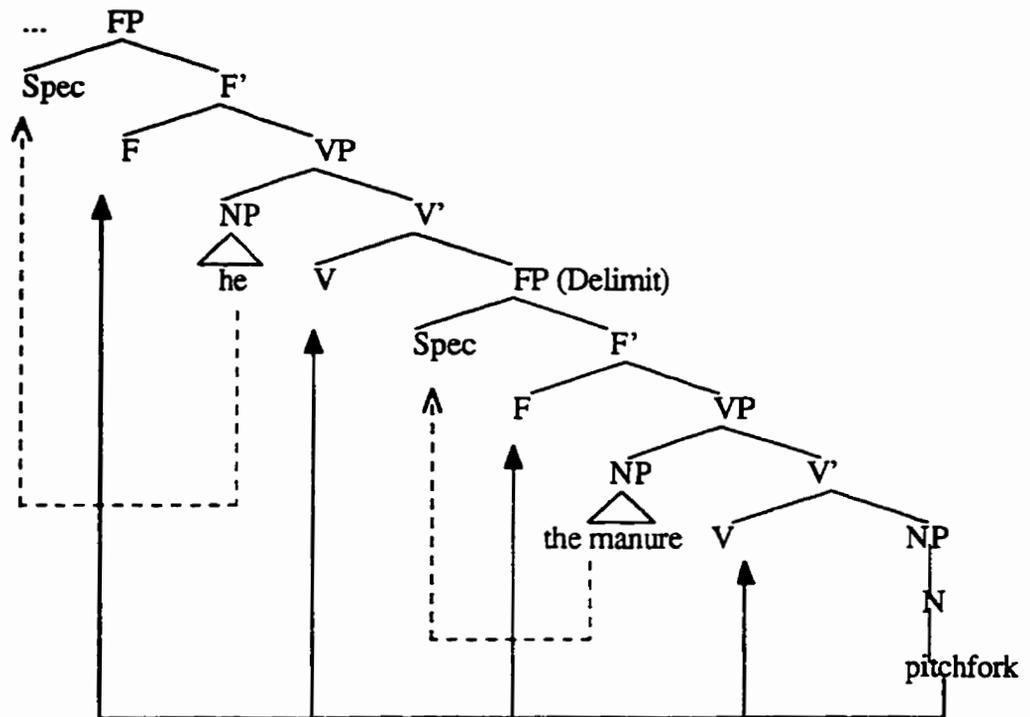
(i) *He pitchforked the manure with a shovel.

- (44) a. He pitchforked the manure in the barn for an hour. non-delimited
 b. He pitchforked the manure in the barn in an hour. delimited

We propose that this ambiguity is reflected by a difference in the structural representation of the eventuality denoted by (44a) in comparison to (44b). We assume that on a non-delimited reading no eventive FP is projected, but on a delimited one the FP is projected. This difference is illustrated in (45) and (46) respectively.

(45) Non-delimited (activity)



(46) Delimited (accomplishment)

Notice that in the structure depicted in (46), there is no overt material in the head of eventive FP to serve as a marker of delimitation. As indicated in (47), however, aspectual *up* can be added to this structure, and furthermore, if *up* is added it forces the event to have a delimited reading.

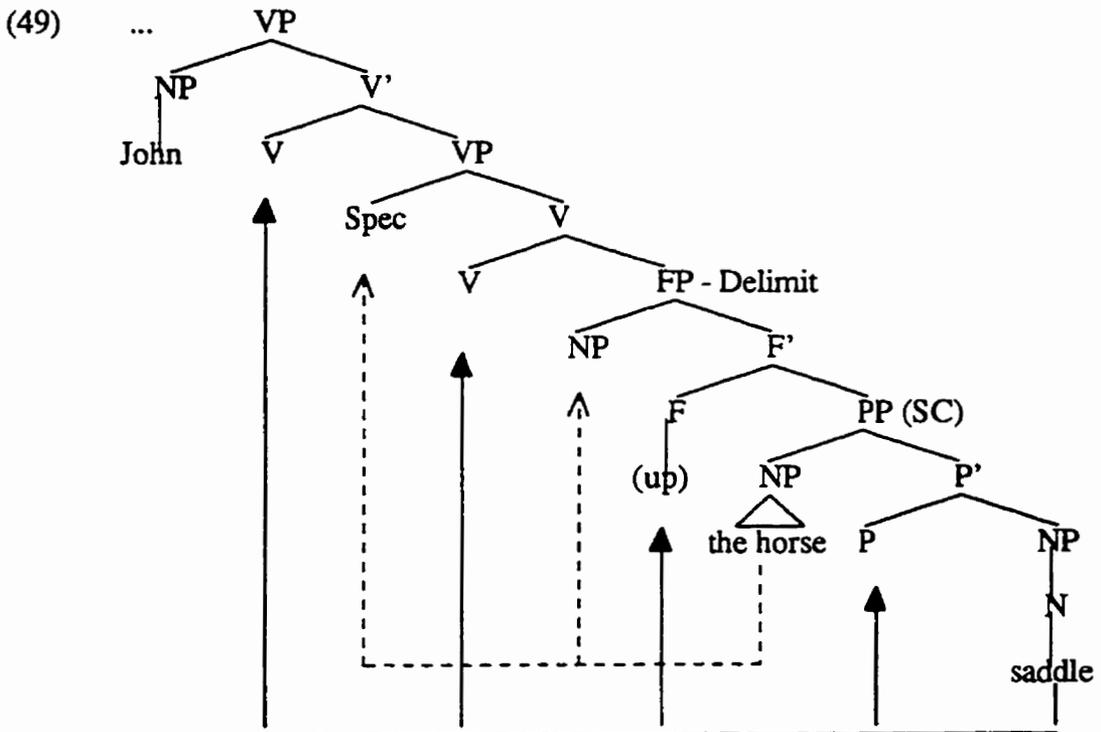
- (47) a. He pitchforked the manure up in an hour.
 b. *He pitchforked the manure up for an hour.

We assume that the representation for (47a) would be identical to that in (46) except that the delimiting F head would be filled by *up*.

So far in our discussion, we have considered strictly non-delimited verbs (like *laugh*) as well as aspectually ambiguous verbs (like *pitchfork*). As noted in (37)-(41) some zero-derived verbs are unambiguously delimited (for example *saddle*, as in *saddle the horse*). Before closing our discussion of zero-derived verbs, let us first discuss the structure we assume for *saddle*. Note that this verb may occur either with or without the particle *up*, but in either case the event denoted is delimited.

- (48) a. John saddled the horse.
 b. John saddled up the horse.

We observe, following Hale and Keyser, that the meaning of the predicate is one in which a horse comes to have a saddle on it. Hence, we assume that an event implicates an interrelation and thus contains a PP complement of the abstract verb. We propose the structure depicted in (49) to represent the predicate of the sentences listed in (48).



Note the structural difference in the lower VPs of the representations in (45) and (46). While the lower V is depicted as governing a PP SC in (49), it simply governs the internal argument in (46). This structural difference accounts for the different semantic interpretations of the derived verbs. In (49) the nominal stem *saddle* is understood as the entity in relation to another entity (i.e., locatum). This relationship is mediated by the preposition *on*. In example (49), P relates the location *the horse* to the locatum *saddle*, the delimited property of this relationship; as a result of the action of the verb *saddle*. In (46) the nominal stem *pitchfork* is understood as the instrument used to manipulate the internal argument *the manure*. It serves as the complement of the verb, not as a predicate of any sort. Thus, the internal argument bears no delimiting relationship to this stem. Notice that it is the SC in (49) that projects the delimiting relationship. This is the case because SC predicates denoting a change of state serve to delimit the event. Hence, if the event denoted has a change of state interpretation, it will project a delimiting FP regardless of there being any change of state head. We predict, then, that only those zero-derived verbs that entail a change of state, or similarly, a change of state, necessarily project a SC with an eventive interpretation. Resultative SCs must project an eventive interpretation. Resultative SCs may optionally do so (accounting for the difference between (45) and (46)).

4.5 Conclusion

In this chapter, we proposed a phrase structural account of *-ify/-ize* affixation. We assumed that the affixes head an eventive functional projection in the syntax. This projection delimit. Building on the work of Hale and Keyser (1993), we analyzed the formation as an example of a general process of incorporation. With Ritter and Rosen (1997), we posited that event information is contained in

form of aspectual functional projections. We then applied our analysis to the aspectual particle *up* and the prefixes *en-* and *be-*. Finally, we demonstrated how our analysis is also able account for the variable aspectual classification of zero-derived verbs. We observed that while zero-derived verbs may or may not be delimited, *-ify/-ize* verbs always are. We claimed that the reason for this is because the affixes head an eventive functional projection. Therefore, verbs derived from them must contain at least this aspectual structure. (They may also contain an initiating FP, but this is not always the case). Whether a given NP is interpreted as an entity that changes state or location, or whether it is an instrument, is determined by its position in the structure. Hence, our analysis is able to capture the variable semantic relationships displayed in derived verb constructions.

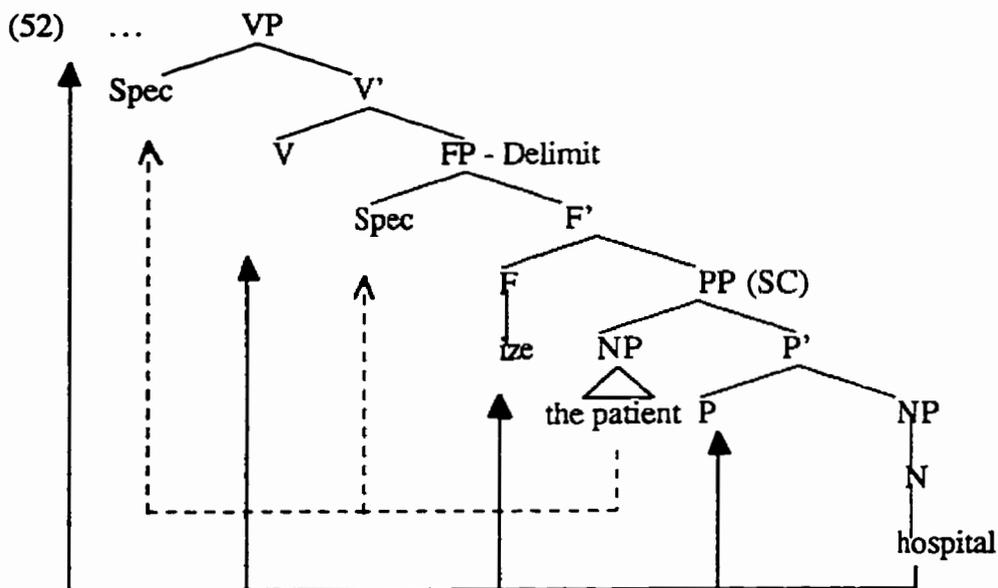
In our discussion in Chapter Two (section 2.2.1), we noted that one of the major weaknesses of the lexicalist theories of Williams (1981) and Lieber (1992), was that they are unable to adequately account for the variable semantic relationships displayed by derived verbs. For example, we noted that Lieber's approach made the wrong predictions for a derived verb like *hospitalize*. Assuming a theory of argument inheritance, the derivation of this verb would be as follows.

- (50) a. **hospital:** [N _____]
 LCS: [Place]
- b. **ize:**]_{NA} _____]v
 LCS: CAUSE [Thing x], [BE LCS of base]
 PAS: (x(...))
- c. **hospitalize:**
 LCS: CAUSE [Thing x], BECOME [Place]
 PAS: (x)

The result of this derivation, we noted, is a verb with the (incorrect) meaning and usage illustrated in (51). Lieber assumes that nouns like *hospital* have no arguments, and thus, no PAS. Affixation of *-ize* would therefore add an external argument, resulting in a PAS with only one argument.

(51) a. *John hospitalized. (=John caused a hospital to come into existence)

Our analysis captures the meaning of verbs like *hospitalize*, by assuming that the lexical stem heads a SC that projects the delimiting FP, as depicted in (52).



Here, the stem names the location where an entity is placed and thus functions as the predicate of a resultative PP headed by an abstract P. As P denotes an interrelation, it requires an NP in its Spec. This structure illustrates that the derived verb *hospitalize* is comprised of an event that implicates a locational relation. The derived verb *hospitalize*, like the zero-derived *saddle*, is necessarily resultative, in contrast to non-locational zero-

derived verbs like *pitchfork* and *laugh*. The crucial point here is that the interpretation of the derived verb and its arguments depends, not only on the inherent semantic properties of each element, but also on the properties of the structure itself. To be able to fully interpret an event, one must take into consideration more than just the lexically listed meaning of a verb.

CHAPTER FIVE

Extensions of the Event Affix Hypothesis:

Deriving Causative Structure in English and Japanese

In this chapter, we tie in our analysis of English *-ify/-ize* constructions with the analyses of two other types of derived construction in English -- the periphrastic and the lexical causatives -- and in doing so, place the Event Affix Hypothesis within a more general framework. We then briefly discuss the implications of such a framework for a universal theory of event structure by comparing the structure of English events with those in Japanese.

5.0 INTRODUCTION

Throughout this thesis, we have developed a constructional account of the semantic properties of English *-ify/-ize* affixed verbs. In Chapter Two, we noted that, traditionally, these derived verb constructions have been referred to as morphological causatives, and the affixes themselves as “causativizing affixes” (cf. Williams (1981), Lieber (1993) and Levin and Rappaport Hovav (1995)). We have taken a different approach, defending an “event affix” analysis of *-ify/-ize*. Especially in Chapter Four, we suggested that in fact these affixes function as the head of an eventive FP in the syntactic structure. Crucially, on our view, *-ify* and *-ize* do not contribute a notion of causation directly. Rather, they contribute the event structure that is necessary for a causative interpretation. In essence, the affixes project a D-event (in the sense of Ritter and Rosen (1997)), and D-events form the basis of a causative event. Thus, causation is derived, not from the affix, but from the event structure that the affix projects.

In this chapter, we relate our analysis of English *-ify/-ize* constructions to the analyses of two other types of derived causative in English, namely the so-called periphrastic and

lexical causatives. We show how our event structure approach to *-ify/-ize* affixation contributes to a general understanding of derived causation. We then look briefly at the constructional account of Japanese event structure proposed by Watai (1996), as evidence for the universality of a constructional account of event interpretation.

5.1 Event Structure and Derived Causatives in English

5.1.1 Morphological Causatives

On our analysis of *-ify/-ize* affixation, English derived verb constructions receive a semantic interpretation compositionally in the syntax. We have argued, on the one hand, that the meaning of the derived verb depends in part on the semantic properties of the arguments and modifiers that appear in its VP, and on the other, that the specific interpretation of the arguments comes from the structure of the event. In Chapters Three and Four, we focused on the aspectual function of the affix as a marker of delimitation. Thus, our claim is not that the affix is a “causative affix”, as has been argued by Williams (1981), Lieber (1992) and Levin and Rappaport Hovav (1994), but rather that it is an “event affix” with a delimiting function. However, as indicated in our discussion of derived accomplishments (section 4.2.1), *-ify/-ize* constructions often do have a causative component to their interpretation, and it is for this reason that Lieber (1992) represents such derivations as lexical operations on LCS, as shown in (1) and (2).

- (1) **modern:** LCS: [_{State}BE [_{Thing}y] [_{State}MODERN]]
 PAS: (y)

- (2) **modernize:** LCS: [_{Event}CAUSE [_{Thing}x], [_{Event}BECOME [_{Thing}y], [_{State}MODERN]]]
 PAS: (x(y))

The LCS in (1) indicates that the adjective *modern* denotes a state and is predicated of one argument, with the meaning that ‘something is modern’. The addition of *-ize*, as indicated in (2), serves two major functions. First, it adds a CAUSE predicate to the semantic composition, and second, it changes [_{State}BE] to [_{Event}BECOME]. Thus, one consequence of Lieber’s analysis is that the creation of event structure is directly effected by the addition of an event initiator or causer, that is to say, a causative interpretation can be obtained by adding a CAUSE predicate to the LCS of a STATE.

Following Ritter and Rosen (1997), we argued in Chapter Four that states and activities pattern together in projecting no syntactic event structure. Event structure is projected only in those cases where the event denoted is delimited. Causation (or initiation) is, furthermore, only possible in the context of delimitation. Hence, the addition of a causer does not create an event from a non-event, but rather augments an existing event. We noted that classifying event structure in this way captures the observation that activities are not causativizable. Example (3) illustrates that it is not possible to causativize the activity verb *laugh*.

- (3) a. The audience laughed.
 b. *The audience laughed Bill.

If a non-delimited event like that in (3) is given a delimited reading (by the addition of a resultative SC, for example), then a causative interpretation becomes possible, as indicated in (4) below.¹

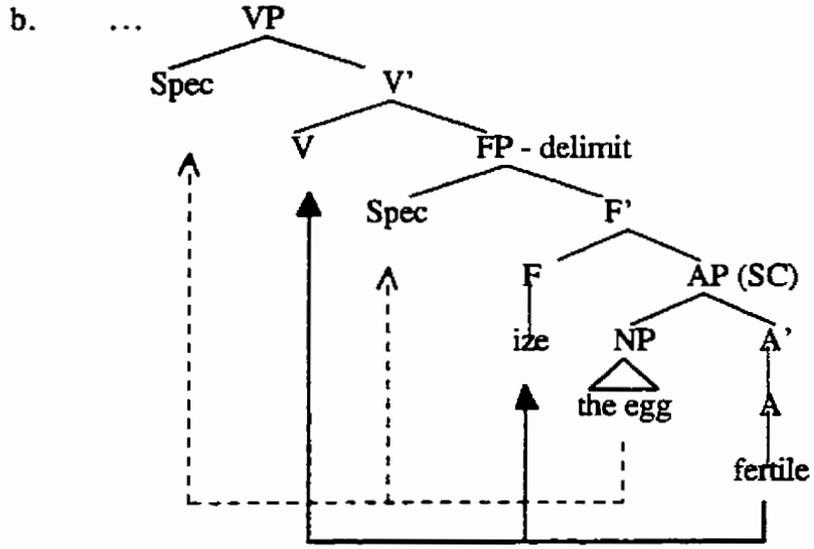
- (4) a. The audience laughed Bill off the stage.
 ⇒ the audience laughed thereby causing Bill to be off the stage

Thus, as discussed by R&R, it appears that causation depends directly on delimitation, and delimitation requires the presence of a delimiting FP in the syntax. Lieber's analysis, which assumes that causation can be formed directly on non-eventive elements, does not capture these generalizations.

In Chapter Four, we argued that *-ify* and *-ize* serve to head the delimiting FP that is required for event interpretation (and, concomitantly, the derivation of initiation). We assume the event structure template in (5b), to represent the "spontaneous" event denoted in (5a) (i.e., with no specified causer).

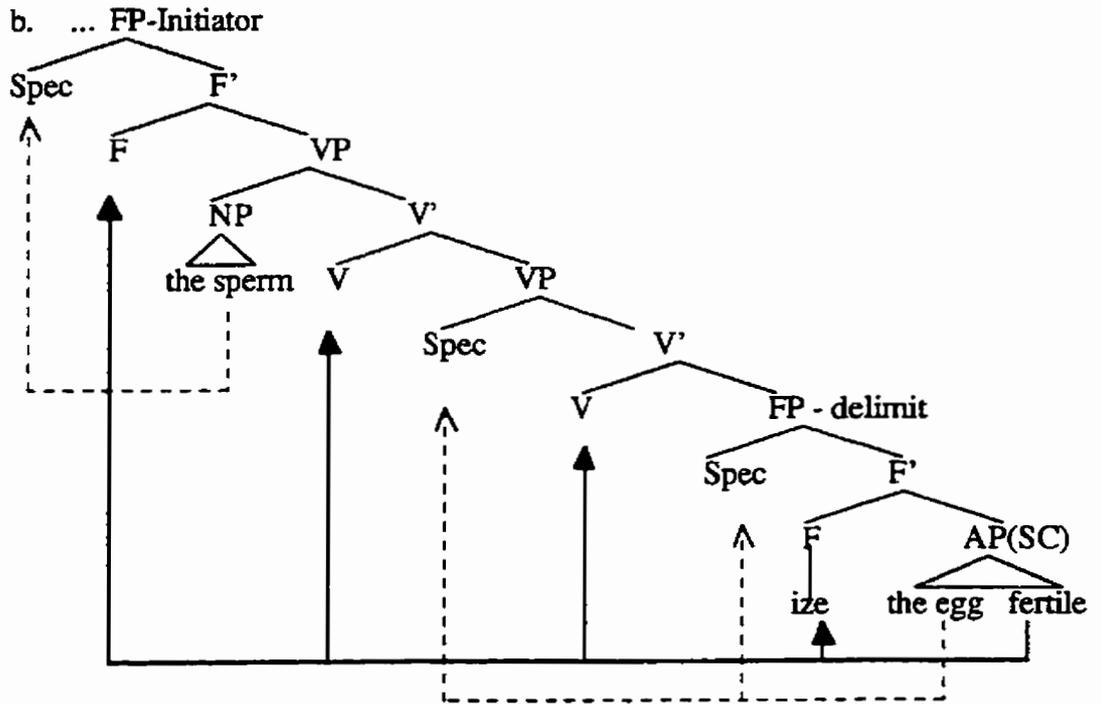
¹ Refer to section 3.2.3 for discussion of the delimiting function of resultative constructions.

(5a) a. The egg fertilized.



If the (D)-event denoted (in our example, the fertilizing of an egg) is one which specifies the initiating participant, then we assume the following event structure template.

(6) a. The sperm fertilized the egg.



In this case, an additional argument, *the sperm*, is generated in the specifier of the upper VP and moves into the specifier of the FP-initiator to be interpreted as event initiator or causer. This interpretation is made possible by the presence of the delimiting FP lower in the tree.

5.1.2 Lexical and Periphrastic Causatives (Ritter and Rosen (1993))

Our analysis of causation in morphologically complex verb constructions contributes to the research program of Ritter and Rosen (1993a,b), who have investigated the status of causer arguments in English. Their analyses focus on two other types of derived causative in English, the periphrastic causative with *have* and the lexical causative, illustrated in (7) and (8), respectively.

Periphrastic Causatives:

- (7) a. The editor had the reporter rewrite the article.
 b. Marcel had the waiter bring him another drink.

Lexical Causatives:

- (8) a. The farmer grows wheat in that field. (cf. Wheat grows in that field.)
 b. The lifeguard swam the child to shore. (cf. The child swam to shore.)

Their basic premise is that CAUSER is an event role and thus not lexically assigned by the verb, but rather assigned compositionally in the syntax. As indicated in the examples in (7), a periphrastic verb is formed by the co-occurrence of two separate lexical items, for

example, *have ... write*, thus forming a complex predicate in the syntax.² R&R (1993a) postulate that there is only one verb *have*, and that it has no independent semantic content. They argue that the function of *have* is to provide syntactic structure for the insertion of an extra argument. This (post-lexical) argument is interpreted by the role it plays in the event denoted. For example, the argument will be interpreted as a causer if it extends the initial boundary of the event backward, adding a new beginning point, as depicted in (9).

(9) The editor had the reporter write a damaging article.

write an article

•-----write an article-----•

have + write an article

•----cause---•-----write an article-----•

The participants involved in the event denoted by the main verb are the NPs *the reporter* and *the article*. *The reporter* is the participant that performs the action denoted by the verb *write*; *the article* is the participant that is acted on. Thus, Ritter and Rosen observe that the extra NP *the editor* is only indirectly involved in the event. Rather than engaging in, or being affected by, the action of the verb, this argument simply instigates the action and hence is interpreted as the event initiator or causer.

The defining characteristic of the periphrastic construction is that the verb *have* is semantically unspecified. A semantically underspecified verb lacks the lexical content necessary to assign a semantic interpretation to its arguments. Such arguments can receive a semantic interpretation post-lexically at LF, the syntactic interpretative component of the grammar.

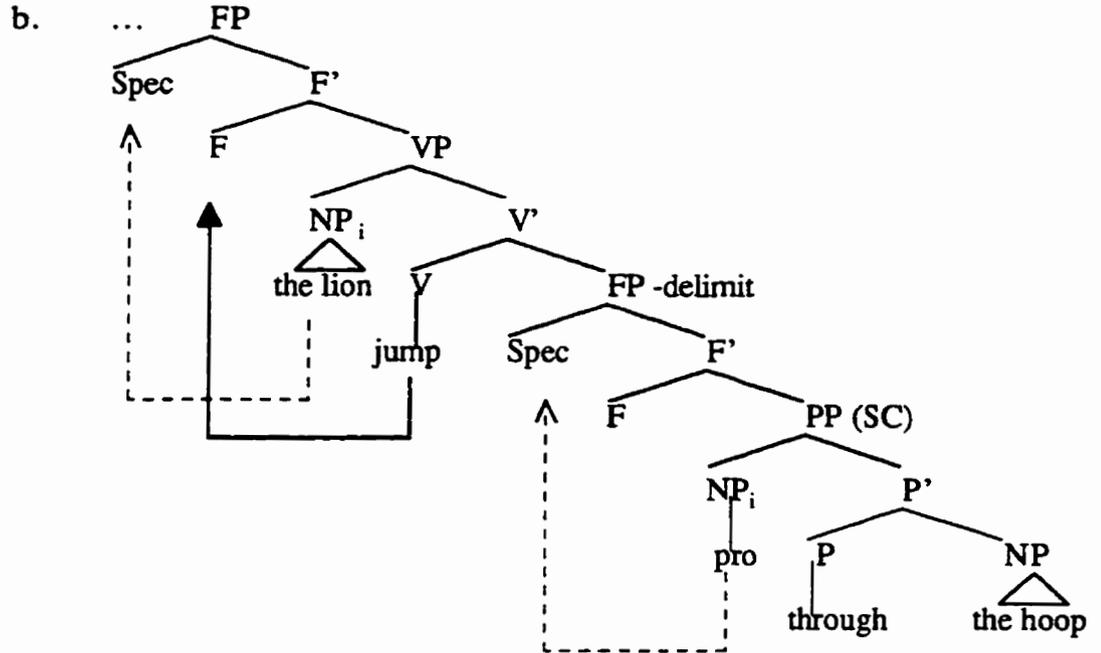
² See also the discussion in section 3.1.2.

Like *have*, lexical causative verbs are not inherently specified as causative, although they do have independent lexical content and thus can license thematic arguments. As indicated with the verb *jump* in examples (10a) and (10b), for instance, the entity that performs the action named by the verb is the same in the basic and derived causative uses; in both cases, it is *the lion* that does the jumping. In (10b) the added NP *the trainer* plays a role only indirectly, by instigating the event. It crucially does not engage in the action named by the verb.

- (10) a. The lion jumped through the hoop.
 ⇒ the lion jumps
- b. The trainer jumped the lion through the hoop.
 ⇒ the trainer does not jump

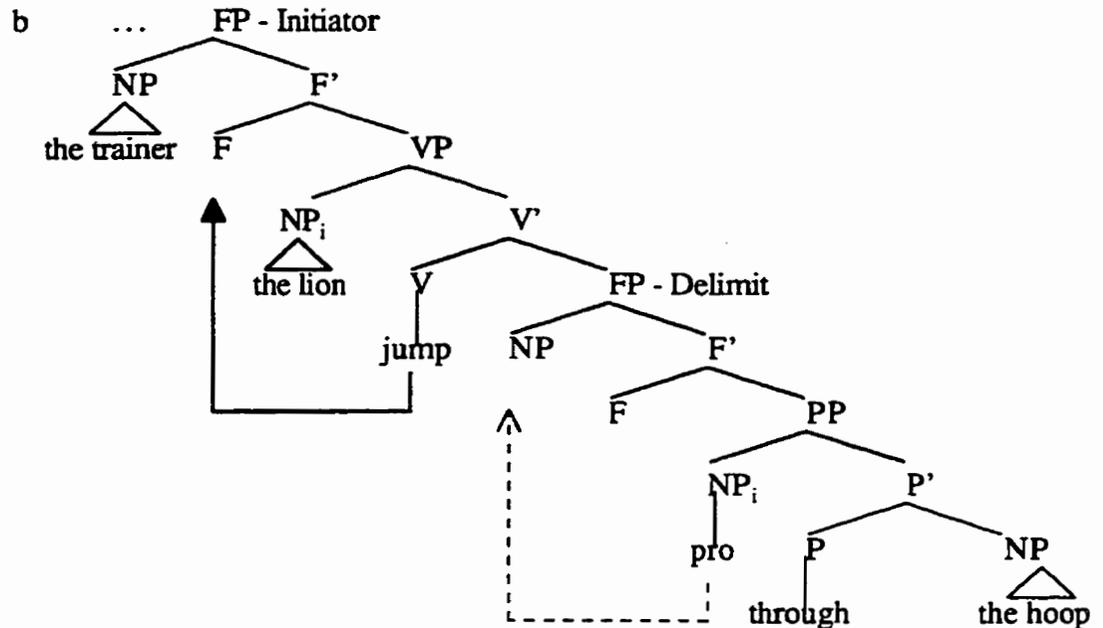
In what follows we provide the syntactic configurations that we assume for the different uses of the verb *jump*. The structure illustrated in (11b) is the one assumed to represent the non-causative use of the verb, and that in (12b) the derived causative.

(11) a. The lion jumped through the hoop.



The event denoted by the single-argument verb in (11) is delimited; as a result of the jumping, the lion is 'through the hoop'. In this structure the NP *the lion* is generated in the Spec of VP, reflecting the fact that this NP is an argument of the verb; the lion is the agent of jumping. From this position, it can move up to the Spec of the upper FP. As we just mentioned, however, the interpretation of the event is such that the lion is also interpreted as being 'through the hoop' as a result of the jumping. Hence, we postulate a PP SC with a delimiting FP projection as a complement to the V. Within this PP, a *pro* coindexed with *the lion* serves to delimit the event by moving into Spec of FP-delimit and receiving the DELIMITER role. In this structure, then, the entity denoted by *the lion* both initiates and delimits the event. Consider now the event denoted in (12).

(12) a. The trainer jumped the lion through the hoop.



Again, the event denoted in this structure is delimited and it is the NP *the lion* that delimits the event by being ‘through the hoop’. Thus, we assume a *pro* subject in a PP SC that is coindexed with *the lion*, the agent of jumping. However, in this case, the entity denoted by *the lion* is not interpreted as initiating the event. Rather, the event is understood as being initiated by the added NP *the trainer*, which is a purely aspectual argument generated in Spec of FP, rather than the Spec of a verbal projection. This structure reflects the intuition that, while the trainer does instigate the jumping event, the trainer does not jump. Compare this structure with the one depicted in (6) for the derived verb *fertilize*. (6) contains an external argument, *the sperm*, generated in Spec of VP which then subsequently moves into Spec of the initiating FP, with the net result that *the sperm* is interpreted as both the agent or doer of *fertilize*, as well as the initiator of the event. We postulate that *the sperm* is thematically related to the verb (a type of agent), whereas *the trainer* in (12) is not.

In order to maintain the assumption that *the sperm* is the agent proposed by Dowty (1991), that thematic role rather, “cluster concepts”. Dowty suggests reanalyzed as PROTO-AGENT and PROTO-PATIENT characterized by a set of properties. The interpretation of agent or proto-patient, then, results from the properties it has. Crucially, the notion ‘agent’ is a cluster of properties. The contributing properties are given in (13) below.

- (13) Contributing Properties for the Agent Proto-Agent
- a. volitional involvement in the event or process
 - b. sentience (and/or perception)
 - c. causing an event or change of state in the world
 - d. movement (relative to the position of the event)
 - (e. exists independently of the event name)

As long as an argument has one or more of these properties agentively. We assume that in (6), *the sperm* is the agent and hence is thematically related to the verb. It is the agent because it entails some of the defining properties in (c), (d) and (e).³

³ That *the sperm* in (6) is thematically related to the verb is suggested by the following grammaticality contrast:

- (i) a. The egg was fertilized by the sperm.

To summarize, we see that our analysis of *-ify/-ize* affixed verbs contributes to a general understanding of derived causation. With Ritter and Rosen, we postulate that the notion of causation, or event initiation, is derived in the context of delimitation, at least in English. In the following section, we consider the implications of this hypothesis for a universal theory of event structure.

5.2 Event Structure and Derived Causatives in Japanese

We have adopted a view of event structure which assumes that (at least in English) only delimited events are structurally encoded. These are events in which a delimiting FP is projected and an argument in its Spec is assigned the DELIMITER role. In this section, we examine the event structure of Japanese. We see that in this language the opposite is true; a structurally encoded event is one in which an initiating FP is projected and an argument in its Spec is assigned the INITIATOR role.

5.2.1 The PrP Hypothesis (Watai (1996))

In her analysis of subjects in Japanese, Watai (1996) proposes a functional projection Pr(edicate)P, that occurs somewhere between IP and VP and in whose Spec a subject is generated. Furthermore, on this analysis, PrP is responsible for projecting an event

b. ?The lion was jumped through the hoop by the trainer.

(i) demonstrates that the external argument of *fertilize* can be put into an agentive *by*-phrase when the sentence is passivized, whereas the external argument of *jump* is not so felicitous in the *by*-phrase, suggesting that this argument is not agentive. (Hence, we are making a distinction between agent and causer not made by Dowty. While an agent participates in the core event denoted by the verb, a causer does not, which is why an agent can appear in a *by*-phrase, but a non-agentive causer cannot).

structure onto syntax by denoting the beginning point of an event. Watai argues that this analysis captures the observation that subjects of eventive verbs in Japanese must be initiators of an event. This specification on subjects is based on the theory of event structure realization proposed by van Voorst (1988), who notes that, while internal arguments function as objects of termination, external arguments may function as either objects of origin or objects of actualization.⁴ In Dutch, and as demonstrated by Watai, in Japanese, subjects (i.e., external arguments) must play a role in initiating the event. For example, as the grammaticality contrast in the following sentences shows, an instrument cannot function as subject, only an agent can. While *kagi* in (14) is crucial to the actualization of the event, it clearly does not initiate the event and hence cannot function as subject. The agent *Tom* in (15), on the other hand, can be interpreted as event initiator. Hence, the sentence in (15) is perfectly felicitous.⁵

- (14) *Kagi-ga doa-o aketa.
 key -NOM door-ACC opened.
 'The key opened the door.'

⁴ For further discussion of van Voorst (1988), see discussion in Chapter 1, section 1.3.1.

⁵ Watai observes that this property of Japanese subjects mirrors that of subjects in Irish, as noted by Guilfoyle (1995). The Irish sentences in (i) and (ii) show the same grammaticality contrast between agent subjects and instrument subjects that is demonstrated in Japanese. Hence, like Japanese, Irish is a language that is sensitive to event initiation.

(i) *D'oscail an eochair an dorais.
 open-Past the key the door
 'The key opened the door'.

(ii) D'oscail Seán an dorais.
 open-Past Seán the door
 'Sean opened the door.'

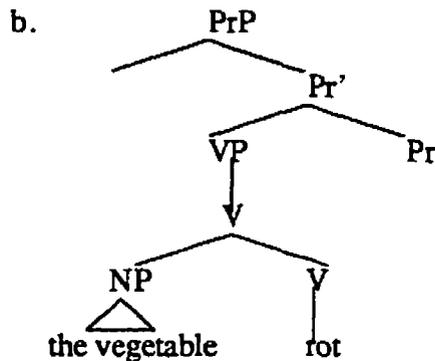
(=(44) & (46) pp. 37-38, Guilfoyle (1995))

Japanese, it must be initiated. In other words, it must be an I-event (as opposed to the English D-event).

5.2.2 The Structure of Unaccusatives

Watai's analysis of Japanese mirrors our English analysis insofar as she assumes event interpretation to take place through the projection of a functional phrase (or phrases) in the syntax. Thus, events are distinguished from states in that states are assumed to lack a syntactically encoded event structure. One curious assumption that Watai makes, however, (given her analysis of PrP as marker of initiation), concerns the structure of Japanese unaccusative verbs. As in English, the characteristic property of an unaccusative verb is that its sole argument functions underlyingly as a deep object. In other words, an unaccusative lacks an external argument, and only external arguments are event initiators (typically agents). Thus, in an unaccusative construction, there is no argument to serve as the initiator of the event. If a structurally encoded event is defined in Japanese as one in which an initiating PrP is projected with an initiating argument in its Spec, then it would seem reasonable to presume that Japanese unaccusatives are non-eventive (as far as the syntax is concerned). Watai, however, assumes the configuration in (17b) to represent unaccusative constructions in Japanese.

- (17) a. Yasai -ga kusat-ta.
 vegetable-NOM rot-Past
 ‘ The vegetables rotted.’



(=23) p. 102, Watai (1996))

On this view, unaccusative verbs are eventive and thus require the projection of PrP, but because the sole argument of an unaccusative is not an initiator, it is base-generated as the complement of the verb. Watai explains that the PrP is projected, but because its Spec is empty, it is “inert”. The object argument is then assumed to move into the Spec position, and in so doing, “activate” the eventive property of PrP. In other words, movement of object NP into Spec,PrP triggers an event interpretation, without triggering the initiator interpretation. However, as subjects of non-stative verbs in Japanese must be initiators, this assumption seems suspect.

We propose that the properties of Japanese are better explained if it is assumed that unaccusative verbs in Japanese pattern with states, rather than I-events or true, structurally encoded events. Then we can say that, in order for an event structure to be projected in Japanese, the event must be initiated (in contrast to English, in which a structurally encoded event must be delimited). Thus, the two languages are similar in that event information is encoded in the syntactic projection of an eventive FP but, whereas this FP provides D-information in English, it provides I-information in Japanese (Irish is arguably similar to Japanese in being an I-event language). We hypothesize that UG provides the syntactic means of encoding events, but that the specification of the eventive FP as delimiter or

initiator is subject to cross-linguistic variation. Further evidence for this structural account of Japanese is provided by an analysis of causative constructions.

5.2.3 The Structure of Causative *-(s)ase*

In Japanese, causation is generally indicated by the presence of the causative morpheme *-(s)ase*, which attaches to a verb stem, as shown in (18)-(19) below (examples from Shibatani (1976)).

(18)

| | Noncausative | Causative |
|--------|--------------|----------------|
| 'work' | hatarak-u | hatarak-ase-ru |
| 'look' | mi-ru | mi-sase-ru |
| 'walk' | aruk-u | aruk-ase-ru |

- (19) a. Taroo ga aruk-u.
 'Taroo walks'.
 b. Hanako ga Taroo o aruk-ase-ru
 'Hanako makes Taroo walk'.

(=(2) p. 241, Shibatani (1976))

It is generally recognized that the *-sase* morpheme forms two different types of causative construction, referred to in the literature variously as 'lexical' versus 'productive' (or 'analytical') causatives (for example, Shibatani (1976)) or 'blocked' versus 'unblocked' causatives (Miyagawa (1989)). We shall use the terminology of Shibatani and refer to the distinction as lexical versus analytic. The verbs listed in (18)-(19) are of the analytic type (relevant details of which are discussed presently). Examples of the so-called lexical causatives are provided in (20) and (21).

- (20) a. Yasai ga kusat-ta.
vegetable-N rot-Past
'The vegetables rotted'.
- b. Taroo ga yasai o kusar-ase-ta.
Taroo-N vegetable-A rot-cause-Past
'Taroo rotted the vegetable'.
'The vegetable rotted on Taroo'.
(=(38) p. 129, Miyagawa (1989))
- (21) a. Hana ga sak-u.
flower-N bloom
'The flower blooms'.
- b. Taroo ga hana o sak-ase-ru.
Taroo-N flower-A bloom-cause-Present
'Taroo blooms the flower'.
'Taroo achieves success'.
(=(25)-(26) p. 104, Watai (1996))

One property that distinguishes the analytic *-sase* constructions from the lexical ones, is the observation made by Shibatani (1976), that analytic causatives typically denote 'directive causation', in which the causer (for example, *Hanako* in (19b)) only indirectly causes the event. (For example, the causer perhaps gives directions to the causee.) Lexical causatives, on the other hand, typically denote 'manipulative causation', which means that the causer has a more direct role in the causing event. (For example, the causer must manipulate the causee in order to effect the event.) Furthermore, while analytic causatives are interpreted purely compositionally (as 'cause to V'), the lexical causatives often have an additional meaning, either an idiomatic interpretation (as indicated in (21b)) or an adversity interpretation (indicated in (20b)). It is argued that such non-compositional meanings must

be lexically listed, whereas analytic meanings are predictable and can be derived in the syntactic structure (cf. Shibatani (1976)).

Notice that the intransitive verb stems in (18)-(19) (which form the base for the analytic causative) are unergative, whereas the verb stems in (20) and (21) (which form the base for the lexical causative) are unaccusative. As we shall see, this marks a critical distinction between lexical and analytic causatives, and provides evidence for our proposal that structurally encoded events in Japanese are I-events.

One of the most striking properties of the analytic causatives, is that they require the causee to have volitional control over its action, that is, the causee must be an event initiator. Hence, an analytic causative can be formed either from a transitive activity verb or from an unergative verb, if it is intransitive. Consider the examples in (22) below illustrating causative formation on an intransitive verbal stem.⁶

- (22) a. *Taroo ga isu o taore-sase-ta.
 ‘Taroo caused the chair to fall down’.
- b. Taroo ga Ziroo o taore-sase-ta.
 ‘Taroo caused Jiro to fall down’.

(=(45)-(46) p. 133, Miyagawa (1989))

⁶ The formation of a ditransitive verb from a transitive one is provided in (i) below.

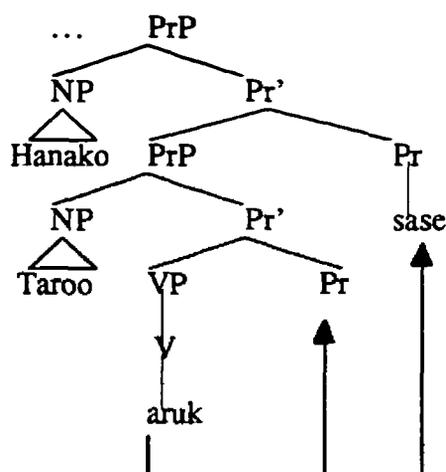
- (i) Hanako ga Taroo ni syokki o araw-ase-ta.
 Hanako-N Taroo-D dishes-A wash-cause-Past
 ‘Hanako caused Taro to wash the dishes’.

(=(1) p. 111, Miyagawa (1989))

The chair in (22a) cannot initiate its own falling. Hence, the eventuality in which a chair falls cannot be causativized by adding *-sase*. If *the chair* is replaced by *Jiro*, as shown in (22b), then an analytic interpretation becomes possible. Building on the work of Harley (1995), Watai (1996) proposes that in the case of analytical verb-*sase* constructions, a second instigator in an upper PrP is projected over the PrP of the original event, and that the head of this upper PrP is filled by the *-(s)ase* morpheme. The structure Watai proposes for the event denoted in (19b), repeated below in (23a), is depicted in (23b) (excluding functional projections relating to case assignment).

(23) a. Hanako ga Taroo o aruk-ase-ru.

b.



In this structure, the verb undergoes head movement, raising through the lower Pr to the higher Pr containing *-(s)ase*. The NP in the lower PrP initiates the core event (Taroo initiates the walking), while the NP in the higher PrP initiates the causing event (Hanako initiates an event that causes Taroo's walking). Note that, crucially, the requirement for the addition of a causer argument in the upper PrP in Japanese is the syntactic projection of an (I)-event with an initiator in its Spec (exactly the opposite situation than is required for

English).⁷ Alternatively, because the unaccusative construction in (22a) lacks an event initiator (hence, lacks a syntactically encoded event structure), causativization is not possible. We assume that causativization is dependent upon an eventive FP in both English and Japanese. However, whereas in Japanese eventive FP is the initiating FP (Watai's PrP), in English it is the delimiting FP. Hence, we can account for the curious fact that, in Japanese it is possible to causativize an unergative, but not an unaccusative, whereas in English the opposite is true.

While analytic causatives are ruled out for unaccusative verbs (as indicated by the ungrammaticality of (22a)), it is possible in Japanese to form a lexical causative verb from an unaccusative. This is shown in examples (20) and (21) above, repeated below in (23).

- (23) a. Taroo-ga yasai-o kusar-ase -ta.
 Taroo-NOM vegetable-ACC rot -Cause-Past
 'Taroo rotted the vegetable.'
 'The vegetable rotted on Taroo.'

⁷ Unlike Japanese, it is not possible in English to form either a morphologically or lexically derived causative on a stem verb such as *walk*, *look* or *work*. Observe the ungrammaticality of the following sentences (cf. example (18) above).

- (i) a. *Hanako walked Taroo. (with the meaning, 'Hanako caused Taroo to walk')
 b. *Hanako looked Taroo.
 c. *Hanako worked Taroo. (with the meaning, 'Hanako caused Taroo to work')

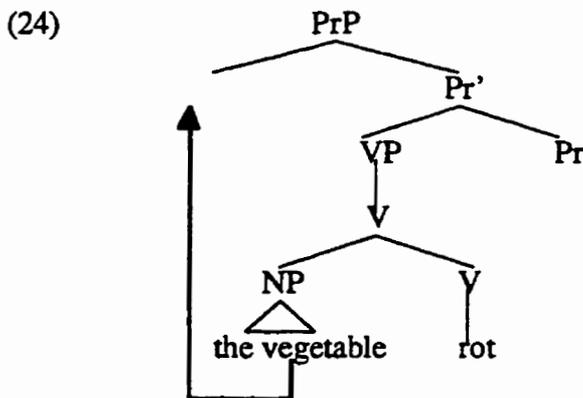
Like *laugh*, discussed in section 5.1.1 of this chapter, *walk*, *look* and *work* are classified as unergative (activity) verbs. We maintained that because such verbs do not project an eventive (i.e., delimiting) FP in English, and because the projection of the initiating FP is dependent upon this delimiting FP, such a construction cannot be formed. The only possible way to form a causative with such verbs, is by adding a second clause headed by the independent verb *make*. In other words, English must utilize the periphrastic construction, as shown below in (ii).

- (ii) a. Hanako made Taroo walk.
 b. Hanako made Taroo look.
 c. Hanako made Taroo work.

- b. Taroo-ga hana-o sak -ase -ta.
 Taroo-NOM flower-ACC bloom-Cause-Past
 ‘Taroo bloomed the flower.’
 ‘The flower bloomed on Taroo.’

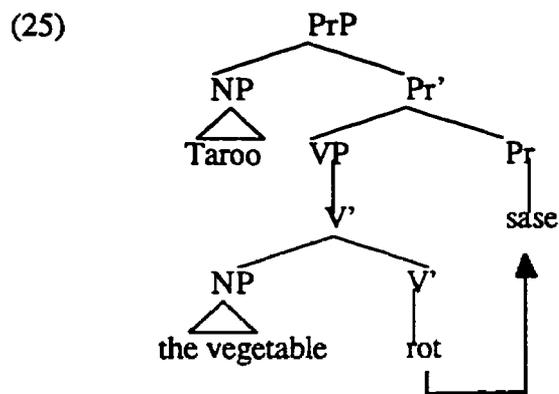
Here, we see *-(s)ase* attached to the unaccusative verbs *kusar* ‘rot’ and *sak* ‘bloom’. That these are lexical forms is indicated by the fact that the interpretation is not the ‘cause to V’ interpretation characteristic of analytic constructions (in which there are two separate sub-events implied, with two separate initiators). Rather, the interpretation of such forms is more direct in a sense (similar to the lexical transitive verb *kill* in English, as opposed to the syntactic *cause to die*) (cf. the discussion of ‘directive’ versus ‘manipulative’ causation in Shibatani (1976)). Furthermore, these examples show that an alternative adversity (or experiencer) interpretation is available, in which the subject is not the causer of the event, but one who is adversely affected by it.

Recall now that Watai (1996) assumes unaccusative constructions to be eventive and thus to project an (inert) PrP in the syntax. This was illustrated in (17) and is repeated below in (24).



(=23) p. 102, Watai (1996))

As this structure demonstrates, the object NP is assumed to move into the Spec position of the inert PrP in order to activate the “eventive” property of unaccusatives (crucially, without triggering an initiator interpretation). Now, compare this structure with the structure in (25), which is assumed to represent a lexical causative formed from this same unaccusative. Watai assumes that when *-(s)ase* is added to the unaccusative, an added external argument is inserted into the empty Spec PrP position, thus engaging the event function (as well as the initiator interpretation).



On the one hand, the Spec of PrP is assumed not to activate an initiator interpretation for the argument in its Spec (the case of unaccusatives shown in (24)), but at the same time, is assumed to activate an initiator interpretation in the case of lexical causatives (shown in (25)). It is not clear on this analysis how the eventive PrP could be interpreted as initiating in one case and not the other. Furthermore, it is not clear how the different interpretations of the lexical causative (as demonstrated by, for example, the two interpretations listed in (23)) are to be distinguished by using this structure.

Hence, we propose that the data are better explained on the assumption that unaccusative constructions pattern with states in that they do not project a syntactic event structure. On

this analysis, the ban on analytic causatives formed from unaccusative verbs is then accounted for, because derived causation requires the augmentation of an eventive FP, we predict it to be impossible if no such FP is present in the syntax. We assume, following Shibatani (1979), that lexical causatives are to be treated separately from analytic causatives. We assume that these lexicalized elements cannot be given a structural account based on the projection of syntactic event structure.

5.3 Summary

In this chapter, we attempted to place our analysis of English *-ify/-ize* constructions within a larger framework of derived causatives by extending our analysis to other types of English causative construction. We demonstrated that morphological causatives formed by *-ify/-ize* affixation manifest a pattern similar to the other causatives, in that causation is derived from the syntactic projection of a D-event. We then summarized a structural account of Japanese event structure proposed by Watai (1996), and suggested an alternative way in which Japanese events may be classified. It was seen that in this language structural events are defined as those which are initiated. Thus, unaccusative constructions, because they lack an initiating external argument, were claimed to pattern with states. Further evidence for this classification came from a brief look at causative constructions in Japanese, where we observed that unaccusatives are not causativizable. This pattern is strikingly different than the pattern of causative verbs found in English.

Given our observations concerning the event structure pattern in English and Japanese, we conclude that a comparison of these two languages provides some preliminary motivation for proposing that syntactic event structure may be a property of Universal Grammar, with

languages parameterized with respect to whether eventive FP is specified for delimitation (for example, English) or initiation (for example, Japanese).

CHAPTER SIX

Conclusion

6.0 A Review

Throughout this thesis we have sought an answer to the question ‘Where do the (uniquely) verbal properties of derived verbs come from?’ In addressing this issue, we have focused our attention on the morphologically complex verbs in English formed by the affixation of *-ify* and *-ize*. We first established that verbs in general are distinguished from other grammatical categories in that they typically encode events. Events encode the notion of time and involve one or more semantic participants (or arguments). Hence, in our examination, we concentrated on the argument structure and event structure properties of the derived verbs. We began in Chapter Two by discussing the lexicalist word-formation theories of Williams (1981) and Lieber (1992), pointing out some of the problems that are associated with the lexicalist approach (in particular, the fact that the argument structure properties of the derived verbs cannot be predicted from a highly specified lexical representation). We then provided an alternative analysis of *-ify/-ize* in Chapter Three in which we proposed that these verbalizing affixes are thematically underspecified (contributing no argument structure information), but that they do have an eventive contribution to make. The overwhelming majority of *-ify/-ize* verbs only appear in delimited events. Therefore, we concluded that the suffixes should be analyzed as Event Affixes, which we defined as morphological markers of delimitation. We then provided motivation for our analysis by demonstrating that the affixes occur in complementary

distribution with other delimiting aspectual elements in English, the resultative particle *up* and the prefixes *en-* and *be-*. In Chapter Four, we proposed a unified structural treatment of the various aspectual markers, suggesting that they occupy the head of a delimiting FP in the syntax. Complex verb formation, then, was argued to occur via head movement of a lexical stem into the head of FP and thus to be a phenomenon of sentence-level syntax. Implications of our analysis for the study of derived causatives in English and Japanese were suggested in Chapter Five.

6.1 Final Remarks

While a fairly thorough examination of the event structure properties of English *-ify/-ize* verbs was undertaken, the analyses of zero-derived verbs and *en-/be-* prefixed verbs were comparatively underdeveloped. Zero-derived verbs, in particular, are more problematic, as they display a broader range of semantic properties (for example, see Clark and Clark (1979) and Pounder (1995) for discussion). We included zero-derived verbs in order to compare the structural representations of derived verbs that denote delimited events with those that denote non-delimited ones. However, just how much semantic information can be structurally encoded over and above the aspectual properties of these verbs remains a question for further research.

Throughout our analysis, we have provided a comparison of *-ify/-ize* verbs with prefixed verbs and verb-particle constructions, pointing out the functional similarity between these elements. It would be interesting to explore these relationships further. We noted that *-ify/-ize* occur in complementary distribution with *up*. Does this sort of relationship between derivational affixes and particles occur in other, related languages such as German

or Dutch? What are the origins of *-ify-ize* as aspectual suffixes (i.e., did they always have this function)? This question has already been addressed for the particle *up* by Denison (1985).

Finally, it should be noted that our analysis of *-ify/-ize* as event affixes was based on the assumption that event structure is determined by the presence of functional projections in the syntax (and it is for this reason that we analyzed the affixes as actually heading the delimiting FP). What we did not discuss, however, is the role played by tense in the determination of event semantics. We have argued that the event denoted in a sentence like *The carbon crystallized* is delimited, and that the single NP argument serves to terminate the event of crystallizing. However, as pointed out by Pounder (p.c.), this can be contrasted with the sentence in the simple present tense, *Carbon crystallizes*, and in this case the sentence expresses a permanent property of carbon, not a delimited event. While this is a curious fact, it does not necessarily undermine our hypothesis that the suffixes are morphological markers of delimitation. The general intuition that the crystallizing event ends when the carbon reaches a stage of crystallization remains. It is striking that sentences put in the present tense are never delimited even though their past tense counterparts normally are. Thus, this phenomenon is not a problem specific to our analysis, but is, rather, a general fact about the interaction between TP and the eventive FP, an interaction that should be investigated in future research.

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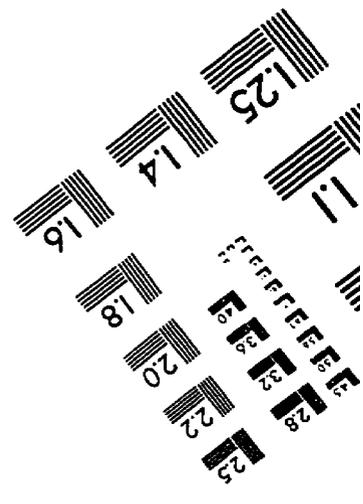
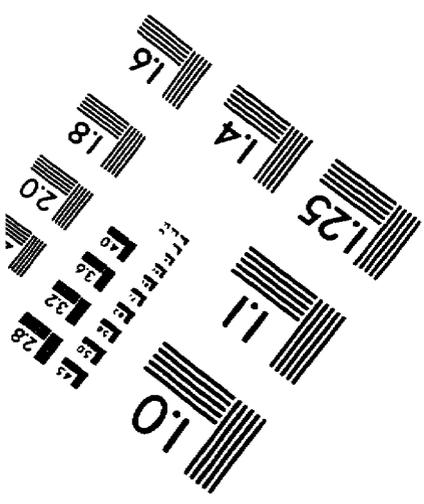
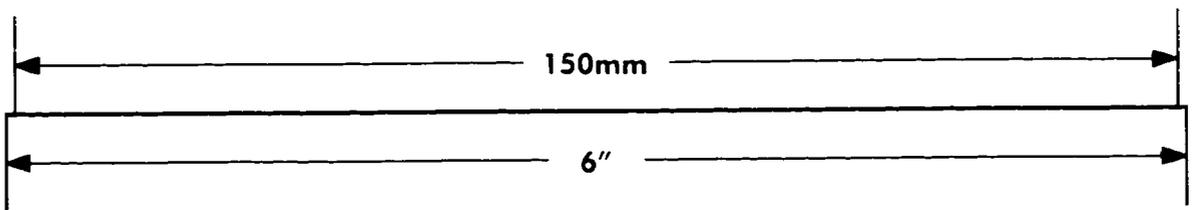
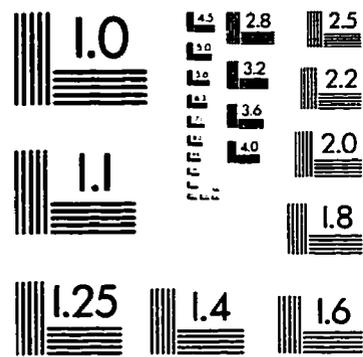
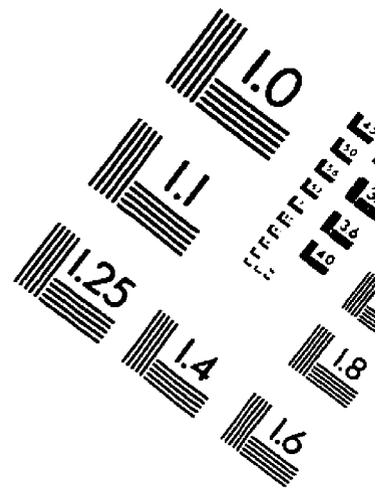
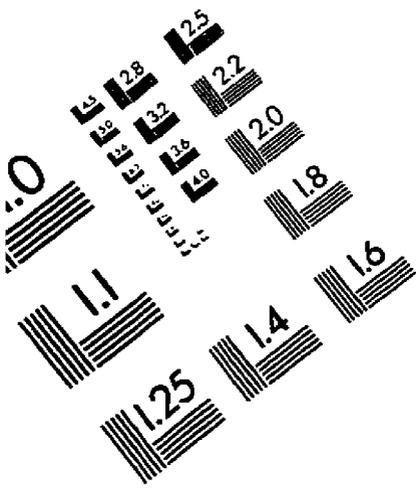
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IMAGE EVALUATION TEST TARGET (QA-3)



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