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Event Structure in Syntax

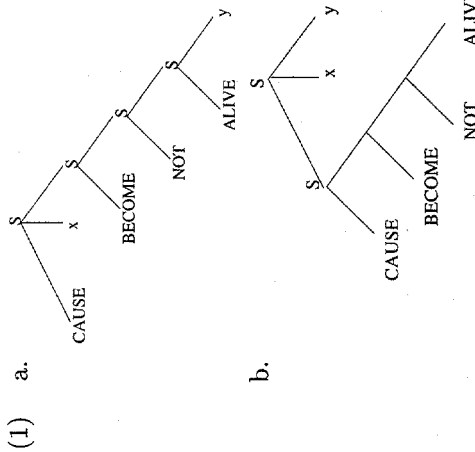
LISA TRAVIS

The structure of events has long been considered the domain of philosophers and semanticists.¹ Generally, it has been assumed that any level internal to a verb is outside the domain of syntax. Even when a phrase structure was proposed to represent subeventual structure, the framework was called Generative Semantics. Recently, however, syntacticians have suggested that there is an interaction between lexical semantics and purely syntactic structure.

Without giving a detailed view of the road from the phrase structure of Generative Semantics through pure semantics and back to a syntactic account of subeventual structure, I would like to point to some developments that might explain why the intersection of semantic interests and syntactic interests occurred when it did.

McCawley (1968) within the Generative Semantic framework proposed that *kill* be represented as in (1a) below. (1b) shows what the representation would look like after Predicate Raising and before lexical insertion (McCawley 1968:73).

¹This work represents an overview of the research that I have been doing since 1990. I am grateful, therefore, to anyone I have spoken to over the last eight years concerning this research - obviously too many people to mention here. I will single out, however, students who have passed through the McGill program and who have influenced my thinking on these issues in important ways: Mengistu Amberber, Mark Campana, Dongdong Chen, Natividad del Pilar, Eithne Guilfoyle, Henrietta Hung, Anna MacLachlan, Maire Noonan, Ileana Paul, Vivianne Phillips, Tony Pi, Ben Shaer, Roumyana Slabakova, O. T. Stewart, and Miwako Uesaka. Also my colleagues at McGill: Mark Baker, Nigel Duffield, and Brendan Gillon. I am also grateful for funding I have received from FCAR (97ER0578) and SSHRCC (410-98-0452).



Kill is seen as being composed of several primitive predicates. These predicates then combine into a semantically larger predicate pre-syntactically via a syntactic-like rule of predicate raising. Once this composition has occurred, the lexical item meaning CAUSE BECOME NOT ALIVE, i.e. *kill*, can be inserted. In a well-known series of debates, syntacticians from the interpretivist school argued that this level of structure should not be considered to form any part of syntax. Rather, these primitive predicates that made up the meaning of a verb such as *kill* belonged to the autonomous domain of syntax.

Dowty (1979) translates many of the observations of the Generative Semanticists into Montague's semantic framework again using predicates such as CAUSE, BECOME. His representation of a (non-intentional) agentive accomplishment as in 'John broke the window' is given in (2) below (Dowty 1979:124).

(2) $[[DO(\alpha_1, [\pi_n(\alpha_1, \dots, \alpha_n)])] CAUSE [BECOME[\rho_m(\beta_1, \dots, \beta_m)]]]$

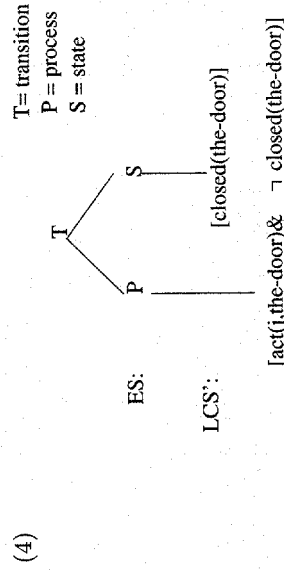
There is no associated syntactic structure (although, of course, some translation could be made from the brackets). Further there are no quasi-syntactic rules like predicate raising to form the transitive verb *open*. At this point, the representation makes no claims to syntactic representation or processes.

The representations of Parsons (1990) encode a certain view of 'subatomic semantics' which follows the tradition of Dowty and the Generative Semanticists again using predicates such as CAUSE and BECOME. The verb 'close' as in 'Mary closes the door' would, in fact, contain two events and one state as shown in (3) (Parsons 1990:120).

- (3) (e) [Cul(e) & Agent (e,x) & (e') [Cul(e') & Theme(e',door) & CAUSE(e,e') & (s) [Being-closed(s) & Theme(s,door) & Hold(s) & BECOME(e',s)]]]

Here there is a culminated event, e, which introduces the Agent, another event, e', which introduces the Theme and is caused by e, and a final state of being closed which is reached from e'. This representation contains not only the familiar primitive predicates, but also representation of sub-events in the form of e, e', and s.

Pustejovsky (1991) also presents the sub-parts of events using predicates such as *cause*, *act*, and *become*. However, these predicates mapped onto a level called Event Structure which contained only types of events. He, then, explicitly separates the semantics of the predicates from the representation of sub-parts of events. His representation of 'John closed the door' is given in (4) below (Pustejovsky 1991:58).



LCS: $cause([act(j,the-door)], become([closed(the-door)])$

There is the level of the Lexical Conceptual Structure (LCS) which is much like the semantic representations of Dowty and Parsons. This level maps to another level of LCS, LCS', which pulls the LCS apart into two sub-events - one which causes the other. The first one is a process of an action and the state of the door not being closed. This event is followed by the state of the door being closed. At the level of Event Structure (ES), all that is represented is the process (P) followed by a state (S), and together these form a Transition (T).

By picking these representatives of the development of event structure, the line of development seems to move from a rich syntactic representation of meaning (as in Generative Semantics), to a rich semantic representation of meaning (Dowty), to a representation of meaning which clearly outlines the contribution to event structure by introducing the event variable e (Parsons), to a representation which clearly extracts the information that is relevant to event structure from the representation that might encode other aspects of meaning (Pustejovsky). As we will see in what follows, by allowing some of the richness of meaning to stay within the domain of

semantics, and extracting that which is particular to event structure, we might return to a version of Generative Semantics that allows syntax to encode bits meaning without running into the problem of trying to encode all of meaning in syntax.

In this paper, I will argue that there is a syntactic side to the question of the sub-structure of events. As the semantic representations of events were developing, there were changes being made in the structure of the VP. I believe that these parallel changes made the interaction between the semantics of event structure and the architecture of the VP possible. As the semantic representations developed a structure that was less rich, the syntactic representations developed a structure that was less impoverished. The main line of the discussion is as follows: over the past few years, the structure of the VP has become more and more articulated - first with VP internal subjects (e.g. Fukui and Speas 1986, Kitagawa 1986, Koopman and Sportiche 1991, Kuroda 1988), then with VP shells (Larson 1988). In some sense, the verb is seen to be made up of verb segments in the tree. Interestingly, the subparts of the verb correspond, in some languages, to morphological bits. Further, these morphological bits often reflect semantic subparts of an event. Therefore, while the discussion of the existence of subparts of events has largely been kept within the disciplines of semantics and philosophy, there is evidence that natural language encodes subeventual structure morphologically and syntactically (also discussed in the era of Generative Semantics). Though the main goal of this paper is to argue that there is an articulated VP structure which reflects event structure, there is the secondary goal of showing that by combining information from syntax, morphology, and semantics, one can have a clearer idea of exactly how natural language encodes sub-eventual structure.

4.1 The Articulation of VP

4.1.1 VP-internal Subjects

The first move to an articulated VP structure was the inclusion of the subject (external argument) within the VP. Since this argument needed to be distinguished from internal arguments, there had to be some hierarchical structure within the VP. This distinction was achieved by placing the external argument in the Spec, VP while all the other (internal) arguments were dominated by V'. I will review some of the discussion here as this present paper will rely heavily on data from Western Malayo-Polynesian (WMP) languages, and some of these languages have been used to support the VP internal subject hypothesis.

WMP languages have a productive process which allows a variety of elements to become the subject.² Morphological marking on the verb will

²There is a lively debate as to whether the elements designated by the verbal mor-

vary depending on which element is in the subject position. If the Agent is the subject, the verb appears with Actor Topic (AT) morphology. If the Theme appears in the subject position, the verb appears with Theme Topic (TT) morphology. In example (5) below, the verb *sasa* 'wash' is in the Circumstantial Topic (CT) form of the verb. This form of the verb ensures that an NP other than Agent or Theme (something like Location, Instrument, Benefactive, etc.) is the subject of the sentence and therefore appears in a sentence final position (see Keenan 1976). In Malagasy (and other WMP languages), the Agent, when it is not the subject, appears adjacent to the verb and receives genitive case.³

(5) Guilfoyle, Hung, and Travis (1992): Malagasy (VOS)⁴

- a. An-sasa-na(anasan') ny zazavavy ny lamba ny savony.
pres.CT.wash GEN.the girl the clothes the soap

The soap was washed (with) the clothes by the girl.

- b. [V [Agt tv Theme PP] Subject]

The Agent *ny zazavavy* intervenes between the V and the Theme *ny lamba* and is marked genitive by a morphological process called N-bonding by Keenan (in press) This word order can be accounted for by generating the Agent in Spec, VP and allowing the V to move to a higher functional category shown in the bracketed structure in (5b). This phrase structure and subsequent movement can explain why the verb, which usually is in a tight construction with its object complement, allows the Agent, and only the Agent to appear between the Verb and the Theme.⁵

A by-product of this conception of phrase structure is that we can now study subjects or topics. The status is particularly problematic in Tagalog (see e.g. Kroeger 1993, Richards in press, Schachter 1976, Schachter 1996, Sells in press). I am assuming, nevertheless, that it is a subject.

³Abbreviations used in the example sentences are the following:

ACC	accusative	lnk	Linker
ASP	Aspect	LT	Locative Topic
AT	Actor Topic	neg	Negation
BT	Benefactive Topic	NOM	nominative
CT	Circumstantial Topic	PC	Productive Causative
E	Event	perf	perfective
GEN	genitive	pres	present
IT	Instrumental Topic	pst	past
LC	Lexical Causative	TM	Topic Marker
		TT	Theme Topic

⁴This example has been adapted to be consistent with the glosses in this paper. Morpheme by morpheme glosses will change slightly as different issues are highlighted, particularly with respect to verbal morphology.

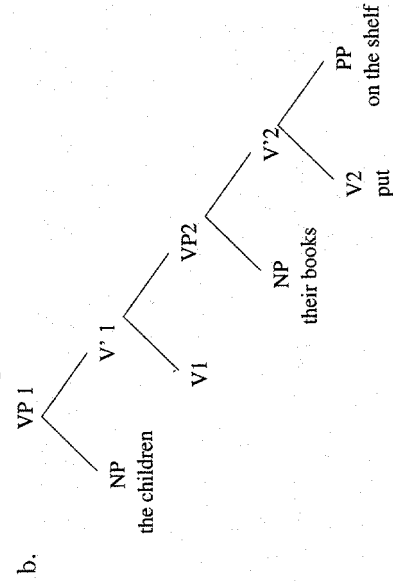
⁵Certain adverbs may appear in this position. For a full treatment of Malagasy adverbs see Rackowski (1998).

say that the VP represents the whole event - the V and all of its arguments. The external argument is still, in some sense, external, however only with respect to V', not the VP.⁶

4.1.2 VP Shells

A further step in the articulation of VP came when Larson (1988) proposed the Single Complement Hypothesis whereby a head may have only one complement. This, in effect, forces a binary branching structure, but further forces the generation of additional heads to license multiple internal arguments. For the string in (6a) then, a tree like that in (6b) would have to be created.

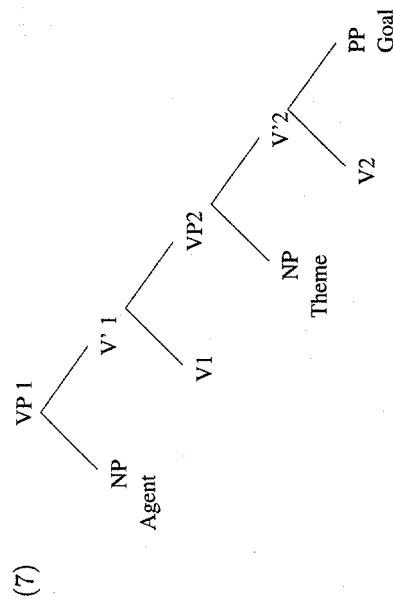
(6) a. The children put their books on the shelf.



Two VPs must be generated so that the two internal arguments, 'their books' and 'on the shelf' both can be generated as sisters to a head. Note that the upper V, V1, is empty.⁷ This position will eventually be filled when the V2 *put* undergoes head movement from the lower V position to the higher V position. Schematically, verbs with three arguments of the type Agent, Theme, Goal will place their Agent in the Spec of the higher VP, the Theme in the Spec of the lower VP, and the Goal as the complement of the lower V following the version of the theta-hierarchy espoused by, for example, Larson (1988) and Baker (1988). This theta-role template is shown in (7).

⁶By having the subject within the VP, the syntactic representations more closely reflect the semantic representations given in Discourse Representation Theory of Kamp and Reyle (1993:516-519).

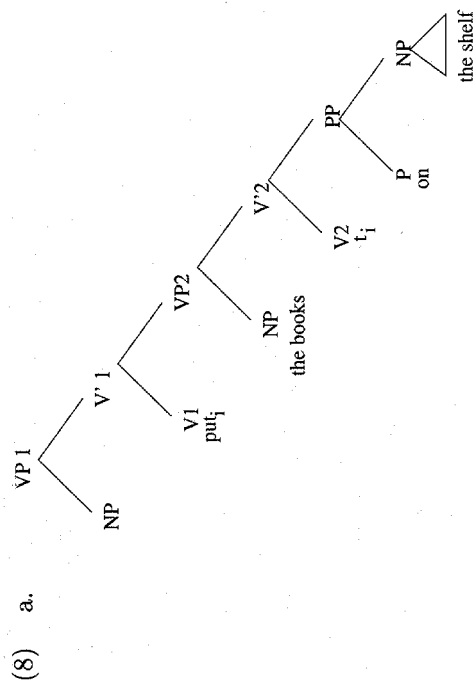
⁷I use the terms V1 and V2 to represent the top and lower V respectively as I have done in other work to keep some consistency throughout the paper. Current work within the Minimalist Program uses v ('little v') for the top V.



As the VP becomes more articulated, questions are raised. First, why should there be so much syntax in a single word. Here we have the lexical entry 'put' which requires two separate heads to realize all of its arguments. Secondly, is the placement of arguments accidental - Agents being in the Spec of the top VP, Themes in the Spec of the lower VP.

4.1.3 Lexical Semantics in Syntax

A further development in the understanding of VP structure is outlined in Hale and Keyser (1993). Through an investigation of the nature of denominal verbs such as *shelve*, Hale and Keyser (H&K) propose that, in fact, all English verbs contain even more syntax. Unlike Larson, however, they propose that the syntax contributes semantics as well. The verb *shelve* will be derived by syntactic processes (in particular, head movement) in a component of the grammar called l-syntax - a syntax that occurs within the lexicon. A Larsonian-type representation for 'put the books on the shelf' is given in (8a). The l-syntax derivation of *shelve* is given in (8b) below.

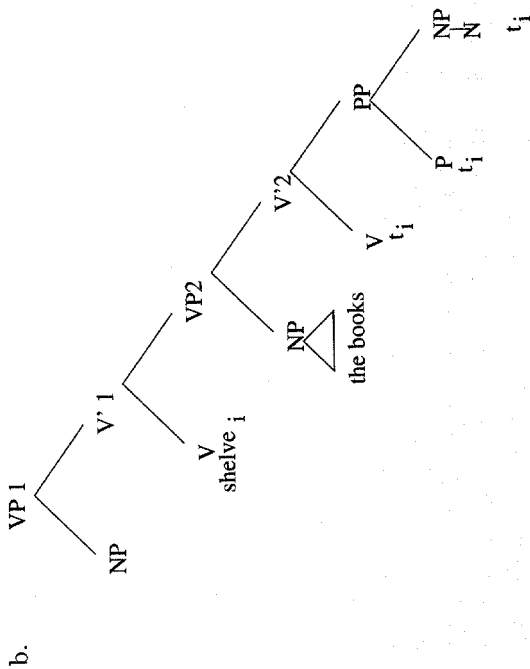


give the general line of argumentation by summarizing each of the sections but I leave the empirical support for the argumentation for the body of the paper.

I start the discussion by showing that there are languages which show more overtly the amount of syntax being proposed by H&K for single English lexical items. In particular, I show in section 2.1 that both Malagasy and Tagalog have a morpheme (*an-* in Malagasy and *pag-* in Tagalog) that expresses the l-syntax (lexical) causative represented by the top V in the trees in (8). An interesting fact is that both languages also use these morphemes for the s-syntactic (productive) causative. However, as shown in section 2.3, the s-syntactic use of the morpheme (as in *work/make work* alternations) can be distinguished in principled ways from the l-syntactic use of the morpheme (as in *melt/melt* alternations). The result is that, while causatives may iterate, adding agents each time, only the first use of the causative (and the first agent) is introduced through l-syntax, the others in s-syntax.

In section 3 I argue that, while l-syntax and s-syntax may be distinguished, they are nevertheless both part of the syntactic component. There is a process of causative morpheme deletion in Tagalog which operates on both the l-syntax morpheme and the s-syntax morpheme. Further, the process appears to be sensitive to S-structure Spec, head relations suggesting that syntactic processes feed the realization of both the s-syntax and l-syntax morphemes. More specifically, the requirement is that the morpheme be overt in the head if XP movement leaves the Spec empty suggesting a tight correlation between syntactic movement and morpheme realization.

Section 4 reviews some of the consequences of these findings with the aim of distinguishing in-words (morphological words) from s-words (syntactic/semantic words). M-words vary from language to language depending on the morphological/lexical inventories of a language. S-words represent at most one event, are formed in the l-syntax, and are universal. The universality of s-words and the language variation found in m-words lead to mismatches. For example *mampanasa* (cause-cause-be.washed) 'make wash' is one m-word in Malagasy, two m-words in English, and two s-words in both. *Sûá dé* (push fall) 'push down' is two m-words in Edo (a serial verb language, see Stewart 1998), two m-words in English, one m-word in French (*renverser*), and one s-word in all three languages. The upper limit of the s-word is represented in syntax with a syntactic projection E(vent). Support for this additional head in phrase structure is found once again in the morphology of Tagalog and Malagasy. Each has a morpheme that appears between the s-syntactic causative and the l-syntactic causative. E, then, defines the edge of an event, the edge of an s-word, and the boundary between l-syntax and s-syntax.



In (8b) the single verb *shelve* is represented by four syntactic heads - N, P, and two Vs. All of these heads contribute meaning, however. The meaning of N is clear, this is the endpoint of the action, the shelf, and P contributes a locative relation like the preposition *on*. The top V, the one with the agent in its Spec position, is CAUSE and the bottom V is BE/BECOME. Further, the theta-roles of the arguments will be determined by the structure that they appear in. In other words, it is not accidental that the theta-roles appear where they do. For H&K, Agents will always be generated in the Spec position of a V which takes a VP complement. A Theme will always be generated in the Spec of a V which takes either a PP or an AP complement.

H&K have contributed the following things to our discussion. The heads of an articulated VP do, now, have semantic content. Further the placement of arguments is predictable from the structure. However, we are now left with a monomorphemic verb that has a lot of syntax and a parallel amount of semantics.⁸

4.1.4 Event Structure and Phrase Structure

In the remainder of this paper I will argue for a conception of phrase structure, particularly of the VP, that assumes that phrase structure represents sub-eventual structure along the lines of Hale and Keyser. To begin with, I

⁸It is arguable that *shelve* is bimorphemic. Other denominal verbs appear to be monomorphemic such as *saddle*. Deadjectival verbs such as *reddened* are clearly bimorphemic and *thin*/TRANS /*thin*/INTRANS appear monomorphemic. The problem will be that all of them will have the same amount of syntax and semantics regardless of the overt morphological structure.

In section 5 I argue for one more event related head, Asp(ect), which appears between the two shells of the VP. I use evidence from syntax (derived objects), morphology (an aspectual morpheme that appears between the lexical causative and the root), and semantics (the scope of aspect over the result but not cause of an event) to argue that Aspect must appear below the base-generated position of Agent.

In the final section of the paper, I argue that by recognizing a relationship between overt linguistic realization in the shape of morphemes on one side and phrase structure and the linguistic conceptualization of event structure on the other side, one can use these overt realizations to answer questions concerning the linguistic conceptualization of event structure. Here I show that morpheme choice in Malagasy and Tagalog and morpheme deletion in Tagalog point to a structure for achievement verbs that distinguishes achievement verbs from accomplishment verbs. In sum, clues from outside the domain of semantics may, at times, provide answers for semantic questions.

4.2 When Morphology helps Syntax

While the sorts of structure proposed by Hale and Keyser (and discussed in 1.3) may seem quite abstract for English where there are generally no overt representations for the syntactic (and semantic) heads that they are proposing, other languages provide morphological evidence for at least a subset of these heads.

4.2.1 L-syntax in WMP

The morphology of Tagalog and Malagasy (as well as many other languages) offer support for some of the proposals of Hale and Keyser. In both languages, there are morphologically encoded alternations such as the *metrans/meltrans* alternations in English.⁹ The use of the alternation, however, is much more extensive, and the transitivizing morpheme may appear on forms that have no intransitive correlate. Some typical examples from Tagalog are given in (9). For example, with the root *tumba*, we get both a verb meaning 'to fall down' and one meaning 'to knock down'. The intransitive root may appear with the Actor Topic morphology (-*um-*) directly attached.¹⁰ The transitive form has the Actor Topic morphology

⁸The discussion of the difference between *l*-syntactic and *s*-syntactic causatives in Malagasy and Tagalog was first presented at AFLA II, at McGill University in 1995. It will be published as (Travis in press).

⁹Davis and Demirdache (this volume) discuss similar data from St'at'imcets, a Salish language.

¹⁰Tagalog uses infixation in certain circumstances. Here we have *m-* which appears as an infix when attached to the root. Later we will see the aspect marker *n-* which appears as an infix on a root or on the morpheme *pa-*.

(*m-*) as well as the morpheme *pag-*.¹¹

(9) Alternations in Tagalog (Maclachlan 1989)

a.	<u>t-um-</u> umba	X fall down	b.	<u>m-pag-</u> tumba	Y knock X down
	<u>s-um-</u> abog	X explode		<u>m-pag-</u> sabog	Y scatter X
	<u>l-um-</u> uwas	X go		<u>m-pag-</u> luwas	Y take X
		to into the city			
	<u>s-um-</u> abit	X be suspended		<u>m-pag-</u> sabit	Y hang X
	<u>s-um-</u> ali	X join		<u>m-pag-</u> sali	Y include X

no alternation:

*h-um-alo' ??X incorporates m-pag-halo' Y mix X

c. m-pag-tumba = m + pag + tumba
 Actor Topic + CAUS + √fall

An example of one of these alternations given in sentential context is given in (10).¹²

- (10) a. Tumumba ang bata t-um-umba
 AT-perf-tumba NOM child um=AT;0=perf
 'The child fell.'
 b. Nagtumba ng bata si Rosa. n-pag-tumba
 AT-perf-pagtumba ACC child NOM Rosa 0=AT;n=perf
 'Rosa knocked the child down.'

Note that there is a verb *maghalo* meaning 'to mix', which has the causative morpheme *pag-* even though there is no inchoative counterpart. This, in effect, would mean that just as *maghalo* can be morphologically composed of *pag-* and *halo*, it can be seen as semantically composed of CAUSE and MIX where MIX means something close to 'be mixed'.

Similar alternations appear in Malagasy. In Malagasy, however, the intransitive form has the Actor topic morphology as well as the morpheme *-i-*, while the transitive form has the Actor Topic morphology as well as the morpheme *-an-*. Again, like Tagalog, there are forms that appear with the causative morpheme but that have no inchoative counterpart. Examples of the alternation given in context are found in (12).

¹¹I use Pesetsky's notation of √ to express the root morpheme.

¹²There is an additional effect here of the addition of aspect which shows up as *n-* on the transitive form and is not overt on the intransitive form.

(11) Alternations (Malagasy)

a. <u>m-i-hisatra</u>	X move slowly	b. <u>m-an-hisatra</u> (manisitra)	Y move X slowly
<u>m-i-lahatra</u>	X be in order	<u>m-an-lahatra</u> (mandalatra)	Y arrange X
<u>m-i-lona</u>	X soak	<u>m-an-lona</u> (mandona)	Y soak X
<u>m-i-sitrika</u>	X hide	<u>m-an-sitrika</u> (manitrika)	Y hide X
no alternation:	??X dies	<u>m-an-vono</u> (mamono)	Y kills X
* <u>m-i-vono</u>		+ an	+ sitrika
c. <u>m-an-sitrika</u>	= m Actor Topic	+ CAUS	+ √hide

(12) from Malzac (1908)

- a. Nisitrika tao an-trano izy (M: 612)
pst.AT.hide pst.there ACC-house NOM.3sg n+i+sitrika
'He hid in the house.'
- b. Nanitrika ny vola tao an-trano izy
pst.AT.hide the money pst.there ACC-house NOM.3sg
n+an+sitrika

'He hid the money in the house.'

The claim is that both Malagasy and Tagalog have causativizing morphemes that attach to roots to form the causative counterparts. Further, these morphemes may be used in forms that arguably have a causative meaning even though there is no inchoative counterpart of the verb.

- (13) Tagalog 0 intransitive transitive(agentive) (generally)¹³
Malagasy -i -pag-

What Malagasy and Tagalog morphology can tell us is that, as proposed by H&K, there is a higher V head with the meaning CAUSE. In English this head is not realized morphologically (generally) while in Malagasy and Tagalog it is.

¹³ We will see that these alternations are neither completely productive nor predictable.

4.2.2 Iteration of Causatives

If a V can be composed of two segments, we raise the question of how many parts there can be in a verb. One reason we might want to extend it upwards is to house iterative causatives as in 'w causes x to cause y to V'. In both Malagasy and Tagalog, the causative morpheme can iterate as long as there is an intervening morpheme. I will call, for reasons that will become clear later, the causative morpheme closest to the root the lexical causative (LC), and all others the productive causative (PC).

The iteration of causatives is easiest to see in Malagasy. Taking one of the causative alternations we have already discussed in (12) above, in (14) below we can see that another causative morpheme can be added to each of the members of the pair. In each case an additional agent is added so that the one argument verb becomes a two argument verb and the two argument verb becomes a three argument verb. In the most complex example, which is the productive causative of the lexical causative in (14b), we can see the two causative morphemes *an-* with the intervening morpheme *-f-* shown in (14c).¹⁴ I will argue later that this intervening morpheme is housed in the event related head E.

(14) Malagasy (-*anp-* = *an* + *f*)

	stem				productive causative
a.	misitrika	'X hide'			'Z make X hide'
b.	manitrika	'Y hide X'			'Z make Y hide X'
				mampisitrika	
				mampanitrika	
c.	m	+ an	+ f	+ an	+ sitrika
	m	+ PC	+ E	+ LC	+ root

In Tagalog, the iteration is less easy to see because of a quirk of morphology that will become a central concern later in the paper. The relevant data are given in (15) below.

(15) Tagalog (Actor Topic: -*pagpa-* = *pag* + *pa*)

	stem				productive causative
a.	sumama	'X go with Z'			'W make X go with Z'
b.	magsama	'Y bring along X'			'W make Y bring along X'
				*magpapasama	
c.	m	+ pag	+ pa	+ ??	+ sama
	m	+ PC	+ F	+ LC	+ root

¹⁴ I owe the analysis of the productive causative -*anp-* as -*an-* and -*f-* to Hung's work (Hung 1988).

In both Malagasy and Tagalog the productive causative morpheme and the lexical causative morpheme are identical (*an-* and *pag-* respectively). Further, in both languages there is an intervening morpheme (*f-* and *pa-* respectively). The confusing point in Tagalog is that, when the productive causative is added to the lexical causative form (15b), the lexical causative morpheme disappears. Instead of *magpapagsama* we get *magpasama*. This produces the same form, *magpasama*, for the productive causative of both the inchoative and the lexical causative form. It also raises the question of whether the lexical causative morpheme is not there or simply has a zero realization. In keeping with the analysis of Malagasy above, I will assume that the lexical causative has a zero realization in this construction, and again, there is a morpheme between the two causatives which in Tagalog is *pa*.

(16)		V -	E -	V -	√
Malagasy:	an -	f -	an -	√	
Tagalog:	pag -	pa -	pag -	√	
		PC	LC		

4.2.3 S-syntax Causatives vs. L-syntax Causatives

While the causative can iterate, each time adding an agent, the causative closest to the root which I have been calling the lexical causative behaves differently in many respects from the subsequent causatives or productive causatives. These differences are familiar from the literature on causatives but I will add WMP examples. The overall impression is that the lexical causative is idiosyncratic while the productive causative is predictable.

4.2.3.1 Semantic Idiosyncracies

One area of idiosyncrasy found with lexical causatives is in their semantics. Often the meaning of the causative form of the inchoative is not compositional, i.e. does not mean simply 'cause to V'. For example, the inchoative form of the root *sabog* in Tagalog means 'explode', but the lexical causative form does not mean 'cause to explode' but means rather 'scatter'. What's more important is that it cannot mean 'cause to explode'.¹⁵

(17) Tagalog

- a. Sumabog sa Boston ang bomba
AT-perf-sabog in Boston NOM bomb
'The bomb exploded in Boston.'

- b. #Nagsabog ng bomba sa Boston ang terorista
perf-pag-sabog ACC bomb in Boston NOM terrorist
can't mean: 'The terrorist exploded the bomb in Boston.'
get odd reading: 'The terrorist scattered the bomb.'

4.2.3.2 Phonological Idiosyncracies

There are also phonological idiosyncracies that are evident in Malagasy. Normally, in Malagasy, when morphological processes place a nasal adjacent to a consonant, the consonant becomes (among other things) prenasalized. When a lexical causative, which ends in a nasal, is placed adjacent to a consonant, however, fusion occurs - the nasal takes the place of articulation of the consonant, but otherwise the consonant disappears.

(18) Malagasy¹⁶

post-lexical (pre-nasalized consonant)

- a. n+p => ^mp pentson+pentson pentso^m pentsona N.
'chatter'
- b. n+s => ⁿts m+an+sampon+sampon manampoⁿ tsampona V.
'to stop'

lexical (fusion)

- c. n+p => m man + petrak mametraka 'to put'
- d. n+s => n man+sitrik manitrika 'to hide'

In (18b) we can see a case of prenasalization when the root is reduplicated and a case of fusion when the lexical causative *an-* is added.

4.2.3.3 Lexical Idiosyncracies

Lexical causatives are also not productive, i.e. their distribution is idiosyncratic. As mentioned already, many verbs with causative meaning contain the causative morpheme even though they have no inchoative counterpart. Ideally, the causative morpheme would always appear on verbs which have an Agent in their argument structure since this would be the morpheme in V1 which would assign this theta-role. Unfortunately, however, this is not always the case. Further, sometimes the causative morpheme is optional with no change in meaning. In (19a) we see a case in Tagalog where the morpheme is optional. In (19b) we see a case in Malagasy where we might expect to have the causative morpheme because of an Agent in the argument structure of the verb, but we don't have it.

¹⁵This leads to problems if we want to assume that the larger event has to entail the sub-event. While 'Mary flew the plane' entails that the plane flew (see Parsons 1990:109), in the Tagalog example 'x pag-sabogs the seeds' (x scatters the seeds) does not entail that the seeds *sabogged* (the seeds exploded).

¹⁶The only consonants that are found root finally are k, tr, and n, but because of a requirement that all syllables be CV, an epenthetic vowel appears word finally (see, for example, Erwin 1996).

- (19) a. Tagalog
 hiwa or *paghiwa* X cut/slice Y
 b. Malagasy
 mividy X buy Y

These idiosyncrasies form the basis for the assumption that lexical causatives occur in the lexicon, a module where idiosyncrasies are expected to appear. However, H&K argue that lexical causatives show distinctly syntactic properties. They are formed through the syntactic process of head movement whereby the head of one maximal projection can move into the head position of the next maximal projection up the tree. Further, this movement which creates lexical items also obeys the constraints on syntactic head movement such as the Head Movement Constraint of Travis (1984) and Baker (1988).¹⁷ Lexical causatives, then, are formed in the component of the grammar which they call l-syntax, syntax which occurs in the lexicon.¹⁸

4.2.3.4 S-syntactic Causatives

Productive causatives in both Tagalog and Malagasy show none of the idiosyncrasies mentioned above. These causative morphemes occur to the left of the *f/-pa-* morpheme. In Malagasy, the productive causative has the appearance of *amp-* (though it is *an-f-*) and in Tagalog the productive causative has the appearance of *papa-* (though it is *pag-pa-*). These morphemes always add an additional cause (agent), and they can always be given the compositional meaning of 'x causes y to V'. As we can see with the surface realization of the productive causative in Malagasy, it triggers the productive (post-lexical) rule of prenasalization (*an+f...->amp...*) rather than fusion (**am...*). Further, these morphemes attach productively. All of this further suggests that this happens in pure syntax, s-syntax in H&K's terms.¹⁹

4.3 When Syntax helps Morphology

The existence of identical l-syntaxic and s-syntaxic morphemes offers an interesting testing ground for the exact nature of these two components but, before turning to the relation of l-syntax and s-syntax and event structure,

¹⁷This head movement is very like the predicate raising discussed in the Generative Semantics literature.

¹⁸For the Generative Semanticists this was called pre-lexical syntax (see McCawley 1968).

¹⁹Of course some would assume that even productive causatives are formed in the lexicon but I am following the analysis of causatives given in Baker (1988).

²⁰This discussion of *pag-* deletion in Tagalog was presented at AFLA III, at UCLA in 1996 and is published as Travis (1996).

we will look at the case of the disappearing *pag-* morpheme in Tagalog. We will see how syntax in this case can help solve a morphological problem. Further, the syntactic account of *pag-* will become important in the last section of the paper where the phrasal architecture of achievements is discussed..

While the overt causative morphemes in Malagasy and Tagalog provide support for H&K's claim that there are heads within l-syntax, we are left with the problem of the disappearing *pag-* in Tagalog. In this section, I will propose an account of the distribution of *pag-* that relies on the syntactic relation between a Spec and its head. More specifically, I will argue that the heads in l-syntax (as well as s-syntax) may be sensitive to a doubly filled Spec/Head constraint as in Sportiche (1996). If this account is correct, I believe that it is an argument that l-syntax must refer to a syntactic relation other than that of head movement strengthening the claim that l-syntax is indeed a form of syntax.

Starting with the data we have already seen (15), we have noticed that once the productive causative is added in Tagalog, the lexical causative morpheme is deleted. This gave us the form of *magpasama* when we expected *magpapagpasama*.

- (20) Productive Causative (Agent2 = Topic)
 magpasama 'W make Y bring along X
 m + **pag** + pa + ?? + sama
 m + PC + E + LC + root

The forms of the causative we were using were the Actor Topic (AT) forms. If we use the Theme Topic (passive) form of the productive causative, we have just the opposite effect. Here the productive causative morpheme is deleted, but the lexical causative morpheme appears. Note that in this form of the verb, we regain the distinction between the inchoative and the lexical causative which we had lost when we added the AT form of the productive causative (*papagsamahin* vs. *pasamahin* 'X be made to go with Z').

- (21) Productive Causative (Agent1 = Topic)
 papagsamahin 'Y be made to bring along X'
 ?? + pa + **pag** + sama + in
 PC + E + LC + root + ThemeTopic

This deletion of *pag-* is part of a much larger phenomenon in Tagalog. When a lexical causative appears in the Theme Topic form, the lexical causative *pag-* disappears as we can see in (22).²⁰

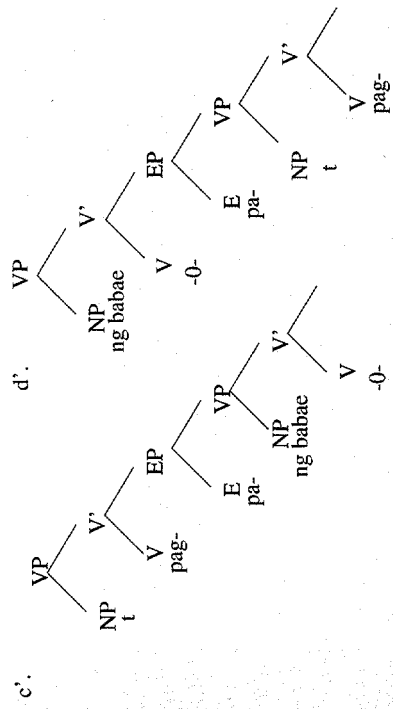
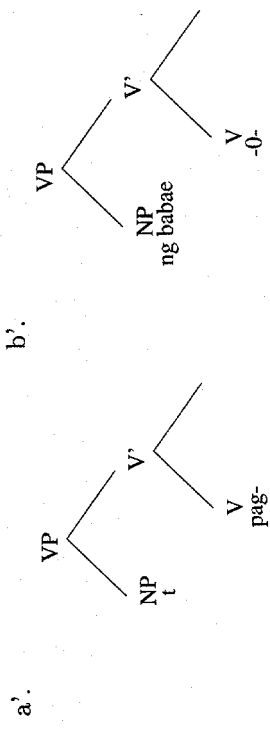
²⁰This example shows clearly the *pag-* deletion is not simply a surface constraint on the realization of two *pag-s*.

(22) Lexical Causative

- a. AT: pagsama 'X brings along Y'
 - b. TT: samahin 'Y is brought along by X'
- ?? + sama + in
 LC + root + Theme Topic

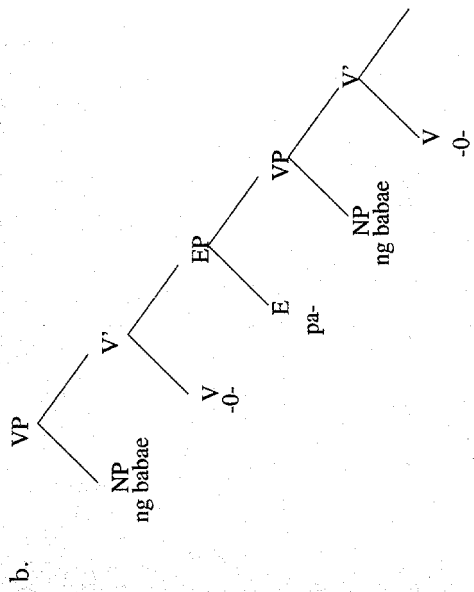
When we line up all of the *pag-* deletion cases we have seen so far, we can see two possible ways to generalize when *pag-* is deleted or when it is realized. We can say that *pag-* is realized when the associated Agent has moved out of the VP, or we can say that *pag-* is zero when the associated Agent is left in place. So, for example, in (23a) where the Agent has moved out of the VP, the related *pag-* is realized. Or, as in (23b), when the Agent is in place, the *pag-* is zero. In the case of the productive causative in (23c), when *Agt2* (the outer Agent) has moved out of the VP, *pag2* is realized and at the same time *Agt1* is in place and *pag1* is zero. (23d) shows the reverse situation. Note below that the correlations between a *Opag* and an Agent in place are shown in bold.

- (23) a. AT: LC pag1 - ✓ (Agt1 moved out) (Th in place)
- b. TT: LC **Opag1** - ✓ (**Agt1 in place**) (Th moved out)
- c. AT: PC pag2 - pa - **Opag1** - ✓ (Agt2 moved out) (**Agt1 in place**)
- d. TT: PC **Opag2** - pa - pag1 - ✓ (**Agt2 in place**) (Agt1 moved out)



What is interesting is the case where neither Agent has moved out of the VP. This situation arises when the third argument of the complex verb (the theme of the lower verb) becomes the subject. Now both the outer Agent and the inner Agent remain in place. As predicted by both generalizations, neither *pag-* shows up on the verb form, either because neither Agent is externalized or because both are in place. This is shown in (24).

- (24) a. Pinabuksan ko kay Pedro ang kahon (S&O: 328)
 pst.pa.open GEN.1s kay Pedro NOM box
 'I had Pedro open the box.'
- b.



The overall form of the pattern we have seen above - empty Agent/realized *pag-* or filled Agent/zero *pag-* - is given in (25). If we think of the restriction in terms of the filter in (25c), it has the same configuration as another restriction in syntax - originally called the Doubly filled COMP filter.

- (25) a. [_tAGENT [pag-]]
- b. [Agent [0_{pag-}]]
- * [Agent [pag-]]

The Doubly Filled COMP filter was meant to account for the range of data given in (26). While both *who* and *that* can separately appear in a relative clause construction, they can't co-occur.

- (26) a. * the children [who [that [I know t]]]
- b. the children [who [e [I know t]]]
- c. the children [e [that [I know t]]]
- d. the children [e [e [I know t]]]

This restriction has been generalized by Sportiche (1992) to account for the common complementary distribution of clitics and arguments.²¹ His Doubly filled Voice filter is given in (27).

(27) Doubly filled Voice Filter (Sportiche, [1992 #75])

*[HP XP [H...]]

where H is a functional head licensing some property P and both XP and H overtly encode P.

While the use I am making of the Doubly filled Voice Filter extends beyond his characterization (for instance I believe that *pag-* is a lexical category and not a functional category), the similarity of the restriction and the configuration is obvious.

The fact that the appearance of *pag-*, whether it is the lexical causative *pag-* or the productive causative *pag-*, is conditioned by its position in a Spec, Head configuration with an argument makes both *pag-s* look very syntactic. In fact, I would like to argue that l-syntax is not a case of syntax appearing within the lexicon but the case of lexical insertion occurring within the computational component (i.e. 'real' syntax)²², since the determination of *pag-* is sensitive to movement of the Agent out of the VP. How exactly the morphology transpires – whether the morphemes are concatenated before (e.g. Chomsky 1991) or after (e.g. Halle and Marantz 1993) the tree is built – there is a very tight link between the order of the heads and the order of the morphemes, and the morphemes, whether they are part of l-syntax or s-syntax, have to receive an equal footing in terms of phrase structure.

²¹ I am grateful to Mark Baker for bringing Sportiche's Doubly Filled Voice Filter to my attention.

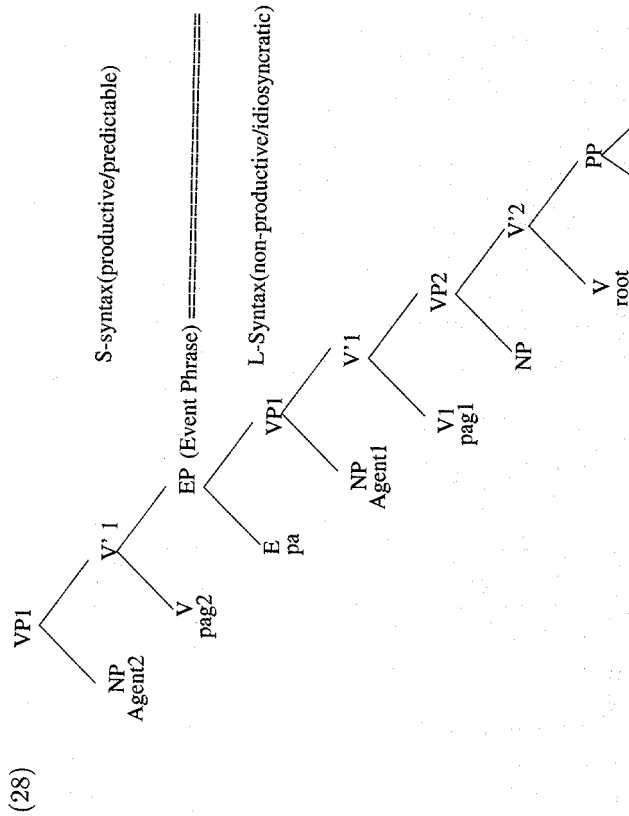
²² For very similar conclusions, see Marantz (1997).

4.4 When Semantics helps Syntax and Morphology

If all that has been said is true, i.e. both l-syntax and s-syntax are in fact syntax and have full phrase structure representations, why are they distinguishable? Why is one so idiosyncratic and the other so predictable? More important, can we predict where one will end and the other begin? In other words, can we predict which part of syntax can be in l-syntax (and show idiosyncrasies) and which part of syntax must appear in s-syntax and therefore be predictable and productive?

This is where semantics and the notion of event can help solve a syntactic and morphological problem. I argue that the edge of l-syntax is the edge of an event which is the edge of a possible word in the sense of Carter (1976). In English we have a word 'melt' that means, more or less, 'make melt' but we don't have a word that means 'make laugh' or a word that means 'make kill'. In Malagasy there is, technically, a word that means 'make kill' (*mampamono*) but it is clearly derived by the s-syntactic causative (on top of a lexical causative). What English can't do in a word, Malagasy can't do with an l-syntactic causative. It seems, in Malagasy and Tagalog, that the "word" edge is marked by the mysterious morpheme that appears between the two causatives. I put this morpheme in E (Event), a non-lexical category that appears above V1 in a double VP structure. My claim is that any morpheme added above this E is in s-syntax.²³ What appears below this E represents one event and is created in l-syntax. "Possible" words can contain at most one 'event', one Cause, one Agent, two Vs.

²³ For other arguments for an E projection, see Travis (1994).



The notion, then, of 'possible word' correlates to one event (occurring at one time with one instigator). Sometimes morphological words may represent more than one event as in the Malagasy s-syntactic causative *mamapamono* 'to make kill'. In this case the morphological word (m-word) is larger than the semantic/syntactic word (s-word). Sometimes m-words are smaller than s-words as in serializing languages where two non-contiguous V roots may combine semantically to describe one event as in the Edo example below (from Stewart 1998).

- (29) Èsòsà sùá Úyì dé
 Esosa push Uyi fall
 'Esosa pushed Uyi down.'

We need, then, a notion of s-word that is distinct from morphology and determined by an interaction of the phrase structure of syntax and the event structure of semantics. What will be included in an s-word is the structure of one event. If the event has a process and a result, these will be syntactically realized by VP1 and VP2 respectively.

4.5 Further Articulation of VP: syntax, morphology, semantics

We have now seen arguments from syntax (word order and Spec-head relations), morphology (morpheme realization and morpheme order) and semantics (structure of subevents) that VP should have (at least) two subparts. In the next two sections we again use arguments from all three modules of the grammar, this time to support a phrase structure analysis of the VP that includes a non-lexical²⁴ projection between the two VPs. Word order facts will suggest that there is a non-lexical category within the VP. Morpheme order facts will support this and suggest that this category is Aspect. The term of 'aspect' has been used to refer to viewpoint aspect such as perfective vs. imperfective distinctions or situation aspect such as accomplishments vs. activities. Interestingly, both of these notions of aspect have scope only over the resulting state sub-event. This, then, is arguably a semantic argument for the placement of an Aspect category with scope only over the inner VP.

4.5.1 Syntax of Derived Object Positions

In languages like Kalagan (and Pangasinan, both WMP languages), there is a position between the Agent and the Theme where the topic appears. Collins (1970) characterizes the order of Kalagan as in (30).

- (30) Kalagan subjects (Collins 1970: 4)
 the verb is first and is followed by the nominal elements as they are given [Agent-Object-Instrument-Beneficiary-Locative-Time]. The one regular exception is that when the *ya*-phrase [topic] is not the agent, it immediately follows the agent, all other phrases keeping their places.

The morphological form of the verb will determine which NP is the topic as shown in example (31), but that topic will appear in a very restricted position.

- (31) V-(Agt)-"Topic"-XP

- a. Kumamang aku sa tubig na lata kan Ma' adti balkon
 AT-get I the water with the can for Father on the porch
 na lumis
 on Monday
 'I'll get the water with the can for Dad on the porch on Monday.'

²³The arguments for a VP-internal Aspect projection were first presented at NELS 22, at the University of Delaware in 1991. They were published as Travis (1992).

²⁴When discussing this category within the VP, I will refer to it as a non-lexical category rather than a functional category since I have argued elsewhere (Travis 1994) that there are two types of non-lexical categories - functional categories and binding categories. The Aspect category which I discuss below is, in fact, a binding category.

- b. Kamangin ku ya tubig na lata kan Ma' adti balkon na
TT-get I the water with the can for Father on the porch on
lunis
Monday
- c. Pagkamang ku ya lata sa tubig kan Ma' adti balkon
IT-get I with the can the water for Father on the
na lunis
porch on Monday
- d. Kamangan ku ya Ma' sa tubig na lata adti balkon na
BT-get I for Father the water with the can on the porch on
lunis
Monday
- e. Kamangan ku ya balkon sa tubig na lata kan Ma' na
LT-get I on the porch the water with the can for Father on
lunis
Monday

Taking (31c) as an illustrative example, the verb is in the instrumental topic form designating the instrument as topic. The instrument *lata* 'can', then, appears between the Agent and the Theme as shown schematically in (32b).

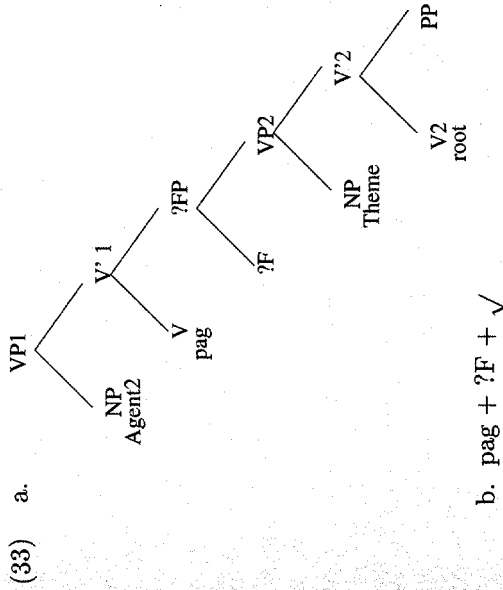
- (32) a. Pagkamangk [VP ku ya lata, [VP sa tubig V_k t_i kan
IT-get I with the can the water for
Ma']]
Father
- b. V_k [VP Agt derived object [VP Theme V_k t_i XP]]

My assumption is that everything is generated in a syntactic hierarchy following the theta-hierarchy, but there is a position between the Agent and the Theme to which a topic may move. In order to allow such a movement, the structure of the VP must contain a possible landing site for movement between the Agent in the Spec,VP1 and the Theme in the Spec,VP2. Assuming that movement is always to a Specifier position of a non-lexical category, this implies that there must be more structure to the VP.

4.5.2 Morphological Position of Aspect

While syntax (word order) has suggested that there is a non-lexical category within the VP, morphology can help us determine what exactly this category is. We know that this category should appear between the two V_s in a Larsonian type VP so that its Spec will appear between the Agent and the Theme positions. Taking Tagalog, if head movement attaches the verb root to the causative affix in V1, this head movement should pass through

the intermediate non-lexical category and we might expect it to show up in the morphology of the verb forms between *pag-* and the root.

- (33) a. 
- b. pag + ?F + √

In fact, there is a morpheme which does show up in this position - incomplete aspect. Tagalog has two morphemes in the tense/aspect system - one we can call outer aspect which encodes roughly whether or not the event has started, and inner aspect which encodes roughly whether or not the event is complete (see Maclachlan 1989). The exact meaning and distribution of these morphemes requires further study, however it is the position of the realization which is of interest here.

(34) Aspect in Tagalog:

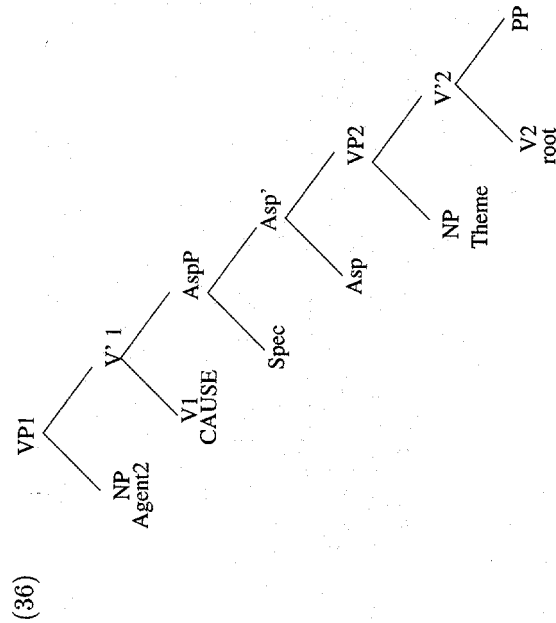
- Aspect1 (outer aspect) +/-start: +start -in-/n-
Aspect2 (inner aspect): +/-incomplete: +incomplete reduplication

As we can see in (35b), outer aspect is a prefix which appears to the left of the *pag-* morpheme, while inner aspect appears as reduplication on the root, i.e. between *pag-* and the root. Taking the surface realization of inner aspect very seriously, I will say that inner aspect appears in the non-lexical category between the causative V1 and the root V - confirming that there is a non-lexical category in this position and giving this non-lexical category a function.²⁵ I will call it Aspect.

²⁵While inner aspect may appear in this position, directly affecting the root, in other forms reduplication will appear further away from the root. For instance, in the productive causative which we have seen above, it is the *pa-* morpheme appearing in E which will reduplicate: *maggapasama*. I am only interested in the fact that the reduplicating morpheme can appear between the lexical causative and the root. I leave it to future research to determine why it doesn't always appear there.

- (35) a. start incomplete
 + + nagtutumba Imperfective
 + - nagtumba Perfective
 - + magtutumba Contemplated
- b. nagtutumba n + m + pag + RED + V
 Aspect1 + TM + pag + Aspect2 + V Imperfective
- c. Nagtutumba ang mga bata ng halaman
 pst.pag.RED.tumba NOM PL child ACC plant
 'The children were pushing the plant over.'

The phrase structure of the articulated VP will be, then, as in (36)²⁶.



4.5.3 Semantic Correlations of Syntax and Morphology

As mentioned above, aspect has two senses – viewpoint aspect and situation aspect (see Smith 1991). In either sense we can say that, semantically, aspect is concerned primarily with the resulting state part of an event which is represented by VP2. Situation aspect, as in the difference between activities and accomplishments, is concerned with the presence or absence of the natural endpoint of the event. This is also true of viewpoint aspect. As mentioned briefly in the introduction, Pustejovsky (1991) argues that accomplishments – or in his terms, transitions – are comprised of an initial process followed by a resulting state. Further, he claims that imperfective, a case of viewpoint aspect, has scope over only the resulting state. A verb in the imperfective, while implying that there is a natural endpoint to an

²⁶The PP position within VP2 is typically for result phrases or Goal phrases.

accomplishment, makes no claims concerning the eventual arrival at that natural endpoint (as in the difference between 'He built a house' (endpoint achieved) and 'He was building a house' (unclear whether endpoint was achieved)). As is clear in the tree in (36) above, the syntactic structure predicts this semantic scope. The syntactic node, Aspect, will have syntactic scope over only the endpoint of the event and not over the initial point (the Agent in Spec, VP1 and the process in V1).

While the evidence given above suggests that viewpoint aspect is housed in the syntactic category Asp, I have to admit that I am not convinced that viewpoint aspect is the primary use of this category (even though it may host viewpoint aspect morphemes). Situation aspect, which I believe is the central role of the Aspect projection, has been argued to involve only those elements within VP2. As shown by Tenny, ([1994 #62]) and Verkuyl (1993), internal arguments may affect the aspectual class that a construction belongs to. Mass or bare plural objects can change an accomplishment into an activity (37). PPs may change an activity into an accomplishment (38).

- (37) a. Mary built a house (in a year/*for a year).
 b. Mary built houses (for a year/*in a year).

- (38) a. Mary ran (for three minutes/*in three minutes).
 b. Mary ran to the store (in three minutes/*for three minutes).

What is crucial here is that all of these projections will be dominated by AspP and therefore the computation of the items that help determine the situation aspect of the verb can be done within this projection.

To summarize, the syntactic movement of XPs to a position within the VP, bolstered by the appearance of a morpheme between the lexical causative morpheme *pag-* and the root, leads to the proposal that there is a non-lexical category between the two VPs in a Larsonian VP. The meaning of the Tagalog morpheme bolstered by the semantic consideration of the scope of both situation and viewpoint aspect leads to the proposal that this category is Aspect.

4.6 Where Syntax and Morphology help Semantics

If there is as close a match between event structure and phrase structure as I have mapped out above, and phrase structure is shown very clearly in some languages through morphology, one might expect that some of the murky areas of event structure might be illuminated through the morphology. In the remaining part of the paper, I will suggest that the morphology of Malagasy and Tagalog can help us understand the structure of

²⁶This discussion of the structure of achievements was first presented at AFLA III at UCLA in 1996 and was published as Travis (1996).

Achievements. What I will argue is that Achievements contain a stative V1 (perhaps confirming Vendler's classification of achievements as having features in common with States), and that the external argument of transitive achievements is assigned to the Spec, Asp by [+telic] Asp. The road leading to the conclusion is a bit circuitous. Since telicity will be an important part of distinguishing the class of Achievements in Malagasy, I start with a discussion first of the basic atelicity of 'simple' Malagasy verbs. I then show how they may be made telic through the addition of specific affixes. Oddly, once made telic, an inchoative may add an additional cause (non-volitional/accidental agent) argument to its argument structure.²⁷ I argue that it is the telic morpheme itself that assigns this theta-role and that it is this extra argument that appears as the external argument of a transitive achievement verb. Finally, we can see from the type of morpheme deletion in Tagalog discussed above that this 'external' argument is syntactically in the Spec, Asp position. By combining what we know about the syntax, morphology, and semantics of these constructions, we can shed light on the phrasal architecture, and thereby the event structure, of achievements.

4.6.1 The Atelicity of Malagasy

To begin this discussion I return to the transitivity alternation in Malagasy. The verb root *voary* 'meet' can appear in an inchoative or $\#$ transitive construction.

(39) Transitivity alternation in Malagasy

- √voary 'meet'
 m-an-voary mamory 'X gather Y'
 m-i-voary mivory 'Y meet'

In both of these forms, however, the action is not necessarily telic meaning that the implied endpoint need not have been achieved. So, for instance, if we say, as in (40a) that the teachers gathered the children, we assume that in fact they were successful. This implication, however, is defeasible as shown in (40b).²⁸

- (40) a. namory ny ankizy ny mpampianatra
 pst.an.meet the children the people
 'The teachers gathered the children'
 b. ... nefa tsy nanana fotoana izy
 ... but neg pst.have time they

²⁷The use of these telic morphemes has many interesting correlations with the Out of Control structure discussed by Davis and Demirdache (this volume) that deserve to be explored. I leave this for future research.

²⁸This is very counterintuitive for English speakers. Perhaps a better translation of (40a) would be 'The teachers start to gather the children'. Unlike this translation, however, the successful completion is strongly implied.

'... but they didn't have time.'

While it is harder to deny the success of the inchoative form, it is only awkward and not impossible.

- (41) a. Nivory ny olona
 pst.i.meet the people
 'The people met.'
 b. ?....nefa tsy nanana fotoana izy
 '.... but they didn't have time.'

As (42) shows, the normal passive morphology has the same results.

- (42) a. Novorin' (ny mpampianatra) ny ankizy
 pst.meet.IT.GEN the people the children
 'The children were gathered (by the people).'
 b. nefa tsy nanana fotoana izy
 '... but they didn't have time.'

4.6.2 Telic Affixes in Malagasy

We have already seen that Malagasy takes the l-syntactic prefix *an-* on most of its agentive verbs. Further, as shown in (40), this prefix does not ensure the telicity of the event. If the prefix *maha-* replaces this prefix, however, the natural endpoint of the event must have been achieved. This is shown in (43a) where the additional statement in (43b) is now impossible (as we will see below, we will be assuming that *maha-* is polymorphemic made up of *m/n-a-ha*).

- (43) a. nahavory ny ankizy ny mpampianatra
 pst.a.ha.meet the children the teachers
 'The teachers gathered the children.'
 b. *.... nefa tsy nanana fotoana izy
 '.... but they didn't have time.'

Note that while (41b) was awkward, (43b) is completely unacceptable. *Maha-* is the prefix used for the active (AT) form of the transitive verb. In order to make the passive telic, the prefix *voa-* is added. Now the Theme is the subject, and the natural endpoint must be reached.

- (44) a. voavorin' (ny mpampianatra) ny ankizy
 voa.meet.gen the teachers the children
 'The children were gathered by the teachers.'
 b. *.... nefa tsy nanana fotoana izy.
 '.... but they didn't have time.'

The inchoative verbs may also be made telic by adding the *tafa-* prefix. Again the Theme is the subject and the natural endpoint must be reached.

- (45) a. tafavory ny olona
 tafa.meet the people
 'The people met.'
 b. * nefa tsy nanana fotoana izy.
 '.... but they didn't have time.'

The difference between the passive (44) and the inchoative in (45) is that there is an agent in (44) but not in (45). The telic prefixes are, then, as listed in (46). Further, if the Agent is not realized in (44), its meaning is inherent in the sense of Roeper (1987).

(46) Malagasy: telic prefixes

telic prefix	verb type	atelic affix	number of arguments
<i>maha-</i>	active	<i>man-</i>	2
<i>voa-</i>	passive	<i>-ina</i>	2
<i>tafa-</i>	inchoative	<i>mi-</i>	1 (2?)

As the table above indicates, the number of arguments for each of the verb forms is, for the most part, predictable. The transitive form of the verb has two arguments whether or not it is telic, and the same with the passive of the transitive. What is surprising is that the inchoative form can, unexpectedly have two arguments.

4.6.3 Extra Cause

As is shown in (45), generally there is only one argument with an inchoative form, the Theme. This is not surprising since the atelic form of the inchoative can have only one argument as shown in (47a, b) below. In (47c), however, where the telic morpheme has been added to the root, we can see that an additional argument may be added.²⁹

- (47) a. * Nivory ny ankizy ny mpampianatra.
 pst.i.meet the children the teacher
 b. * Nivorin'ny lehilahy ny boky
 Tafavory ny mpampianatra ny ankizy
 tafa.meet.gen the teacher the children
 'The teacher was able to gather the children.'

Since it seems to be the addition of the telic marking morpheme *tafa-* which makes this extra argument possible, I assume that is the telic morpheme that assigns the theta-role. If this morpheme is placed in the head

²⁹Note that the idiosyncratic meaning of the lexical causative form of the verb appears when the extra argument is added. I believe that the meaning is linked to the complete parsing of the LCS of the verb as described in Hanitrimiana and Travis (1998).

Asp, then its argument should be in the Spec, Asp. Confirmation for this comes from the AT transitive telic morpheme *maha-*.

We have seen above (43) that *maha-* can be added to a root with the effect that the result of the transitive verb is achieved. *Maha-* can also be added to adjectives, and in this case it appears to be a causativizer.

- (48) causative
 a. Tsara ny trano
 beautiful the house
 'The house is beautiful.'
 b. Mahatsara ny trano ny voninkano
 pres.a.ha.beautiful the house the flowers
 'The flowers make the house beautiful.'

In (48b) we see that the meaning of CAUSE has been added and there is an additional argument. While traditional grammars have assumed that there are a multitude of *maha-*'s in Malagasy, Phillips (1996, in press) argues that there is only one *maha-* – or, more accurately, one combination of the morphemes *m-*, *a-*, *ha-*. The difference in the meanings will fall out from the difference in the roots. In all cases, the forms with *maha-* will be telic and have a (non-volitional) cause argument. When *maha-* is added to a root with a transitive counterpart, the most salient change in meaning is the telicity. When *maha-* is added to a root with no transitive counterpart, the most salient change in meaning is the additional (non-volitional) cause argument.

As the examples in (49) and (50) below show, in the cases of both the transitive root and the adjectival root, the cause argument must be non-volitional.³⁰

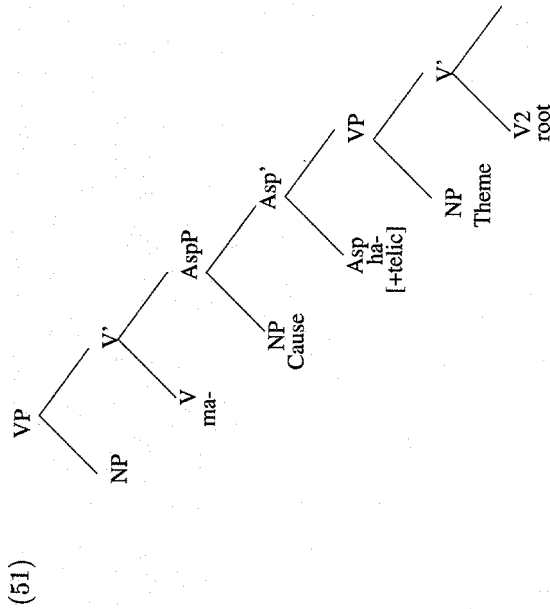
- (49) *Mahatsara ny trano Rabe. (cf. (48b))
 pres.a.ha.tsara the house Rabe
 'Rabe makes the house beautiful.'
 (50) a. (Nanao fanahiniana) nanitsaka ny biby kely Rabe.
 made spirit pst.an.footprint the animal small Rabe
 'Rabe deliberately stepped on the insect.'
 b. (*Nanao fanahiniana) nahahitsaka ny biby kely
 made spirit pst.aha.footprint the animal small
 Rabe.
 Rabe

³⁰One of the additional meanings of *maha-* is abilitative. Phillips (1996, in press) argues that this is simply a side-effect of the meanings of the subparts of *maha-*.

Rabe deliberately was able to/stepped on the insect.'

In (49), the external argument cannot be a volitional agent. In other words, the only way that (49) can be grammatical is if Rabe beautifies the house by his presence alone (like flowers). It cannot mean that he actively does something which causes the house to become beautiful. In (50), the expression *nanao fanahinana* 'deliberately' can only be added when the verb is realized in its an-form. The *-aha-* prefix in some sense downgrades the agent argument of the verb to a non-volitional agent thereby disallowing the addition of *nanao fanahinana*.

To follow along the lines of the account of *tafa-* given above, once again we will say that the telic morpheme will assign this non-volitional cause role. Phillips shows that *maha-* is a combination of the morphemes *m-*, *a-*, and *ha-*. *M-* is the AT morpheme we have been seeing throughout this paper. *A-* is a stative morpheme used to change nouns like *loto* 'dirt' into adjectives like *maloto* 'dirty'. *Ha-* marks telicity and therefore will be placed in the head of AspP. The non-volitional cause argument will be generated in the Spec,Asp. This configuration is shown in (51) below.



This leaves us with the result that volitional agents are assigned a theta-role in the Spec, VP1 while non-volitional agents are assigned a theta-role in Spec, Asp. We will return to this distinction in section 6.5 but first we will look at how transitive achievements are formed morphologically in Malagasy.

4.6.4 Achievements in Malagasy

Important for our discussion is that transitive achievements are also formed using the morpheme *maha-*. This is not surprising given that transitive achievements (like *find, discover, notice*) are telic and their external arguments are non-volitional. There are some interesting cases where a root will have an activity meaning with the non-telic prefixes of either *man-* or *mi-* but will have an achievement meaning with *maha-*.

(52) (Phillips 1996)

- a. mijery 'to look at' mahajery 'to notice'
- b. mandinika 'to examine' mahadinika 'to remark'

In other cases, verbs appear only in the *maha-* form with an achievement reading.

(53) verbs only taking *maha-* (Rabenilaina 1985, 372)

- mahazo 'to understand, to seize'
- mahalala 'to know'
- mahatsiahy 'to feel, to remember'
- mahatsikaritra 'to remark'
- mahatsiaro 'to perceive'
- mahahay (>mahay) 'to know' (>mahay)
- mahahita 'to see' (>mahita)

Following Phillips, we will assume that *maha-* will act uniformly in all of its uses. The telic morpheme *ha-* will assign a theta-role to its Spec position. When *maha-* is added to a root which has no external argument, *ha-*, like *tafa-* above, will add the cause argument. If the root has an external argument in its LCS, *ha-* will simply place this external argument in the Spec,Asp. The morpheme which is in the top V is *a-*, a stative morpheme. It is this morpheme, along with the non-volitionality of the agent, that gives the abilitative flavor of the form. The two types of constructions are given in bracketed strings below.

(54) (Phillips 1996)

- a. *maha-* causative
 [VP1 [V1' a- [AspP X [Asp' ha [VP2 Y [V' √]]]]]
 "cause" [+telic] (Th)
- b. *maha-* achievement
 [VP1 [V1' a- [AspP X [Asp' ha [VP2 Y [V' √]]]]]
 "agent" [+telic] (Agt, Th,...)

The root is generated with a theta-grid as part of its LCS. If there is no Agent in the theta-grid, the [+telic] morpheme will add a cause as in (54a). If there is an Agent in the theta-grid, the [+telic] morpheme will realize that agent but as a non-volitional agent as in (54b).

4.6.5 Cause in Spec, Asp

While it might seem strange to be placing Agents, whether or not volitional, in Spec, Asp, it turns out that there is an argument that comes from a joint effort of morphological and syntactic observations. Recalling the phenomenon of *pag*-deletion in Tagalog, we saw that the syntactic notion of Spec,head configurations could be used to explain the distribution of the morpheme *pag*-. When the Agent that was associated with a *pag*- remained in place, the *pag*- would be covert. When the Agent had moved out of the VP, the *pag*- was overt.

A similar phenomenon occurs with *maka*-, the Tagalog counterpart of *maha*-. If the distribution of *m-a-ha* is as described above (*-a-* is in V1, *ha* is in Asp), and if the Tagalog morpheme *maka*- is analyzed in the same way, we might expect *-a-* deletion parallel to *pag*-deletion. In other words, in both cases the V1 would be susceptible to deletion. It is not the *-a-* that deletes in the TT form as one might expect. It is, rather, the *ka*- that deletes. This is shown in (55).

(55) *ka*- 'deletion' in Tagalog Schachter and Otnes (1972: 330)
'gamit 'use'

	V1	Asp	V2	
AT:	m + a + ka +		√gamit	
TT:	m + a + 0 +		√gamit	

a. Nakagamit siya ng manggang hilaw (AT) n+a+ka+√gamit
pst.a.ka.use he.NOM ACC.mango.lnk green

'He was able/happened to use a green mango.'

b. Nagamit niya ang manggang hilaw (TT) n+a+0+√gamit
pst.a.0.use he.GEN NOM mango.lnk green

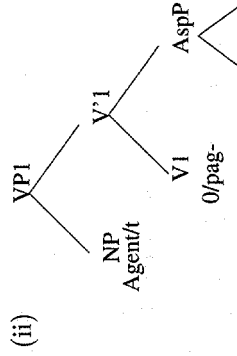
'He was able/happened to use a green mango.'

In order to generalize our account of *pag*-deletion to the cases of *ka*-deletion, we would have to assume that the agent of the *maka*- form was in the Spec,Asp position rather than the expected Spec,VP position. But this is what we were led to say above. The claim was that the [+telic] Asp was able to assign a theta-role to its Spec position. Now we can see the parallel between the case of *pag*-deletion (shown in 56a) and *ka*-deletion (shown in (56b)).

(56) a. *pag*- forms

AT: Agent moved out of VP: pag + ✓
TT: Agent is in situ: 0 + ✓

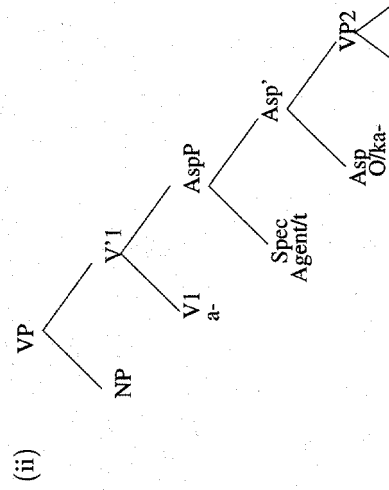
(i) [VP₁ Agent/t [V1' 0/pag [AspP X [Asp' [VP₂ Y [V2' ✓]]]]]



b. *maka*- forms

AT: Agent moved out of VP ma + ka + ✓
TT: Agent in situ ma + 0 + ✓

(i) [VP₁ [V1' a [AspP Agent/t [Asp' 0/ka [VP₂ Y [V2' ✓]]]]]



When the Agent (generated in Spec, VP1) is moved out of the VP in the structure in (56a), the respective head morphology (*pag*-) is realized. When the Agent is found in situ, the *pag*- is not phonetically realized. In (56b), when the Agent (generated in Spec, Asp) is moved out of the VP, the respective head morphology (*ka*-) is realized. When the Agent is found in situ, the *ka*- is not phonetically realized. The difference in the morpheme that deletes indicates a difference in the position that the Agent is generated in. Further, this difference in position leads to a difference in semantics - a volitional agent vs. a non-volitional agent.

The aim of this section was to show that perhaps syntax and morphology had something to give back to semanticists and philosophers. Achievements have an odd place in the aspectual verb classes. It is not always

clear whether they have any linguistic reality. Achievements are by definition telic and punctual, but how much of this has to do with real world knowledge and how much with meaning inherent to the verb? It is also not clear what their exact membership is. Verkuyl (1993:48) raises the question of whether *type*, as in *to type the letter*, should be an achievement. One can imagine an event of long duration (a three page letter on a typewriter) or an event of short duration (the letter p). Verkuyl concludes that the difference between the two is an extra-linguistic fact that has to do with duration. Further, while it seems that all eventive unaccusative verbs are achievements, do they form a natural class with transitive achievement verbs like *find* and *discover*? Finally, transitive achievements seem to fall into two different classes depending on the theta-role of their subject. The verb *find* seems clearly to have a non-volitional agent while the verb *hit* (considered an Achievement by Smith (1991)) can have a volitional agent.

The importance of the notions of durativity and agentivity in the determination of achievements arises again and again. But the question (at least for linguists) is not how events may be categorized in the world, but how they are categorized by language. Malagasy, at least, makes a clear division between transitive achievements on one hand and activities and accomplishments on the other. Further, by making the distinction clear, it makes the membership of the class clear. *Find*, *win*, and *reach* are all transitive achievements (*mahita*, *mahazo*, and *mahatratra* respectively). Further questions may be raised, however. Malagasy is a language which, even with verbs that we translate into English with accomplishment verbs, the final state is defeasible. People who have met may not have met. The verb only forces the process leading up to the change of state, but the change of state, while implied, may not have been realized. It is a bit of a mind game to imagine what an achievement would look like in a language like this. If achievements consist of nothing but a resulting change of state, how can they exist in a language where resulting changes of state are defeasible? The answer for Malagasy is that achievements must contain telic morphology.

What Malagasy morphology shows us is that there are three parts to transitive achievements. There is the root which describes the final state. There is a morpheme that ensures telicity. And there is a morpheme which indicates a state.³¹ This last observation is interesting in the context of Vendler's claim that states and achievements form a natural class. In terms

³¹This configuration of state followed by a change of state might suggest a structure similar to a perfect construction like 'I have broken that vase'. I would suggest that the difference is where the state appears. In a perfective, the state is outside of the event - in my terms above E. Further (and probably relatedly) the state is expressed with an auxiliary. In the case of achievements, the state is within the event. I know that this has to be worked out more clearly and is only impressionistic at this point.

of syntax, what is interesting is that all the arguments of the achievements are discharged within the domain of the AspP. By having the 'external' argument discharged in the Spec,Asp, a syntactic distinction can be made between states and achievements on one hand (where states are comprised only of the lower VP) and activities and accomplishments on the other hand. Further, all achievements - inchoatives and transitive achievements - can be classified as change of state [+telic] verbs which discharge all their arguments below AspP.

4.7 Limits of Interactions

At the outset of this paper, I suggested that the research within was a return to Generative Semantics. In many ways, the ideas presented here are straight from the Generative Semantics literature. I think that there are two ways in which the insights from Generative Semantics can be resurrected without falling into the same traps. One advantage that is at our disposal now is a finer-tuned phrase structure. When speaking of embedded predicates or sentoids, we now have an array of options - at the very least CPs, IPs, and VPs. With the recent explosion of functional categories, we now also have NegPs, VoicePs, AspPs, etc. So now *kill* can mean CAUSE $\sqrt{\text{DIE}}$ without meaning *cause to die*. The three arguments which Fodor (1970) brought against Lakoff's (1995) analysis of KILL as CAUSE TO DIE now can have rebuttals. For example, Fodor shows that the lower event in *cause to die* can serve as an antecedent for *do so* in (57a), but the inner event in *kill* cannot (57b).

(57) (Fodor 1970:431)

- a. John caused Mary to die and it surprised me that she did so.
- b. *John killed Mary and it surprised me that she did so.

However, given what we have seen above about productive (s-syntax) causatives, and lexical (l-syntax) causatives, we know that the syntactic structure is different for *cause to die* and *kill*. *cause* in (57a) takes an EP as its complement while CAUSE in (57b) takes AspP as its complement.

- (58) a. [VP cause [EP to [VP die]]]
 b. [VP CAUSE [AspP [VP √DIE]]]

The lower event of EP in (57a) can serve as an antecedent (the NP correlate of EP is R(eference)P³²). The inner event of AspP in (57b) cannot serve as an antecedent.

Another difference between the introduction of sub-eventual structure here, and the folding together of semantics and syntax in the framework of Generative Semantics is the limits on what can crossover from semantics to syntax. There is no pretense here of putting all of semantics into syntax. Additional heads are proposed only if they have morphological as well as semantic content. Many languages have a lexical causative morpheme to mediate between the transitive and the intransitive versions of *melt* or *break*. Because of this, there is reason to posit a syntactic head.³³ I do assume that if one language has morphological evidence for that head, then all languages will have that same head with the same semantic force even though the morphology may be covert. Since no language that I'm aware of encodes *kill* with morphological bits meaning CAUSE BECOME NOT ALIVE, I believe that syntax has no right encoding all of these concepts. Some work must be left to the lexicon and lexical semantics. As a syntactician I am interested in that part of meaning which is part of syntax.

³²Higginbotham (1985) uses the functional categories Infl and Det to bind the theta-roles of E(event) and R(eferent) respectively. I have translated these theta-binding relations into separate syntactic heads (see Travis 1994).

³³Obviously, this is not the case for many syntacticians or morphologists. Here I am clearly following the direction of research of people like Baker (1988).

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