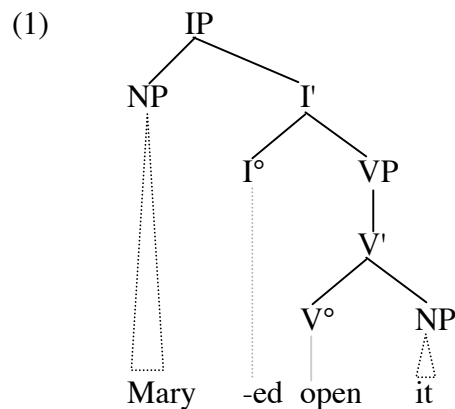


The bipartite structure of verbs cross-linguistically
(or: Why Mary can't exhibit John her paintings)
 ABRALIN, UFMG, Belo Horizonte, March 1 2007
 Heidi Harley, University of Arizona
hharley@email.arizona.edu

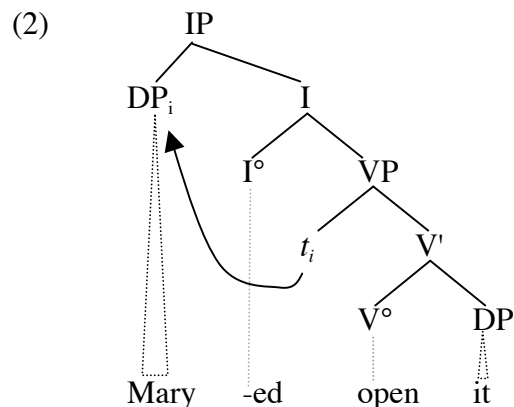
1 Introduction

Not so long ago, in a universe very similar to this one except for the beliefs held by Chomskyan linguists about VPs, *Mary opened it* was assigned the following syntactic structure, within an X-bar approach to syntax (the internal structures of the NPs are not shown):



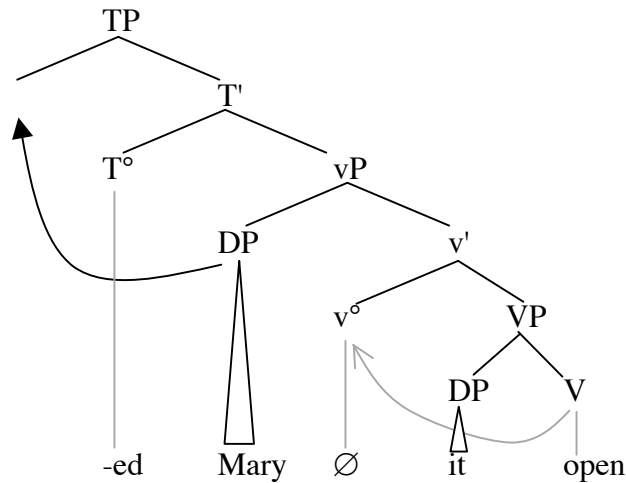
(The suffix *-ed* and *open* would get put together by some process ('Affix Hopping', e.g.) to produce the surface linear form of the sentence.)

Then for a few years it looked like the structure illustrated below, where the salient change is that the subject argument is structurally related to the VP, reflecting the semantic (thematic) relationship between the V and its subject, and the nonthematic nature of the content of I°.



Nowadays (Hale and Keyser 1993, as adopted in Chomsky 1995), the structure (focusing only on the VP part) has minimally at least one more projection in it:

(3)



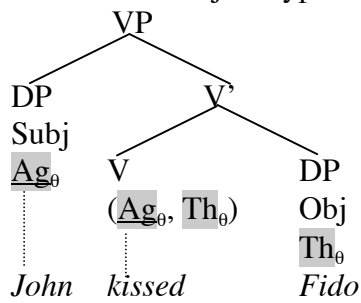
In this yet more abstract structure, the surface form is derived via two operations. Head-movement from $\sqrt{\text{ }}$ to v° simultaneously creates the causative verb *open*, and moves *open* into the right position with respect to *it*; movement of *Mary* to spec-TP for the usual case-related or Extended Projection Principle-related reasons puts *Mary* in the sentence-initial position and allows *-ed* to be adjacent to the verb *open*, permitting *opened*.

The crucial aspect of this proposal is the claim that the portion of syntactic structure previously identified simply as the verb phrase exhibits a (minimally) bipartite structure. In fact, verbs themselves, on this approach, are necessarily complex, being made up of a v° part and a 'V' part. In this paper, I will review some of the theoretical and empirical motivation for this more complex structure. Then I will present some of the phenomena which this account has been extended to cover, phenomena which previously had not been treated syntactically. Finally, I will show how the approach allows a new and perhaps more general account of a particular peculiarity of the English 'dative shift' alternation, namely its famous failure to extend to the Latinate portion of the English verbal inventory. The same constraint applies to the English verb-particle constructions and resultative constructions as well, and insofar as the theory treats all three of these constructions in a similar way, it may be extended to account for the applicability of the Latinate restriction to all of these cases.

2 Bipartite Verbs: Syntactic arguments

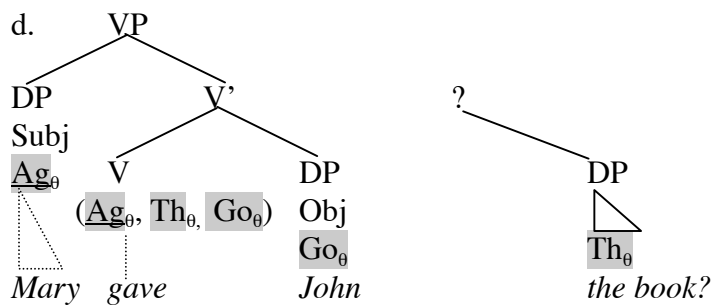
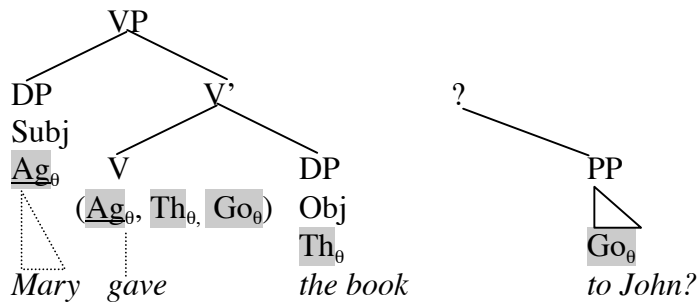
The first argument for a bipartite verb structure was presented in Larson 1988's treatment of Barss and Lasnik 1986's c-command facts in ditransitive constructions. Verbs with two internal arguments were problematic theoretically and empirically. The VP had gotten somewhat crowded when the external argument was moved down to its specifier position by the VP-internal subject hypothesis (Koopman and Sportiche 1991); in ditransitive verbs, it was more crowded still:

- (4) VP-internal subject hypothesis:



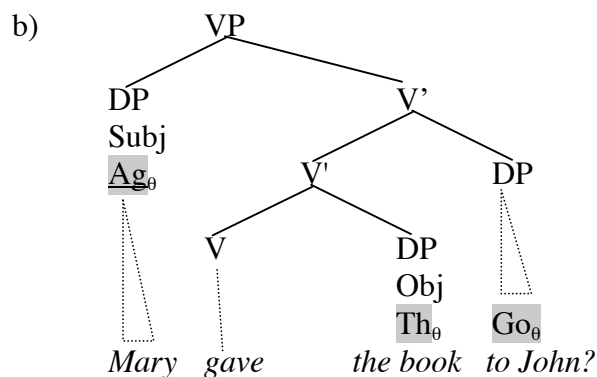
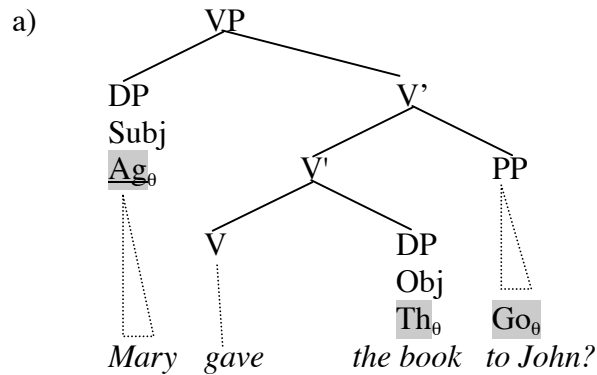
- (5) Ditransitive verbs?

- a. Mary gave the book to John.
- b. Mary gave John the book.
- c. give ($Ag_\theta, Th_\theta, Go_\theta$)



The X-bar schema did not allow for ternary branching, nor for more than one specifier and one complement. As discussed by Barss and Lasnik, it would be possible to right-adjoin the second DP to V', as follows:

(6) Adjunction to V':



However, this structure resulted in the wrong c-command relations, as shown by Barss and Lasnik 1986. In both *to*-dative and double object structures, the leftmost internal argument c-commands the rightmost internal argument, as shown by binding and negative polarity tests:

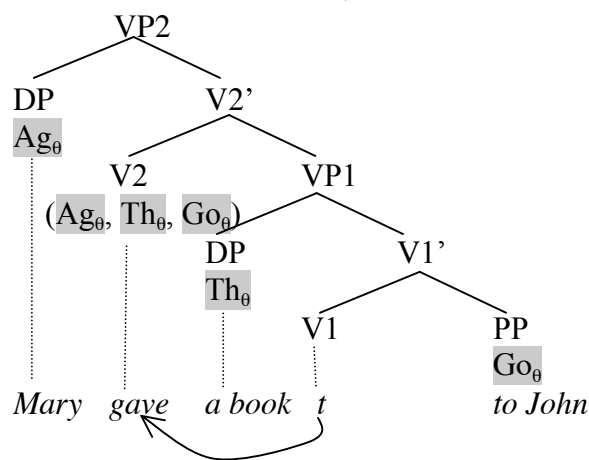
- (7)
- a. John showed Bob₁ himself₁ (in the mirror)
 - b. *John showed himself₁ Bob₁ in the mirror
 - c. Mary gave no one anything
 - d. * Mary gave anyone nothing
 - e. The cruel boss denied [each worker₁][his₁ paycheck]
 - f. The cruel boss denied [it₂s owner] [every paycheck₂]

Further, the bar-level adjunction position was supposed to be reserved for optional adjuncts, and to the extent that the argument/adjunct distinction was thought to have structural reflexes, the adjunction-to-V' analysis predicted that the rightmost internal argument should behave like an adjunct, not an argument (when in fact, if anything, it's the leftmost internal argument that has a few adjunct-like properties).

Larson's solution to this problem was to propose that the external argument was base-generated in the specifier of an upper VP "shell". The verb would project its two internal

arguments in the specifier and complement position of the lower shell, and then head-move to the upper shell to establish its thematic connection to the external argument, as illustrated in (8):

(8) Larson's solution: Two VPs:



This structure made the right empirical predictions, as the leftmost argument c-commands the rightmost, and conformed to X-bar theory, as the X-bar theoretic template applies to each VP independently.

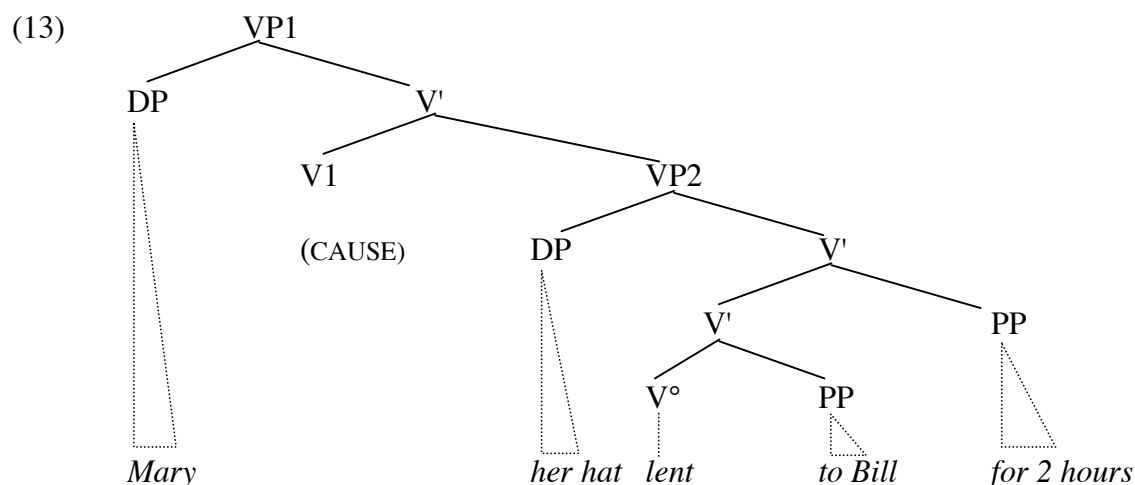
It does, however, raise several new questions. How can one verb project two VPs? What is the nature of the 'late' theta-role assignment to the external argument? What is the nature of the upper V° head? Larson asserted that the upper V° was purely structural in nature, containing no semantic information. The 'mediated' assignment of the external theta-role, however, seemed problematic within the extant θ -theory.

2.1 Semantic reasons to split VP

In a sentence like *John made Mary happy again*, the adverbial *again* can be interpreted in two ways, as modifying *happy* or as modifying *make*. This ambiguity receives a straightforward structural analysis, since *again* can have two loci of adjunction: one on the embedded (small clause) predicate *happy* and one on the matrix predicate *make*, corresponding to the two interpretations. On the former, Mary was happy before (independently of John), had become sad, and then she became happy again, thanks to John. On the latter, Mary had been made happy by John in the past, had become sad, and then been made happy by John again. The two structures are illustrated in (9) below (TP omitted to economize on space):

Beck and Johnson (2004) framed the same argument for the double object verbs, where *again* modifying the upper Larsonian VP-shell is interpreted as iterated causation of the event, and *again* attached to the lower VP shell is interpreted as the iterated result. With a ditransitive verb, the result denoted by the lower VP shell seems clearly to be stative location or possession. This can clearly be seen in another generative semantics argument from McCawley 1968, 1974 and Ross 1976, also resurrected by Beck and Johnson: the interpretation of temporal modifiers with ditransitive verbs:

- (12) Temporal modifiers modifying the result of the event:
 a. Mary gave Bill the car until 3 o'clock (earlier this morning)
 b. Mary lent her hat to Bill for 2 hours



Here, it is not the action itself that lasts for two hours, but the state of the hat's being lent to Bill, or Bill's having the car. A similar effect can be seen with *open* and related change-of-state verbs:

- (14) a. John opened the window for five minutes
 b. Mary turned the tap to 'cold' for five minutes.

If the resultant state is represented in the structure independently of the initiating action, in a VP-shell structure like those above, it is easy to treat the modification of that resultant state by a temporal adverbial like those above; if it is not present, the syntax/semantics interface becomes remarkably complicated, as argued by von Stechow.

On this view of the contribution of the upper and lower V°s — the 'little' v° and the 'big' V° — the upper v° has its own semantic content, having to do with event initiation and causation. The external argument, then, is related semantically to this upper v°, and is in fact not 'selected' by the root V° at all (though obviously the nature of the causation or event-initiation in which the external argument engages will be affected by the content of the V° head, since different events require different types of initiation).

The intuition that the external argument is in some way semantically independent of the big V° is supported by an independent observation due originally to Marantz (1984), and later treated within a compositional semantic framework by Kratzer. Kratzer 1996 points out that if external, agent arguments are in fact arguments of a separate v° functional projection (with a

semantics like that of a neo-Davidsonian predicate $\text{Agent}(x, e)$), then Marantz 1984's generalization about the restrictions on idiomatic composition can be explained. Marantz noted that while verb-object idioms/special interpretations are ubiquitous cross-linguistically, verb-agent idioms (that exclude the object) are close to nonexistent.

- (15)
- | | | |
|---------------------|---|---|
| kill a bug | = | cause the bug to croak |
| kill a conversation | = | cause the conversation to end |
| kill an evening | = | while away the time span of the evening |
| kill a bottle | = | empty the bottle |
| kill an audience | = | entertain the audience to an extreme degree |

Kratzer notes that if the subject and the object both compose directly with the verb *kill*, there is no principled semantic reason why there shouldn't be as many subject-verb idioms as there are verb-object ones. For example, *A bug killed the boy* could have one special interpretation (a non-'kill' meaning), while *The food killed the boy* could have another. However, these kinds of idioms, with free object positions and bound (idiomatic) agentive subjects, do not seem to occur.

If, however, Agents compose with a separate light verb and then have their interpretation composed with that of the lower predicate via a process Kratzer calls Event Identification (essentially, conjunction of the functions and simultaneous binding of the event variables), the semantic independence of Agent arguments is expected. Event Identification combines the denotation of v (type $\langle e, \langle s, t \rangle \rangle^1$) with the (argumentally saturated) denotation of the lower VP, (type $\langle s, t \rangle$), to produce a function of type $\langle e, \langle s, t \rangle \rangle$. This operation can be seen in below (Kratzer's ex. 19):

- (16)
- | | | | |
|--|--|---|--|
| (Voice) | (VP) | | Voice' |
| f | g | → | h |
| $\langle e, \langle s, t \rangle \rangle$ | $\langle s, t \rangle$ | | $\langle e, \langle s, t \rangle \rangle$ |
| $\lambda x_e \lambda e_s \text{Agent}(x)(e)$ | $\lambda e_s \text{wash}(\text{the clothes})(e)$ | | $\lambda x_e \lambda e_s [\text{Agent}(x)(e) \& \text{wash}(\text{the clothes})(e)]$ |

(It's important to note that Kratzer's treatment of Marantz's generalization only works if the object of the verb is truly an argument of the verb, composing with it directly. A truly Neo-Davidsonian analysis where there is, e.g., a function $\text{Patient}(x)(e)$ and a separate Manner function that introduces the contribution of the verb root won't work, or rather, will make the wrong predictions about idiomatic interpretations of the $\sqrt{\cdot}$.)

For at least certain verb classes, then we have some evidence that the verb is made up of a matrix external-argument introducing projection, v° involving causation or initiation, and a formally independent downstairs V° projection, which a) seems to denote a result state (as shown by the interpretation of the examples in (12) and (14) and b) selects the internal arguments of the verb, and contributes the 'root' meaning of the predicate. Next we turn to crosslinguistic morphological evidence that verbs are indeed composed of more than one element: in many (perhaps most?) languages, change-of-state verbs are clearly morphologically complex.

¹ e = individuals, s = events, t = truth values

3 Bipartite Verbs: Morphological evidence

Hale and Keyser (1993, 2002 and other works) also argue for syntactically complex (agentive) verbs, composed of an external-argument-introducing v° and an independent lower V° which contains the verb root itself. Their initial reason for thinking so was the fact that in many languages, verbs are visibly complex, being made up of a root element (itself, in fact, *not* verbal) plus some type of verbalizer. Their examples of morphologically complex unergative verbs from Jemez are given below;

- (17) a. $sæ'$ -a b. $zæi'$ -a c. $se-ʔa$
 work-do song-do word-do
 “work” “sing” “speak”

In fact, this kind of bipartite morphological structure in 'simple' verbs, especially in change-of-state verbs, is crosslinguistically pervasive. Below I give just a few groups of examples from some familiar and less-familiar languages that I have worked with; examples from unrelated languages can be easily multiplied.

3.1 Japanese

Japanese has a large class (containing hundreds of exemplars) of derived causative (transitive) / inchoative (intransitive) verbs which share a common bound root, are generally semantically related in their entailment consequences in the usual way in such pairs, and exhibit a complex morphological structure in either or both the causative or inchoative forms. Below I give a table illustrating the various types of morphological alternations that these verbs exhibit, as identified and classified by Jacobsen 1981, 1992:

(18)	Class/# ²	<u>√</u>	<u>Intr</u>	<u>Tr</u>	<u>Rough √ gloss</u>
	I: e/Ø	hag	$hag-e-ru$	$hag-Ø-u$	‘peel off’
	30 pairs	$hirak$	$hirak-e-ru$	$hirak-Ø-u$	‘open’ ³
	II: Ø/e	ak	$ak-Ø-u$	$ak-e-ru$	‘open’
	44 pairs	$hikkom$	$hikkom-Ø-u$	$hikkom-e-ru$	‘draw back’
	III: ar/e	ag	$ag-ar-u$	$ag-e-ru$	‘rise’
	71 pairs	$aratam$	$aratam-ar-u$	$aratam-e-ru$	‘improve’
	IV: ar/Ø	$hasam$	$hasam-ar-u$	$hasam-Ø-u$	‘catch between’

² The number of pairs does not include other pairs derived from a root already on the list even when these are not transparently semantically related; the number of items on each list, then, is actually somewhat larger.

³ Mamoru Saito and Yosuke Sato (p.c.) inform me that the forms listed as meaning ‘open’ here, $hirakeru \sim hiraku$, are not used (the pair from class II, $aku \sim akeru$, is the appropriate one). Some other particular items in Jacobsen’s lists also seem to not currently be in use, for example $bakasu$, $dekasu$, and $nukumeru$.

8 pairs	husag	husag- ar -u	husag- ø -u	‘obstruct (clog, jam?)’
V: r/s	ama	ama- r -u	ama- s -u	‘remain’
27 pairs	hita	hita- r -u	hita- s -u	‘soak’
VI: re/s	arawa	arawa- re -ru	arawa- s -u	‘show (up)’
18 pairs	hana	hana- re -ru	hana- s -u	‘separate from’
VII: ri/s	ka	ka- ri -ru	ka- s -u	‘borrow/(lend)’
2 pairs	ta	ta- ri -ru	ta- s -u	‘suffice/(supplement)’
VIII: ø/as	hekom	hekom- ø -u	hekom- as -u	‘dent’
38 pairs	her	her- ø -u	her- as -u	‘decrease’
IX: e/as	bak	bak- e -ru	bak- as -u	‘turn into/bewitch’
45 pairs	bar	bar- e -ru	bar- as -u	‘come/bring to light’
X: i/as	ak	ak- i -ru	ak- as -u	‘tire’
8 pairs	dek	dek- i -ru	dek- as -u	‘come/bring into existence’
XI: i/os	horob	horob- i -ru	horob- os -u	‘(fall to) ruin’
6 pairs	ok	ok- i -ru	ok- os -u	‘get up’
XII: Ø/se	abi	abi- ø -ru	abi- se -ru	‘pour over (self/other)’
6 pairs	ki	ki- ø -ru	ki- se -ru	‘put on (self/other)’
XIII: e/akas	obi	obi- e -ru	obi-(y) akas -u	‘take fright/frighten’
4 pairs	hagur	hagur- e -ru	hagur- akas -u	‘stray/evade’
XIV: or/e	kom	kom- or -u	kom- e -ru	‘be fully present/fill’
2 pairs	nukum	nukum- or -u	nukum- e -ru	‘warm’
XV: are/e	sut	sut- are -ru	sut- e -ru	‘fall into disuse/discard’
3 pairs	wak	wak- are -ru	wak- e -ru	‘divide’
XVI: Misc	nigiwa	nigiwa- ø -u	nigiwa- s -u	‘(make) prosper’
25 pairs	nob	nob- i -ru	nob- e -ru	‘extend’

This is clearly a salient and pervasive pattern within Japanese.

3.2 *Hiaki (Yaqui) derived verbs*

A similar contrast can be seen in the Uto-Aztecan language Hiaki, spoken in northern Mexico and the southern United States. In Hiaki, there are many causative/inchoative pairs of verbs which again share a common bound root and semantic content and are related to each other via

distinct suffixation patterns. Consider the following pairs, taken from Jelinek (1997), Jelinek and Escalante (2001):

bwas	"cook"	bwase	"cook, ripen"
chakukta	"bend"	chakukte	"bend"
chakta	"drip"	chakte	"leak"
chihakta	"smash"	chihakte	"shatter"
hamta	"break"	hamte	"break"
heokta	"melt"	heokte	"melt"
chu'akta	"stick on"	chu'akte	"adhere"
chukta	"cut loose"	chukte	"come loose"
chupa	"finish"	chupe	"come to end"
ko'okta	"pull apart"	ko'okte	"come undone"
kowiikta	"make crooked"	kowiikte	"get crooked"
kitokta	deform"	kitokte	"shrivel"
kotta	"break"	kotte	"break"
kutta	"tighten"	kutte	"get tight"
kuuta	"stir"	kuute	"mix"
luuta	"use up"	luute	"run out"
mana	"place before"	mane	"be before"
mohta	"grind"	mohte	"break up"
mohakta	"take apart"	mohakte	"crumble"
nasonta	"damage"	nasonte	"get damaged"
patta	"shut"	patte	"shut"
pesta	"burst"	peste	"burst"
pitta	"press"	pitte	"settle down"
pohta	"boil"	pohte	"boil"
potta	"stretch out"	potte	"rise, expand"
rauta	"rinse"	raute	"rinse"
resta	"spread out"	reste	"spread out"
revekta	"break apart"	revekte	"come apart"
riuta	"split"	riute	"split"
ropta	"sink"	ropte	"sink"
ro'akta	"roll over"	ro'akte	"roll along"
sihho'ota	"sprinkle"	sihho'ote	"drizzle"
sipa	"cool"	sipe	"cool"
siuta	"tear"	siute	"tear"
teita	"trip"	teite	"trip"
tohta	"discolor"	tohte	"fade"
topakta	"turn over"	topakte	"flip over"
totta	"bend"	totte	"collapse"
tuhta	"press"	tuhte	"settle"
tuucha	"put out (fire)"	tuuke	"go out"
veeta	"burn"	veete	"burn"
vi'ita	"twist"	vi'ite	"twist"
vohta	"pour out"	vohte	"drop out"

vutta	"undo"	vutte	"come undone"
weeyya	"carry"	weeye	"move"
wiokta	"untangle"	wiokte	"untangle"
wiuta	"spend"	wiute	"run out"
wohokta	"dig up; puncture"	wohokte	"get a hole in"
woita	untie	woite	"come untied"
wo'ota	spill	wo'ote	"spill"
yohta	"drop"	yohte	"drop"
yooka	"paint"	yooke	"change color"

Again, seemingly a salient and pervasive pattern in the language (this list contains only about half the pairs given by Jelinek; further, these do not include verbs that contain a lexicalized version of the productive causative suffix *-tua* or the (separate) creation suffix *-te*). The roots themselves are not independently used, as in Japanese; they must always come bound with one of their suffixes. Nonetheless it seems clear that they exist as morphological units, and the verbalizing suffixes are independent recurring entities exhibiting specific morphosyntactic behavior.

3.3 Persian

Persian (Farsi) exemplifies a final type of 'bipartite' verb construction, one in which the 'verb' is usually so bipartite it is not in fact a verb at all, but a complex predicate construction consisting of a light verbal head and a complement phrase of any other syntactic category, including nouns, adjectives, prepositions and prepositional phrases. The internal arguments introduced by these complement phrases behave like the regular internal arguments of the few 'heavy' verbs of the language; that is, they do not show any apparent evidence of being further embedded than regular internal arguments (Megerdooian, in press).

The verbal lexicon of Persian has undergone 'separation' in its documented history, from mostly 'heavy' verbs with fewer complex predicates to the current situation in which nearly all verbal meanings are commonly expressed via complex predicates, with the simple 'heavy' verbs restricted to written or elevated language. Some examples illustrating the historical derivation from heavy verbs to complex predicate construction are given below. (All examples and discussion below taken from Folli, Harley and Karimi 2005).

(19)	Simple	Complex		
	lasidan	las zadan	(flirtation doing)	'to flirt'
	raghsidan	raghs kardan	(dance doing)	'to dance'
	agahanidan	agah kardan	(informed making)	'to inform'
	aghazidan	aghaz kardan	(start doing)	'to start'

A more comprehensive sampling of Persian complex predicate types is provided below:

(20)	a.	N+LV		
		kotak zadan/xordan	(beating hitting/colliding)	'to beat, to get beaten'
		xar kardan/shodan	(donkey doing/becoming)	'to fool, become fooled'
		dust dâshtan	(friend having)	'to love'

b. **A+LV**

sabok kardan/shodan	(light making/becoming)	'to degrade' (tr & intr)
pahn kardan/shodan	(wide making/becoming)	'to spread, to widen' (tr & intr)
derâz keshidan	(long pulling)	'to lie down, to take a nap'

c. **Particle+LV**

birun kardan	(out doing)	'to dismiss, to fire (someone)'
bâlâ âvardan	(up bringing)	'to vomit'
bâlâ keshidan	(up pulling)	'to steal'

d. **PP+V**

be yâd dâshtan	(to memory having)	'to have in memory'
bejâ âvardan	(to place bringing)	'to recognize'
be bâd dâdan	(to wind giving)	'to waste'

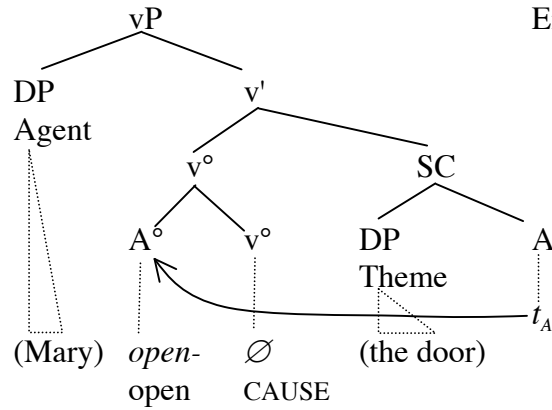
Clearly the bipartite nature of the Persian verb is strongly evident in the language, and supported by the syntactic independence of the two subparts of the construction, despite their semantic unity.

Similar examples of (derivational) morphological complexity in broad segments of the verb inventory of unrelated languages could be multiplied almost indefinitely. Indeed, we will next see examples of this type from English. However, in the complex English cases, an interesting difference can be seen with the Persian, Japanese and Hiaki cases, to do with the locus of the contentful verb root in the structure.

3.4 English 'High' roots

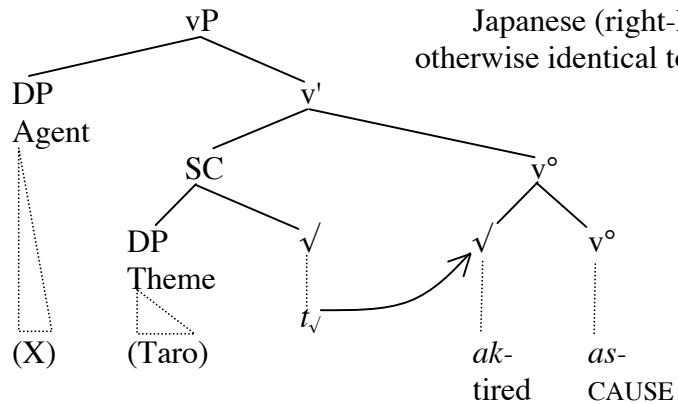
In the complex verbs described above, it seems clear that the verb root originates lower in the verbal structure, identifying the result of the change-of-state indicated by the complex form; this then is composed with a verbalizing morpheme higher in the structure with an abstract meaning like 'cause' or 'become/happen' via head-to head movement. Trees illustrating this structure for causative *open* in English, causative *ak-as-u*, 'tire' in Japanese, causative *hamta*, 'break' in Hiaki and causative *pahn kardan*, 'widen' in Persian, are provided in (21)-(24) below. Two important changes have been made to the initial Chomskyan structure illustrated in (3) above. The lower, contentful 'root' part of the projection has been relabeled with its syntactic category (where this is clear from elsewhere in the language), and with the label 'vⁱ' where the item is a bound, acategorial root which cannot be used freely. In addition, the projection of this root, labeled 'VP' in the previous structure, has been relabeled 'SC' for 'Small Clause', reflecting its predicational and propositional nature (see, e.g. Hoekstra 1988 for discussion). The upper v^o selects for a state-denoting complement, and the semantic combination of the causative v^o and SC creates a change-of-state meaning for the whole (compare, *Mary made [John happy]*).

- (21) *open* English



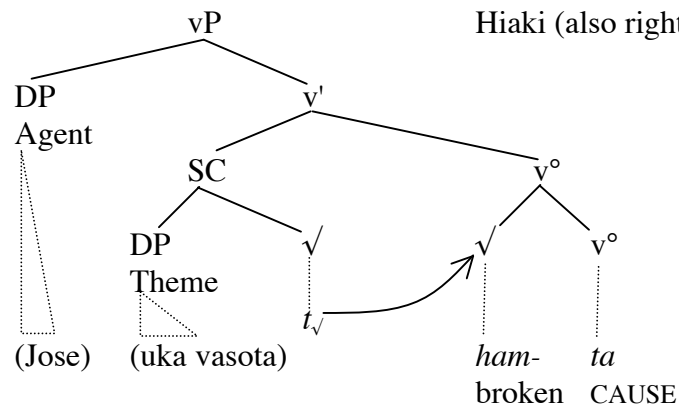
(vP contained in "Mary opened the door")

- (22) *ak-as-*, 'tire' Japanese (right-headed but otherwise identical to structure above)



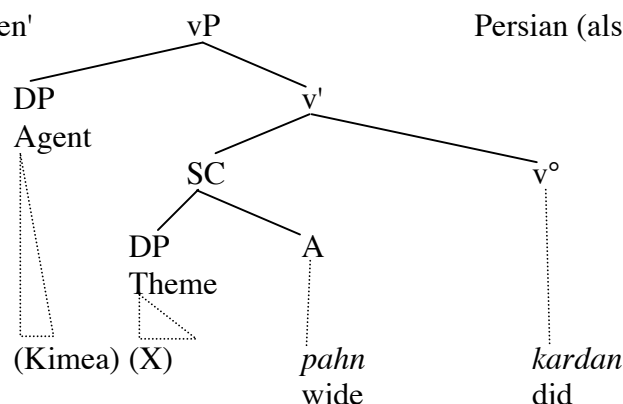
(vP contained in something like *X wa Taro o akasu* "X tires Taro")

- (23) *ham-ta*, 'break' Hiaki (also right-headed)



(vP contained in something like *Hose uka vasota hamtak*, "Jose broke the glass.")

(24) *pahn kardan*, 'widen' Persian (also right-headed)



(vP in something like *Kimea X-ro pahn kard*, "Kimea widened X")

In short, change-of-state verbs in all these languages can profitably be analyzed with the same complex vP syntactic structure, where the semantic structure of the complex involves a causation portion expressed by the v° morpheme, and a resultant state portion expressed by morpheme denoting the predicate of the SC. The predicate may or may not incorporate into the v° to form a 'heavy' (contentful) verb.

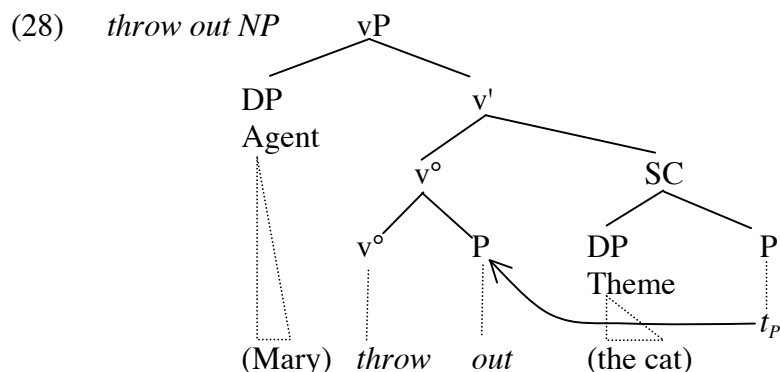
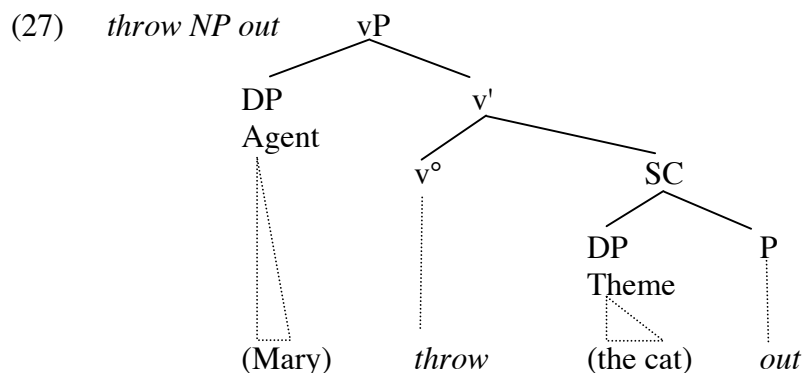
In English, there is no morphological evidence for complex structure in verbs like *open*, since the causative and inchoative variants share identical morphology. There is, however, a large class of morphosyntactic bipartite verbs in English in which it seems most of the same processes are at work, but in which the 'verb root' part of the structure—the contentful part—seems to be located in v° , and the resultative predicate part of the structure lower down is more functor-like, less contentful. These of course are the verb-particle constructions. Just a few examples are given in (25); the pattern is very productive in the language:

- | | | | |
|------|----|---------------------------------------|--------------------------------|
| (25) | a. | <i>throw</i> the garbage <i>out</i> | <i>throw out</i> the garbage |
| | b. | <i>pick</i> the paper <i>up</i> | <i>pick up</i> the paper |
| | c. | <i>push</i> the needle <i>in</i> | <i>push in</i> the needle |
| | d. | <i>pass</i> the dish <i>around</i> | <i>pass around</i> the dish |
| | e. | <i>fight</i> the attackers <i>off</i> | <i>fight off</i> the attackers |
| | f. | <i>paste</i> the stamp <i>on</i> | <i>paste on</i> the stamp |
| | | ... | |

A common approach to the structure of these English constructions within this general framework holds that the particle identifies the resultant state, while the verbal portion identifies the causative portion of the meaning. When one considers the results of, e.g., the *again* modification test with compositional examples of verb-particle constructions like the above, it is clear that on the 'result modification' reading, the crucial thing is that the resultant state be iterated, not the action denoted by the verb root. Consequently, e.g., the result-modification reading of (26)a below requires only that the cat have been outside before, not that he have been *thrown* outside before. A similar observation applies to the endstate modification reading of the temporal adverbial in (26)b — it's the state of the cat being outside that lasted for two hours, not the throwing portion of the event:

- (26) a. (After letting him in only an hour before,) Mary threw the cat out again.
 b. Mary threw the cat out for two hours (then she let him in again).

This suggests that the structure associated with these verbs involves having the verb root, identifying the causation portion of the structure, in v° , and allowing the particle to sit lower in the structure, as the predicate of the small clause, illustrated in (27). (Particle shift arises when the particle head-moves to adjoin to the verb in v° , illustrated in (28)):



Of course, verb-particle constructions are famous for having idiosyncratic, 'lexical' or idiomatic interpretations, where the independent semantic content of the verb or particle is not obviously present, as in the following cases:

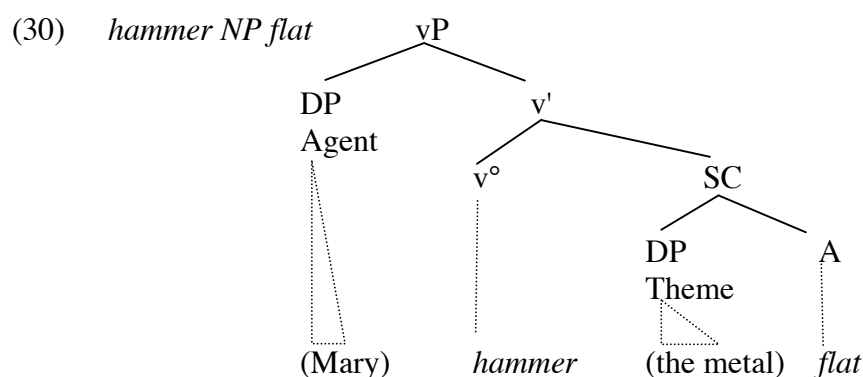
- (29) a. *see NP through* 'to persevere with NP'
 b. *chew NP out* 'to scold NP'
 c. *piss NP off* 'to anger NP'
 d. *fill NP in* 'to brief NP'
 e. *work NP over* 'to beat NP'
 f. *while NP away* 'to pass NP(=time)'
 ...

Clearly we have an overtly bipartite verb structure in these cases; the pervasive verb-particle construction of English is thus another excellent example of the way in which verbs can have internally complex morphological and syntactic structure. However, these bipartite verbs differ in an important respect from the Persian, Japanese and Hiaki cases discussed above, as well as

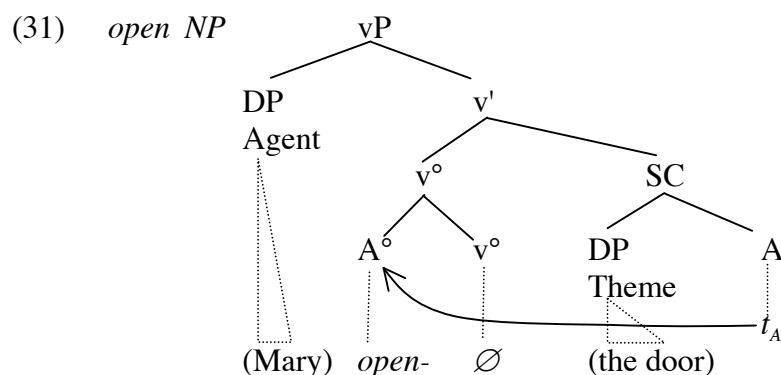
from cases like simple *open*. In English verb-particle constructions, the 'contentful' part of the complex verb—the 'root'—is associated with the v° head, rather than with the lower-down predicate of the SC.

4 Manner Incorporation: Productive insertion of roots into v°

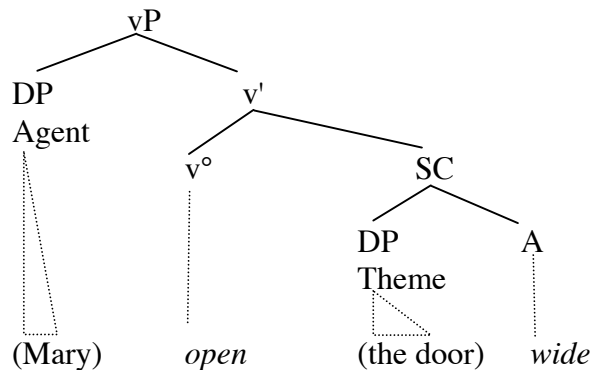
Similar observations apply to the less syntactically and semantically idiosyncratic English resultative construction. The complex predicate *wipe NP clean* clearly involves a causative portion and a result state portion (consider the result-modification interpretation of *Mary wiped the table clean again*). As with the verb-particle constructions, a contentful verbal element is present as the v° head, not the SC predicate, which is independently realized by a separate (contentful) resultative adjective. The structure for *Mary hammered the metal flat* is illustrated below:



Indeed, it seems that in English, the same verbal root can alternately appear as the predicate element of a small clause, *or* in a v° head, with an independent element present realizing the SC predicate. Compare *Mary opened the door* (where *open* is the SC predicate describing the endstate of the door) and *Mary opened the door wide* (where *wide* is the SC predicate, and *open* is present in the v° head):

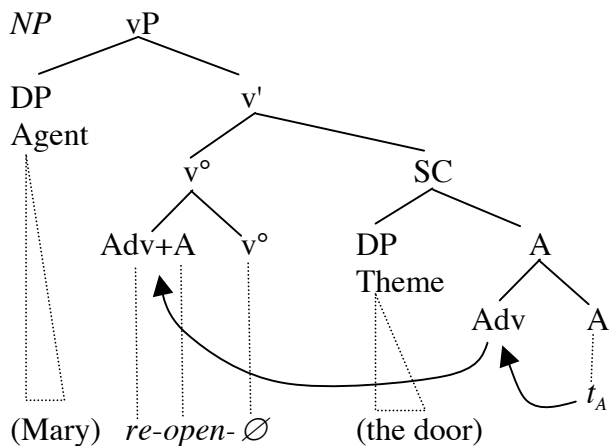


(32) *open NP wide*



The distinct structural sources for *open* in the two structures are revealed by their different behaviors with *re*-affixation, discussed by Keyser and Roeper (1987). English iterative *re-* has essentially the meaning of result-modifying *again*. It applies to change-of-state predicates to indicate that the resultant state, previously holding at some point and then (up to reference time) not holding, has been brought about again. In short, *re-* modifies the endstate-denoting part of the bipartite verb structure, as illustrated in (33), and is then incorporated with the verb root into the v° position via head-to-head movement:

(33) *reopen NP*



With the resultative or verb-particle construction version of *open*, however, *re*-affixation is impossible, as shown by the examples in (34). If *re-* must attach to a SC predicate, which then incorporates into a v° , then with the resultative, *re*-affixation to *open* will be impossible because *open* is never the SC predicate. Consequently, the *re-* can never be attached to *open* when a resultative predicate or verb particle co-occurs with it—in such cases, *open* starts off in the v° position, too high in the structure to be modified by *re-*.⁴ (See Harley 2004 for a somewhat fuller discussion of these cases in the context of head-movement):

⁴ Why can't *re-* attach to the resultative adjective or to the particle, remaining in situ, to produce *Mary opened the door rewide* or *Mary opened the door reup*? For the moment, I conclude that *re-* is subject to a constraint that requires that it ultimately incorporate into a v° head. If a more principled explanation exists, it will have to wait for future research.

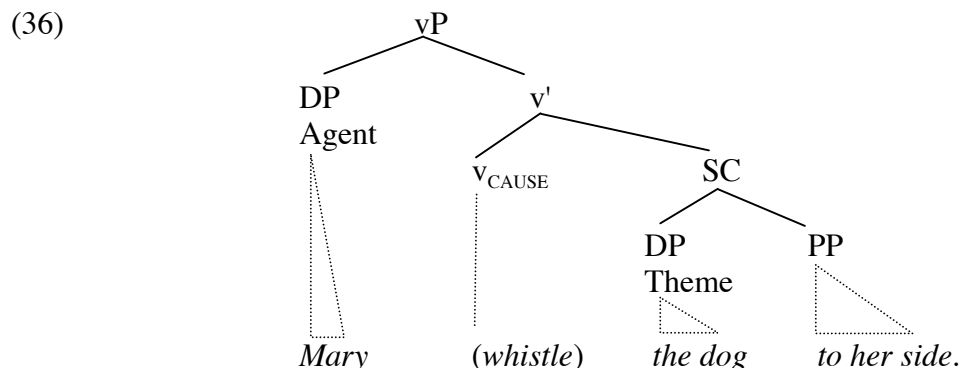
- (34) a. *Mary reopened the door wide.
b. *Mary reopened the door up.

The adjectival verb root *open*, then, can be associated either with the endstate-denoting small clause predicate, or with the activity-denoting v° head, in English. It seems that in general, English v° is able to host either a null causative or a full verb root.

This flexibility of English roots allows a nice account of causative manner-of-motion constructions in the language. Verb roots which do not entail any motion whatsoever in their 'basic' use may occur in causative motion-denoting verb phrases, often with NP direct objects which the verbs themselves would never select, as discussed by Levin and Rappaport-Hovav (1999), among many others. Consider the examples below:

- (35) a. Mary whistled the dog to her side. **Mary whistled the dog.*
b. Mary shoved her way to the front of the line. **Mary shoved her way.*
c. Mary talked herself onto the stage. **Mary talked herself.*
d. Mary pitched her team into the finals. **Mary pitched her team.*

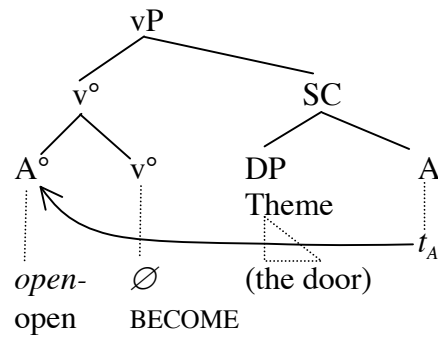
In such cases, the assumption that v° may contain roots indicating manner-of-causation allows us to treat these as garden-variety causative constructions, where the underlying structure of something like (35)a involves a caused change of location in which the causation is accomplished in a *whistling* manner:



The internal arguments of the construction are introduced by the small clause predicate *to her side*. This explains why these sentences are ill-formed without the PP (as shown in (35) above) and why *whistle* thus may co-occur with these 'unselected' objects as a purely manner-denoting root—no selectional conflict occurs because *whistle* here is behaving like a causative verb requiring a small clause complement, not like its unmarked behavior as a root verb where it can optionally select only for a tune-denoting DP complement (*Mary whistled "Three Blind Mice"*).

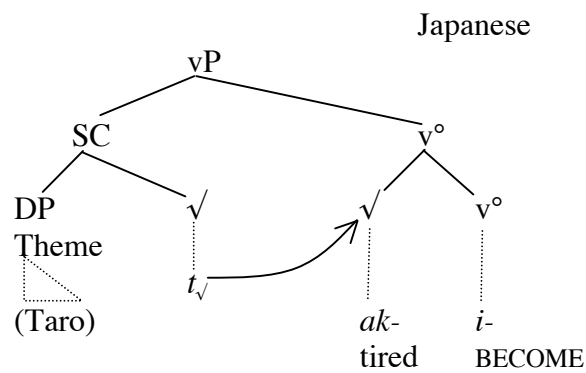
This general approach can also be applied to non-causative manner-of-motion constructions. In our lists of causative/inchoative alternating verbs above, a change in the v° portion of the bipartite morphemic structure is associated with the absence of an external argument; this can be interpreted as reflecting the change from the external-argument-selecting v° meaning CAUSE to the inchoative v° meaning BECOME, illustrated for English *open* (intr), Japanese *ak-i-ru*, 'tire (intr)', Hiaki *hamte*, 'break (intr)', and Persian *pahn shodan*, 'widen (intr)':

(37) *open* (intr)



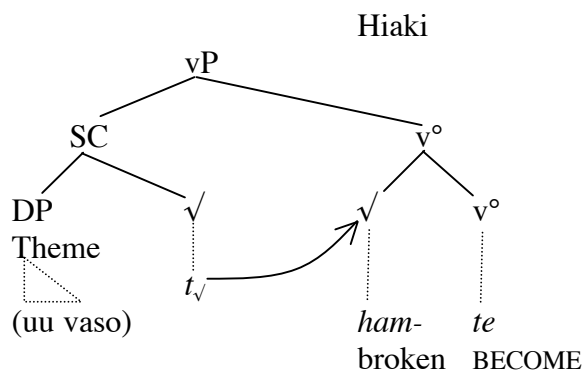
(vP contained in "The door opened"; the DP *the door* moves to subject position in Spec-TP to check nominative case and produce the final word order)

(38) *ak-i-*, 'tire' (intr)



(vP contained in something like *Taroo wa akiru* "Taro gets tired")

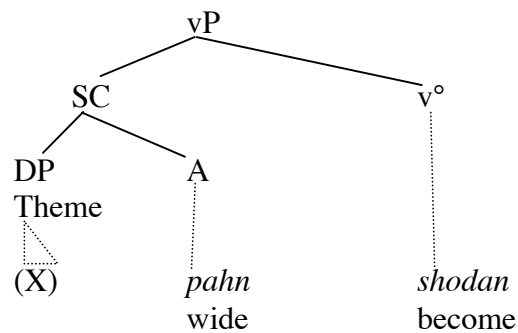
(39) *ham-te*, 'break (intr)'



(vP contained in something like *Uu vazo hamtak*, "The glass broke")

(40) *pahn shodan*, 'widen'

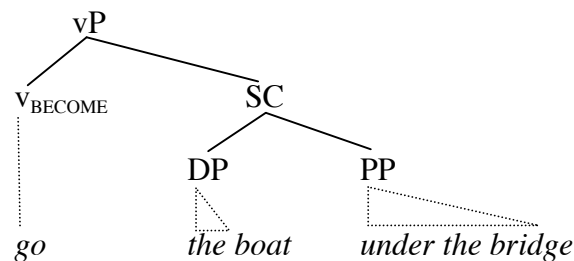
Persian



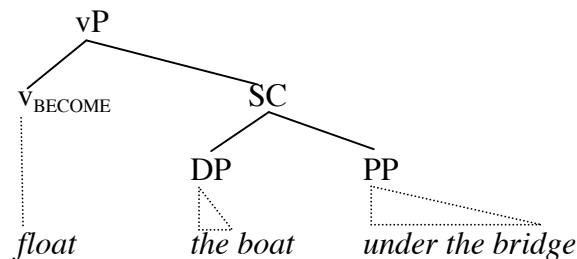
(vP in something like *X pahn shod*, "X widened")

By analogy, we can consider the inchoative version of a manner-of-motion construction to involve a BECOME change-of-state v° predicate and small clause predicating the goal-of-motion of the Theme argument. With no manner element specified, this v° shows up as *go* or *get*. However, other verbs—even non-motion-entailing ones—may appear in the v° head position to specify the manner in which the change-of-location occurred:

(41) a. The boat went under the bridge. (#*The boat went in place*)



b. The boat floated under the bridge. (cf. *The boat floated in place*)



- c. The ball bounced across the road. (cf. *The ball bounced in place*)
 d. The bullet whistled through the window.
 e. The water swirled down the drain.
 ... etc.

In the motion constructions discussed here, then, a verb root is used in v° to identify the manner in which a change (either caused or simply inchoative) occurs. Cross-linguistically, however, it is

seemingly common for the verb root to realize the resultant state portion of a change-of-state predicate, and to have the v° head represented by a more functional derivational morpheme or a light verb (and, indeed, such structures are also available in English as well).

Given this characterization of manner-of-motion constructions, we can recast Talmy 1987's generalization about 'verb-framed' vs. 'satellite-framed' languages in syntactic terms. Recall Talmy's observation: Romance languages (and others) do not allow 'manner' elements to appear as verb roots in motion constructions. So while (42)a is a perfectly good description of a motion event in English, its word-by-word translation in Spanish ((42)b) cannot denote a motion event. Rather, the PP is interpreted as a location adverbial, and the verb receives its usual, non-motion entailing reading. In order to describe both the manner and the motion in a single sentence of Spanish, a motion verb is required as the main verb, with a manner-denoting participial adjunct, as in (42)c:

- (42) a. The bottle floated into the cave.
- b. La botella flotó a la cueva.
 The bottle floated to the cave.
 "The bottle floated in the cave" (no motion involved)
 "#The bottle floated into the cave" (motion interpretation impossible)
- c. La botella entró a la cueva, flotando
 The bottle entered to the cave, floating
 "The bottle entered the cave, floating."

The difference between English and Spanish with respect to manner-of-motion constructions, then, can be characterized as follows: English allows verbs roots to be inserted into v° and behave as causative predicates — 'high' in the bipartite structure — as well as in the canonical position in the lower part of the bipartite structure. Spanish does not allow verb roots to appear in the v° position.

This predicts, as well, that languages like Spanish will not allow resultative constructions nor verb-particle constructions, both of which have also been analyzed above as involving a verb root appearing in the v° position. Indeed, we expect the availability of manner-of-motion constructions, verb-particle constructions, and resultative constructions to correlate with each other, cross-linguistically: if a language allows one, it should allow them all, and if it forbids one, all should be impossible. Indeed, at least as far as the Germanic and the Romance languages go, this prediction appears to be borne out. See Harley (1999, 2005), Mateu (2001), Folli and Harley (2006) and McIntyre (2003) for alternative formulations of this approach and additional discussion.

5 The two English lexicons

Spanish and English differ, then, as to whether they allow an independent verb to realize the v° element in causative and inchoative constructions. What has also long been recognized, but not received a convincing analysis, is that a certain subpart of the English verbal lexicon behaves like Spanish, in failing to allow those particular verb roots optional placement in v° as well as in the small clause. In fact, complex Latinate verbs in English behave for the most part as if they

are still in a Romance language, failing to occur in verb-particle constructions or in resultatives (citation 19XX). Consider the following contrasts:

(43) Verb-particle constructions fine with Anglo-Saxon-type verbs but not Latinate ones

write it up	*compose it up/*arrange it up
eat it up	*consume it up
finish it up	*complete it up
throw it out	*discard it out
lie down	*recline it down
hand it out	*distribute it out
show it off	*exhibit it off / *reveal it off
fire it up	*ignite it up
slice it off	*incise it off
tidy it up	*arrange it up
hide it away	*conceal it away
cut it apart	*dissect it apart
figure it out	*calculate it out
move it over	*displace it over
go away	*depart away
clear it up	*clarify it up
write it up	*compose it up
cast it off	*release it off
dig it up	*excavate it up
swell up	*expand up
trade it in	*exchange it in

(44) Resultatives fine with Anglo-Saxon verbs, not many Latinate ones

cut it apart	*divide it apart
fill it full	*inflate it full
walk yourself tired	*perambulate yourself tired
work yourself ragged	*decide yourself ragged
squeeze it empty	*compress it empty
stab it dead	*impale it dead
train yourself fit	*condition yourself fit
freeze solid	*congeal solid
dance yourself pink	*exert yourself pink
eat yourself sick	*devour yourself sick
drink yourself unconscious	*imbibe yourself unconscious
scrape it raw	*abrade it raw
break it short	*divide it short
grow big	*expand big
burn black	*combust black

The resultative construction has additional constraints on it, so it is not completely productive in any case, but the resultatives that *are* permitted obey the constraint against Latinate-type verbs.⁵

The other case in which the literature has repeatedly noted a significant difference between complex Latinate verbs and Anglo-Saxon ones is with respect to 'dative shift', aka the double object construction. Ditransitive verbs which occur with an accusative theme and *to*-DP Goal can generally also occur in the ditransitive construction, providing certain semantic conditions are met and, importantly, providing that the verb is Anglo-Saxon. Complex Latinate verbs refuse to occur in the double object construction, as shown in the following examples from Pesetsky 1995:

- (45)
- a. Susie gave Oxfam some canned food.
 - a'. Susie gave some canned food to Oxfam.
 - b. *Susie donated Oxfam some canned food.
 - b'. Susie donated some canned food to Oxfam.
 - c. Bill sent Sue his regards.
 - c'. Bill sent his regards to Sue.
 - d. *Bill conveyed Sue his regards.
 - d'. Bill conveyed his regards to Sue.
 - e. Mary showed the committee her findings.
 - e'. Mary showed her findings to the committee.
 - f. *Mary displayed the committee her findings.
 - f'. Mary displayed her findings to the committee.
 - g. Tom told Ben the story.
 - g'. Tom told the story to Ben.
 - h. *Tom recounted Ben the story.
 - h'. Tom recounted the story to Ben.

⁵ In the interests of full disclosure, there are certain exceptions to the overall pattern. For example, to my ear and those of a few other English speakers, *divide up*, *collect up*, and *calculate up* are quite natural. The generalization does not hold for motion-verb constructions PP-resultatives, or *way*-constructions. For example, in *X*'s *way*-manner-of-motion constructions the only restriction is that the verb has an atelic interpretation available, or can be coerced to one (same restriction holds for non-Latinate verbs):

- i. ...complained his way out the door.
- ...exclaimed his way through the museum
- ...composed his way into the hall of fame
- ...narrated his way to an Oscar
- ii. *consumed his way out the door.
- *discarded his way to Buddhism
- *completed his way through the degree
- *reimbursed his way to a healthy bank balance.

The explanation presented in the text, which involves a simple morphological constraint on v-insertion, will need to be revised to account for the above.

This restriction shows up as early as it can be reliably investigated. Gropen et al 1989 demonstrated that this morphophonological restriction on dative shift shows up in both adults and children (4-5 yrs old) using made-up verbs in an experimental context. The kids were taught novel ditransitive verbs that had either 'Latinate' or 'Anglo-Saxon' shapes, where the verb was introduced to them only in a *to*-dative frame. Then the verbs were elicited from the kids in context, manipulated to favor a double-object production (i.e. with a familiar, topical Goal argument). The kid's utterances were recorded, and the number of extensions to a novel double-object frame were tabulated for each verb. Anglo-Saxon verbs were extended significantly more frequently to the double-object frame than the Latinate verbs were, even in children. The children already were able to innovate novel double object constructions, and able to avoid doing so with Latinate verbs.

6 The nature of the restriction

Of course, "Latinate" is not the correct generalization, if it is understood to refer to etymological origin. Many of the verbs in the verb-particle or resultative examples above are in fact historically borrowed from a Romance language, e.g. *finish* (in *finish up*), *train* (in *train yourself fit*) and even *dance* (in *dance yourself pink*). One crucial factor, much commented-upon, is their morphophonological structure, in particular, their prosody. Many of the constrained verbs exhibit a weak-strong stress pattern.

It is clear that something about the complex prosodic structure of Latinate verbs is involved in this phenomenon. If the initial weak syllable of a Latinate verb may be clipped, its occurrence with a particle becomes fine: **confess up* is bad, but *'fess up* is perfectly idiomatic. Similarly, although the canonical judgment is that *donate* may not occur in a double object frame (i.e. that **John donated the library the books* is illformed), many of my students accept it in this frame—with the stress pattern [*'downejt*], rather than [*dow'nejt*] (both patterns are listed in the Oxford American Dictionary).

Most researchers are agreed that some morphophonological restriction on dative shift exists, but most are mute about why such a restriction should hold for *this particular syntactic operation*. For instance, Grimshaw 1986 proposes a prosodic account of the dative shift restriction, according to which words which undergo dative shift must consist of a single prosodic foot. But no explanation is offered as to *why* such a constraint should hold of the double object construction, particularly. Further, both the Latinate and prosodic-foot accounts are leaky, as argued by Boguraev 1989.

Pesetsky 1995 suggests a purely morphotactic solution, arguing that the double object structure involves a special affix with special morphophonology. He claims that the double object structure involves affixing a null preposition which he calls *G* to the main verb, while the *to*-structure involves no such affixation. (Hence, *John gave Mary the book* is really *John gave-G Mary the book*, while *John gave the book to Mary* just is as it seems, morphologically.) Morphophonological restrictions on affixation are not uncommon (Pesetsky cites the famous syllable-counting and stress-sensitive nature of the comparative *-er* affix in English), so he proposes that *G* is subject to affix-specific morphophonological restriction on the roots to which *G* can attach, namely roots with typically Anglo-Saxon prosodic structure, not Latinate.

One could wonder whether a null morpheme should be affected by the morphophonology of the root to which it affixes. Further, for Pesetsky's account to be completely general, the special

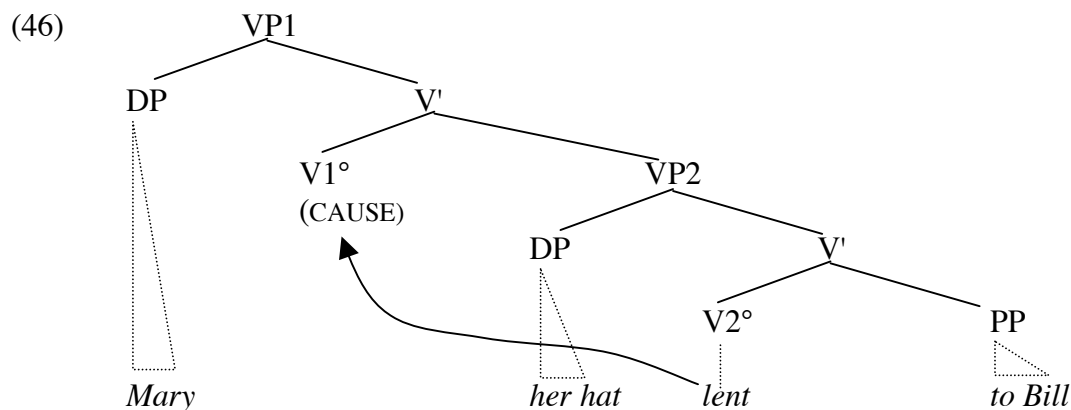
G morpheme would have to be involved not only in the double-object construction, but also in the verb-particle construction.

I propose here that this is a morphosyntactic effect, rather than a morphophonological one. In preliminary support of this idea, consider the case of *clarify*, which may not occur with particles (**clarify up the situation*) or in dative shifted frames (*clarify the situation to/for Bill* but not **clarify Bill the situation*). This verb doesn't fit the prosodic wS pattern of other restricted verbs, but it is morphologically complex. My claim is that if the relevant Latinate verbs are actually treated as synchronically morphologically complex, in the same way that verb-particle constructions clearly are, then their failure to occur with particles and in the double-object construction is simply due to the fact that their morphologically bipartite structure prevents them from being inserted straight into v° as a causative root, which is what would be necessary for them to occur with particles and in the double-object construction.

In order to understand this proposal, it will be briefly necessary to reconsider the structure of ditransitive verbs, and adopt a specific hypothesis about the nature of dative shift.

7 The structure of ditransitive verbs

Let us revisit the structure for a *to*-dative, based on Larson's split-VP proposal, that we considered above:



Here, in the canonical frame, the verb originates in the lower part of the VP structure, as the head of a (complex) SC predicate, *(be) lent to Bill*. It head-moves to the null causative v° in the upper part of the structure to generate

Larson derives the double-object frame from the one above by a 'passivization' operation applied to VP2. However, his account runs into a number of fairly subtle semantic problems, notably the famous animacy constraint on the double object frame. In the *to*-dative frame, the Goal argument can be animate or inanimate. However, in the double object frame, the Goal argument must usually be animate, and most of the inanimate Goals that are possible in the *to*-dative frame are peculiar, as illustrated in (47)-(48) (Oehrle 1976's generalization; see also Green 1974):

- (47)
- The editor sent the article to Sue.
 - The editor sent the article to Philadelphia.
 - The editor sent Sue the article.
 - ??The editor sent Philadelphia the article.

- (48) a. Susan sent Harry to Max/down the hall/to his room/away.
 b. Susan sent Max/*the hall/*his room/*away Harry.
 c. Susan kicked the ball to Max/down the hall/out the window/upward.
 d. Susan kicked Max/*the hall/*upward/*the window the ball.

Further, there is a subtle implication of possession present in the double object frame that is absent in the *to*-dative construction. In (49)a, there is an implication that the students actually learned some French, while that is absent in (49)b. In (50)a, there is a presupposition that *the baby* actually already exists—this sentence would be slightly odd if uttered by a woman only intending to become pregnant, e.g. — while (50)b does not have this flavor.

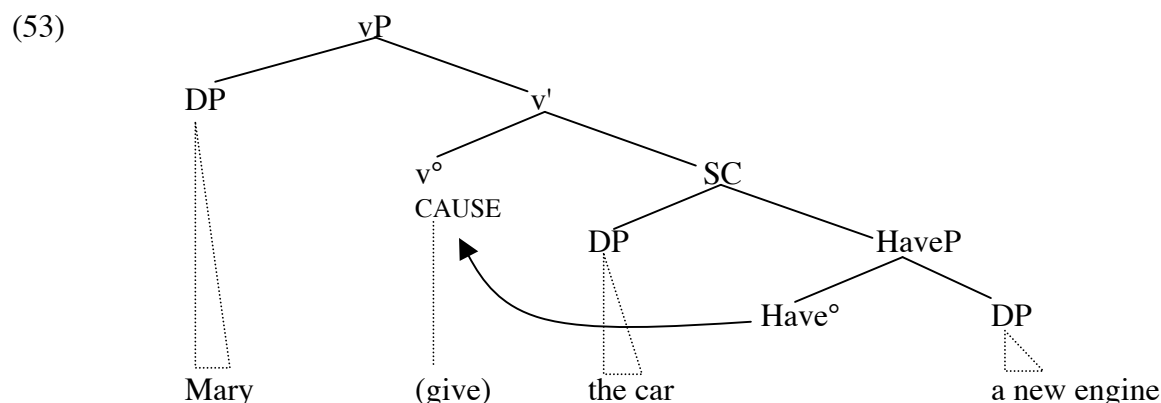
- (49) a. John taught the students French
 b. John taught French to the students
 (50) a. I knitted this sweater for our baby.
 b. I knitted our baby this sweater.

The notion that 'possession' is somehow involved in the double object construction is supported by the fact that the only inanimate Goals permitted in this construction are those which inalienably possess the Theme argument. This constraint is identical to the inalienable possession constraint on inanimate subjects of *have* in straightforward possession expressions of English (see Belvin 1996): An inanimate subject can 'have' its inalienable parts — things to which it is meronymically related — but not anything else. Animate subjects, on the other hand, can 'have' both inalienably and alienably; this same constraint seems to be in effect in the double object construction. In (51)a, an inanimate possessor is grammatical as the subject of *have* with an inalienably possessed object, but in (51)b, the same possessor is ungrammatical with an alienable object. (In (51)c, we see that *have* can be used as long as a locative coindexed PP is added to the expression, turning it into a location, rather than a possessor). In (52), we see that the same constraint is true of the double object construction: if the Goal object is inanimate, the Theme must be inalienably possessed by it (i.e. in a part-whole relation to it); non-inalienable Theme objects trigger the animacy constraint:

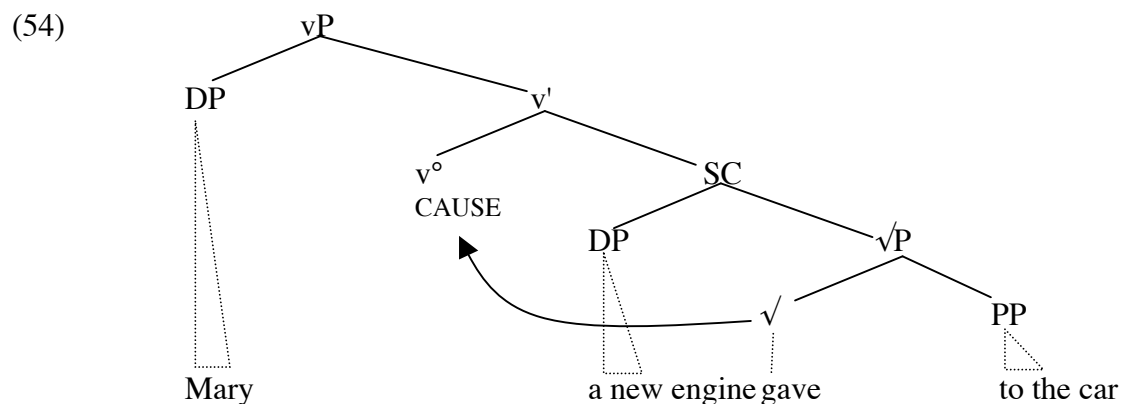
- (51) a. The car has an engine.
 b. #The car has a sweater.
 c. The car has a sweater in it.
 (52) a. Mary gave the car a new engine. (used, e.g., if she's a mechanic)
 b. #Mary gave the car a sweater

These facts, plus a few other more involved arguments, have suggested to many researchers that the double object construction is actually a causative of a possession relationship (see, among others, Richards 2001, Harley 2002). That is, the structure for a double object construction, rather than being derived from the *to*-dative construction in (46), is really based on the syntactic structure in (53) below. In this structure, the predicate heading the SC is an abstract 'HAVE' relation. Following Kayne (1993) and Freeze (1991), I assume that it is a prepositional relation that is a subconstituent of the verb *have* in English (Kayne and Freeze argue that 'have' is the result of incorporating a possession P into the copula BE). In the double object construction, the

verb gets its content in the same way as in the verb-particle construction and resultative construction above: a verb is inserted into v° as an expression of the manner of causation of the transfer of possession.



That is, in the double object construction, the verb is a manner element, exactly as in the verb-particle and resultative and motion constructions discussed above. This contrasts with the *to*-dative construction, in which the verb is itself the contentful source of the predicative material in the small clause, as (re)-illustrated below:



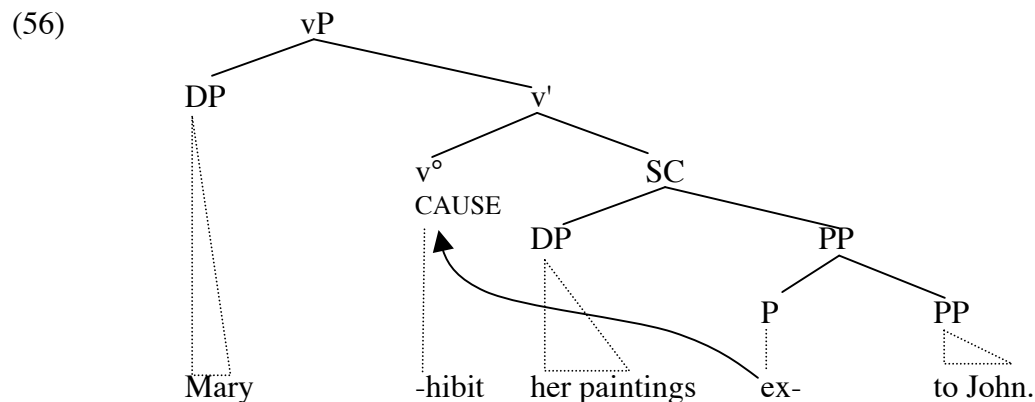
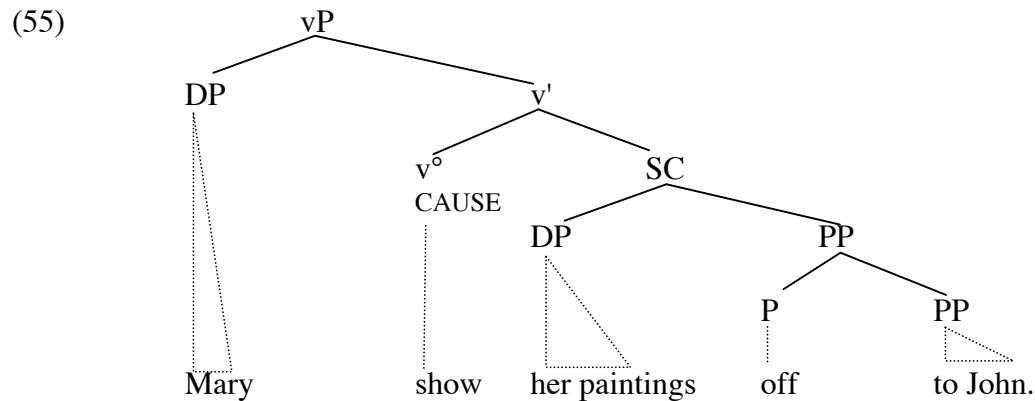
Now we can see what the double object construction has in common with the resultative and the verb-particle construction: in the double-object construction, but not the *to*-dative, the verb root is in the 'high' part of the bipartite structure, identifying the manner of causation.

8 The failure to alternate

The generalization we have arrived at so far, then, is that the Latinate verbs may not be inserted as manner elements into v° , while Anglo-Saxon verbs can be so inserted. But we thus far have not understood why this would be.

I argue that it is because the Latinate verbs are bimorphemic. Each of the two morphemes in a verb like *exhibit* is associated with a particular part of the bipartite verb structure. In particular, these verbs, historically composed of a prepositional particle prefixed to an independent verb root, are in fact *synchronically* so composed, in the minds of English speakers. That is, Latinate

verbs are fundamentally verb-particle constructions, where a) the particle mandatorily incorporates into the v° and b) the whole is interpreted idiomatically, as so many verb-particle constructions are. The verb roots and particles are *cran*-morphs, but morphemes nonetheless, each associated with a terminal node of the syntactic structure. (Marantz 2001 comes to this conclusion based on independent evidence). The structure of *Mary exhibited her paintings (to John)*, then, will be exactly the same as the structure of *Mary showed her paintings off (to John)*, with the additional requirement that the particle *ex-* incorporate into the bound verb stem in v° , -*hibit*. The structures are illustrated below:



In other words, in the Latinate verbs, the head of the lower part of the bipartite structure is built right into the verb, in the form of a separate morpheme (in this case, *ex-*). I assume that this morpheme, like an English particle, is specified for its category, so that when it appears, it entails the appearance of its particular P projection. It cannot be used within a 'manner' modifier of a causative v° , since its appearance forces the projection of the resultant state SC headed by the PP headed by the particle. Hence such Latinate verbs cannot appear in double object constructions, or in verb-particle or resultative constructions.

Verb-particle constructions with resultative meanings should thus also fail to occur in double object constructions, for the same reason, and the literature generally concurs that this is the case, although scattered counterexamples turn up now and then. Certainly there is a contrast between (57)a and (57)b below, and between (57)c and (57)d; I assume that the relative

degradation of the double object construction when the particle appears submits to the same explanation.

- (57)
- a. Mary showed John her paintings.
 - b. *Mary showed off John her paintings. (cf. *Mary showed off her paintings*)
 - c. Mary passed the kids the potatoes.
 - d. *Mary passed around the kids the potatoes. (cf. *Mary passed around the potatoes*)

Finally, the account for the failure of *clarify* in verb-particle constructions will follow the same lines, with the twist that in the case of this change-of-state verb, the root is the small clause predicate (*clar-*), while the verbalizing suffix *-ify* is associated with the v° head. The prediction is the same, however; the complex structure, with subparts associated both with the upper and lower portions of the bipartite verb phrase, means that the whole verb may not be inserted as a simple causation modifier; the bipartite structure will be parsed and the subparts assigned to the upper and lower parts of the VP, preventing the appearance of a particle in the lower part of the VP (in the case of a verb-particle construction) or the appearance of null *Have* there (in the case of the double-object construction).

9 Synchronic segmentation?

But is it reasonable to suppose that English speakers aggressively segment words into morphemes whose semantics are not at all compositional or introspectively apparent? Hammond 1999 argues for extremely aggressive morphological segmentation, on the basis of phonological distribution data. Further, he suggests (in Hammond 2000) that such segmentation is the only explanation for the word-internal phonotactic violations you find in Latinate verbs like *adhere*: if there's a morpheme boundary between *ad* and *here*, then the word is well-behaved according to English phonotactics, but if there isn't, an otherwise very clear generalization about word structure fails. Further, a line of masked-priming work begun with Taft and Forster (1975) shows evidence for morphological priming ('affix stripping') across Latinate words with shared roots, such as *exhibit* and *inhibit*; this effect can be most readily understood if speakers do in fact decompose these forms into their subconstituents, despite their semantic opacity.

Considering things from the learner's point of view, then, there are several cues in the speech stream that these verbs are made up of more than one part:

- (58) *Synchronic motivations for decomposition*
- a. phonotactic clue (like *adhere*)
 - b. phonological clue: (word-final stress)
 - c. familiar with the morpheme from elsewhere (like *deceive/receive/conceive*, *clar-ify*...)

To confirm the plausibility of this account (as well as to test the empirical generalization, I consulted the lists of verbs in Levin 1993 that are listed as occurring in both double-object and the *to*-dative construction, as well as those which only occur in the *to*-dative (nonalternators). If these synchronic clues are adequate to sort verbs into monomorphemic and bimorphemic classes, then the alternators should exhibit none or at most one of the traits listed in (58) above, while the non-alternators should exhibit two or more. In (59) I provide Levin's complete list of alternating verbs as she gives them, sorted by semantic class. (These are the ones which should be purely 'Anglo-Saxon' in character.) Potential counterexamples are in boldface, and addressed in the

discussion below. There are a few odd ones that according to my judgments really shouldn't alternate; these are followed by question marks.)

(59) **Alternating verbs**, sorted by semantic class (from Levin 1993)

sending: **forward**, hand, mail, post, send, ship, slip, smuggle, sneak
giving: feed, give, lease, lend, loan, pass, pay, peddle, **refund**, render, rent, **repay**, sell, serve, trade
throwing: bush, bat, bunt, **catapult**, chuck, flick, fling, flip, hit, hurl, kick, lob, pass, pitch, punt, shoot, shove, slam, slop, sling, throw, tip, toss
telling: ask, cite, pose, preach, quote, read, relay, show, teach, tell, write
instrument: cable, email, fax, modem, phone, radio, relay, **semaphore(??)** **satellite (??)**, sign, signal, **telephone**, **telecast**, **telegraph**, telex, wire, **wireless(??)**

All the non-boldfaced verbs are clearly Anglo-Saxon in terms of stress pattern, and most are clearly monomorphemic. All the boldfaced cases except the *re-* ones are multimorphemic, hence their boldfacing, but are a) zero-derived from nouns or adjectives and b) have initial stress. These should pose no problem for the learner.

It seems likely that the 're' cases are actually not a problem, either, despite having a weak-strong stress pattern. These *re-* morphemes, unlike the *re-* in *receive* or *recite*, are attached to verb roots which are actually themselves free verbs in English, *fund* and *pay*—in short, these words are compositional. English speakers know that this *re-* morpheme means "again" or "reverse", and composes compositionally with the verb root. Consequently, they don't assign it to the P category, but rather to an adverbial position which is free to occur wherever these roots may occur.

Next I provide Levin's complete list of ditransitive non-alternators. These are the ones that should be multimorphemic, exhibiting one or more of the determining characteristics of Latinate particle verbs listed above in (58). Again, there are a few potential problem cases, highlighted in bold.

(60) **Non-alternating "Latinate" verbs.**

address, administer, **broadcast**, convey, contribute, delegate, deliver, denounce, **demonstrate**, describe, donate, elucidate, exhibit, express, explain, **forfeit**, **illustrate**, introduce, **narrate**, portray, **proffer**, recite, recommend, refer, reimburse, remit, restore, return, **sacrifice**, submit, surrender, transfer, transport.

Among the group, the boldfaced verbs have initial stress, so they would perhaps be expected to alternate. However, some seem clearly to be identifiably multimorphemic on the basis of their recurring subparts alone (e.g. the *-ate* verbs, the compound *broad-cast*, the bipartite *for-feit*, with pieces potentially recognizable from *forgive*, *forbid*, *surfeit*, *counterfeit*). The two remaining counterexamples are more problematic, although since these lists are based on corpus data, non-occurrence of the double object frame does not necessarily indicate ungrammaticality. For what it's worth, in my judgment *proffer* is equally acceptable or odd in both the *to*-dative and double object frames — it more normally would occur without any Goal argument at all, to my ear. *Sacrifice* is more puzzling, though its denominal character may be important.

Levin isolates one group of alternating verbs which poses a real problem for the whole account, which she characterizes semantically as 'verbs of future having'; the complete list is in (61) below:

(61) **A Class of Problematic Alternating Verbs**

advance, allocate, **allot**, **assign**, award, **bequeath**, cede, **concede**, **extend**, grant, guarantee, issue, leave, offer, owe, promise, **refuse**, vote, will, yield.

In this list, the non-boldfaced verbs are not a problem because they're either not Latinate, or from nouns, or have initial stress. However, non-underlined, **boldfaced** ones are the real problems; as far as I can tell they are genuine counterexamples. It's quite puzzling how they all cluster in this semantic class. It would be very easy to tell a semantic story about why these *shouldn't* alternate, that is, why they should all be double-object-only class, and then they'd easily be accounted for as necessarily containing forms of Have. But in fact, they do all alternate, and they're probably multimorphemic. What's needed is a story of why these double-object ones should all be happy as *to-* forms but not vice versa. For the moment, these will have to be left as an issue for future research.

10 Conclusions

In short, a cross-linguistically valid bipartite verb structure is supported by evidence from several independent converging sources. It can shed light on several puzzling morphological patterns, including the restriction on *re-*affixation with respect to resultative and particle constructions, and the constraint against Latinate verbs occurring in double object, resultative, and particle constructions. Many questions remain. For example, the prohibition does not extend to Latinate verbs occurring as manner elements in unselected-object motion causatives, although typologically the failure of certain languages to exhibit that property as well as all three of the others (double objects, verb-particle constructions and resultatives) suggests that they should all be subject to the same restriction both within and across languages. Another issue is the fact that the account proposed here concerning Latinate verbs in double object constructions breaks down for several examples in a particular semantic subclass; the behavior of the Latinate verbs in this verb class really has yet to be grappled with.

References

- Barss, Andrew and Lasnik, Howard. 1986. "A note on anaphora and double objects." *Linguistic Inquiry* 17: 347-354.
- Beck, Sigrid, and Kyle Johnson. (2004). "Double objects again," *Linguistic Inquiry* 35.1.
- Belvin, Robert Stallings. 1996. *Inside events: the non-possessive meanings of possession predicates and the semantic conceptualization of events*. Los Angeles: University of Southern California.
- Bougarev, 1989. XX-XX
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press
- Folli, R. and H. Harley (2006) "On the licensing of causatives of directed motion: Waltzing Matilda all over" *Studia Linguistica* 60.2 1-35.

- Folli, Rafaella, Heidi Harley and Simin Karimi. 2005. Determinants of event structure in Persian complex predicates, *Lingua* 115.10, 1365-1401
- Freeze, Ray. 1992. Existentials and other locatives. *Language* 68 (3): 553-595.
- Green, Georgia M. 1974. *Semantics and Syntactic Regularity*. Bloomington: Indiana University Press.
- Grimshaw, J. 1986. XX?Prosody and dative shift? Ms., Rutgers University
- Gropen, Jess, Pinker, Steven, et al. 1989. "The learnability and acquisition of the dative alternation in English." *Language* 65(2): 203-257.
- Hale, K. and Keyser, S.J. 1993. On argument structure and the lexical expression of syntactic relations. In Hale, K. and S.J. Keyser, eds. *The view from Building 20: Essays in honor of Sylvain Bromberger*. Cambridge: MIT Press
- Hale, K. and S. J. Keyser. 2002. *Prolegomena to a theory of argument structure*. Cambridge, MA:MIT Press.
- Hammond, M. 2000. *The phonology of English*. Oxford: Oxford University Press.
- Harley, Heidi. 1995. *Subjects, Events and Licensing*. PhD dissertation, Cambridge, MA: Massachusetts Institute of Technology.
- Harley, Heidi. 2003. Possession and the double object construction. In *The Linguistic Variation Yearbook*, Vol. 2, ed. Pierre Pica and Johan Rooryck. Amsterdam: John Benjamins, pp. 29-68
- Hoekstra, Teun. 1988. "Small clause results." *Lingua*(74): 101-39.
- Jacobsen, W. M. 1981. *Transitivity in the Japanese Verbal System*. Ph D. dissertation, University of Chicago.
- Jacobsen, W.M. 1992. *The transitive structure of events in Japanese*. Studies in Japanese Linguistics I, Tokyo: Kurosio Publishers
- Jelinek, E. (1997). Voice and transitivity as functional projections in Yaqui. The projection of arguments: lexical and compositional factors. M. Butt and W. Geuder. Palo Alto, CSLI, Stanford University.
- Jelinek, E. and F. Escalante (2001). Unergative and Unaccusative Verbs in Yaqui. Uto-Aztecan: structural, temporal and geographic perspectives. E. Casad and T. L. Willett. Hermosillo, Universidad Autonoma de Sonora.
- Kayne, Richard. 1993. Towards a modular theory of auxiliary selection. *Studia Linguistica* 47 .
- Keyser, S. J. and Roeper, T. 1992. "Re: The Abstract Clitic Hypothesis," *Linguistic Inquiry*, 23.1, 89-125
- Koopman, Hilda and Dominique Sportiche (1991) "The Position of Subjects" *Lingua* 85, 211-258.
- Kratzer, Angelika. 1996. Severing the external argument from its verb. In J. Rooryck and L. Zaring eds., *Phrase Structure and the Lexicon*, 109-137. Dordrecht: Kluwer.
- Larson, Richard K. 1988. "On the double object construction." *Linguistic Inquiry* 19(3): 335-391.
- Levin, B. and Rappaport Hovav, M. 1999. "Two structures for compositionally derived events." *Proceedings of SALT 9*, 199-223. Ithaca, NY: Cornell Linguistics Circle Publications, Cornell University.
- Marantz, A. (1984) *On the Nature of Grammatical Relations*, MIT Press, Cambridge, Massachusetts.
- Marantz, A. 1997. No escape from syntax: Don't try a morphological analysis in the privacy of your own lexicon' In A. Dimitriadis, L. Siegel, et. al., eds. *University of Pennsylvania*

- Working Papers in Linguistics, vol. 4.2, Proceedings of the 21st Annual Penn Linguistics Colloquium, 1997, pp. 201-225.
- Mateu, J. 2001. Syntactically-based lexical decomposition: the case of climb revisited. Paper presented at the 26th meeting of the Berkeley Linguistics Society.
- McCawley, James D. 1974. On identifying the remains of deceased clauses. *Language Research* 9 : 73-85.
- McCawley, James. 1968. "Lexical insertion in a transformational grammar without Deep Structure." Papers from the Fourth Regional meeting of the Chicago Linguistics Society, ed. by . University of Chicago.
- McIntyre, Andrew. 2003. The German dative, HAVE, and the syntactic decomposition of verbs. Ms, University of Leipzig. <http://www.uni-leipzig.de/~angling/mcintyre>
- Megerdooomian, K. (in press). The status of the nominal in Persian complex predicates
- Oehrle, Richard T. 1976. The grammatical status of the English dative alternation. Ph.D., Massachusetts Institute of Technology, Cambridge.
- Pesetsky, David. 1995. *Zero Syntax: Experiencers and Cascades*. Cambridge, MA: The MIT Press.
- Richards, Norvin. 2001. An idiomatic argument for lexical decomposition. *Linguistic Inquiry* 32 (1): 183-192.
- Ross, John Robert. 1976. To have 'have' and to not have 'have'. In *Linguistic and literary studies in honor of Archibald A. Hill, I*, ed. Mohammad Ali Jazayery, Edgar C. Polomé and Werner Winter, 263-270. The Hague: Mouton
- Snyder, William and Stromswold, Karin. 1997. "The structure and acquisition of English dative constructions." *Linguistic Inquiry* 28(2): 281-317.
- Taft, M., & Forster, K. (1975). Lexical storage and retrieval of prefixed words. *Journal of Verbal Learning and Verbal Behavior*, 14, 638-647.
- Talmy, L. (1986). *Lexicalization patterns: semantic structure in lexical forms*. *Language Typology and Syntactic Description, Vol. III: Grammatical Categories and the Lexicon*. T. Shopen. Cambridge, Cambridge University Press. III: 57-150.
- von Stechow, A. (1995). Lexical decomposition in syntax. *Lexical Knowledge in the Organization of Language*. U. Egli, P. E. Pause, C. Schwarze, A. v. Stechow and G. Wienold. Amsterdam, John Benjamins. 114: 81-118.