

A Head Movement Approach to Talmy's Typology

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We propose that the well-known verb-framed/satellite-framed variation observed by Talmy (1975, 1985, 2000) is a true syntactic parameter of a well-understood type: a head movement parameter. We claim that it depends on an uninterpretable feature bundled with the particular *v* head used in change-of-state constructions that forces the head of the Res(ult)P complement of *v* to undergo head movement to *v* in Italian. The technical apparatus employed is a feature-driven head movement parameter, of the same kind that accounts for the familiar V-to-T or T-to-C movement variation crosslinguistically. We argue that in Talmy's class of verb-framed languages, head movement of the embedded Res head to change-of-state *v* is mandatory, just as head movement of *v* to finite T is mandatory in V-to-T movement languages. Unlike previous proposals, this approach does not ascribe a deficiency to verb-framed languages, either in their semantic composition inventory or in their inventory of structural operations, both deficiencies being *prima facie* implausible from a biolinguistic/Minimalist perspective.

Keywords: manner of directed motion, telic-pair formation, verb-framed language, satellite-framed language, head movement parameter, Path, typology

1 Introduction

Since Talmy's (1972, 1973, 1975, 1985) observation that the verbal inventories of languages can differ systematically in the semantic content they encode, most formal analyses of the phenomenon have fallen into two general families.¹ One approach focuses on prepositional elements encoding Path semantics that are supposed to be unavailable in verb-framed languages (e.g., Higginbotham 2000, Folli 2002, Fábregas 2007, Svenonius 2008, Romeu 2011). Another approach posits a

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¹ Talmy's typology actually distinguishes three major families of lexicalization patterns: in addition to Motion+Path (*verb-framed*) and Motion+Co-event (*satellite-framed*) patterns, Talmy introduces a Manner+Figure pattern (and discusses several subsidiary patterns and absences; see, e.g., Talmy 2000:60–67). We follow the bulk of the literature in confining our discussion to the manner/path alternation, without addressing the third pattern.

special type of structure-building operation, sometimes called “manner incorporation,” which allows directed-motion verbs to express manner semantics, similarly supposed to be unavailable in verb-framed languages (e.g., Mateu 2002, McIntyre 2004, Harley 2005, Mateu and Rigau 2008, Mateu and Acedo-Matellán 2012). What the two approaches have in common is that they posit a deficiency in verb-framed languages, either lexical (in the case of the prepositional deficiency approach) or syntactic (in the case of the manner incorporation approach).²

We argue that the variation instead results from a parameter of a very standard type, parallel to other well-understood parameters in the verbal domain. We propose that verb-framed languages like Italian enforce a head movement requirement in the lowest domain of the clause, that is, in the first-phase syntax of the vP.³ Satellite-framed languages like English are not subject to this requirement. This accounts for the observed typological variation without appealing to a novel type of parameter resting on syntactic or lexical deficiency. We propose that Italian and English differ simply in the source of the root content of their change-of-state v head: in Italian, it must be supplied via head movement, while in English, it need not be.

In section 2, we first review the modern decomposition of change-of-state verbs into multiple projections that encode the causal and result components of change-of-state events, and sketch the outline of our proposed analysis. We then review previous deficiency-based approaches to the Talmian typology, as well as a more recent third morphologically based approach, arguing that all previous approaches have significant problems. In section 3, we demonstrate that Italian verbs are not globally “fixed” in their argument structure, contrasting the *spray/load* alternation with the *carve/sculpt* alternation. We show that Italian verbal alternations are restricted in manner-of-change-of-state frames, but not otherwise. In both Italian and English, the *carve/sculpt* verbs are ambiguous between a manner reading and a result reading, but even these semantically profligate verbs show the typological contrast between the two languages when used in a manner-of-change frame: one can *carve wood into a doll* in English but not in Italian. In section 4, we present the technical implementation of our proposal, formalized in terms of uninterpretable features on Italian change-of-state v that trigger mandatory head movement from v’s result-denoting complement. In section 5, we elaborate the umbrella category of “result,” using a finer-grained decomposition of this category to ensure that our proposal is compatible with lexical variation. Section 6 concludes.

2 Verb-Framed vs. Satellite-Framed Languages

Talmy (1975, 1985) shows that languages differ with respect to the ability of a directed-motion verb to express a manner of motion. For example, boats can float toward and into caves in English

² Many have also noted that Talmy’s typology is not a matter of all-or-nothing, nor was it intended to be. Many predominantly verb-framed languages have some manner-of-directed-motion predicates and vice versa, as documented in, for example, Folli 2002; and indeed, some recent work has included an “equipollent” category for languages with multimorphemic verb forms expressing both Path and Manner. See Beavers, Levin, and Tham 2010 and references cited therein for extensive discussion. We return to this variation in section 5.3.

³ Acedo-Matellán (2012, 2016) has arrived at a functionally similar conclusion, although his proposed requirement on “Path+v fusion” in verb-framed languages is not expressed as a head movement parameter. See also the discussion of verbs of creation in section 4.2 below.

(1a) but not in Italian (1b–c). To express floating motion in an Italian directed-motion construction, an adjunct is required (1d).

- (1) a. The boat floated into the cave.
 b. *La barca galleggiò nella grotta. (No directed-motion interpretation)
 the boat floated in.the cave
 'The boat floated **into** the cave.'
 c. La barca galleggiò nella grotta. (Locative interpretation only;
 the boat floated in.the cave no directed-motion interpretation)
 'The boat floated **in** the cave.'
 d. La barca entrò nella grotta galleggiando.
 the boat entered into.the cave floating
 'The boat entered the cave, floating.'

Talmy (1985) correlates the availability of the manner-of-directed-motion structure with the availability of other patterns, including adjectival resultatives (2a) and verb-particle constructions (2b). Subsequent work has argued that two other structures also correlate with the availability of manner of directed motion: ditransitive ("double object") constructions (Snyder 1995, Folli and Ramchand 2005, Harley 2005, 2007) (2c) and productive noun-noun compounding (Snyder 2001) (2d). Italian and English differ systematically in all of these respects, as well as in the manner-of-directed-motion construction.

- (2) a. *Resultatives*
 English speakers *knock themselves silly*, but Italian speakers don't.
 b. *Particles*
 English speakers *lock themselves out*, but Italian speakers don't.
 c. *Double objects*
 English speakers *show people things*, but Italian speakers don't.
 d. *Compounds*
 English speakers book [*hotel rooms*], but Italian speakers don't.

As Talmy notes, the ubiquity of such structures in satellite-framed languages like English makes the contrast with verb-framed languages all the more astonishing:

To a speaker of a language like English, such sentences may seem so straightforward that they offer little to ponder: how else might such propositions be colloquially expressed? But in fact there are languages with very different patterns of expression. Even a language as seemingly kindred as Spanish *can express virtually none* of the above sentences in the way that English does. (Talmy 1985:63, italics original)

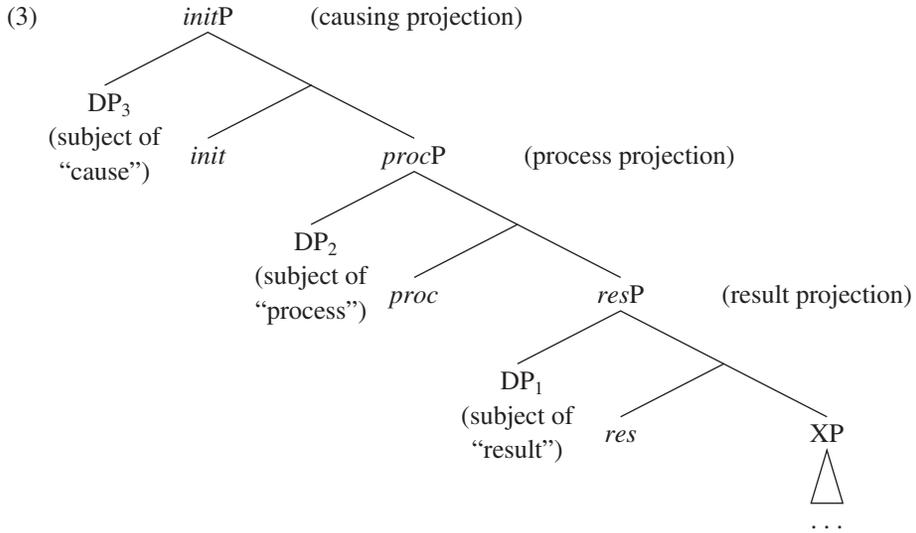
This contrast has been the focus of intensive investigation in formalist, functionalist, and psycholinguistic literature (see Beavers, Levin, and Tham 2010 for a recent summary and synthesis). Understanding of the contrast has been greatly enhanced by the development of theories of event structure composition and the syntax-semantics interface (e.g., Borer 1994, 2003, Rosen 1999, Ramchand 2008). In the next section, we briefly sketch how the new understanding of the

internal structure of the verb phrase raises the possibility of a purely syntactic parameter that can capture this kind of typological variation.

2.1 *The Syntax of Event Structure and Encoding the Result in the Verb*

Since a cluster of important proposals investigating argument structure in the early 1990s (Hale and Keyser 1993, Borer 1994, Kratzer 1994, 1996, Chomsky 1995), the traditional VP has been decomposed into at least two projections, a functional layer (vP or VoiceP) embedding a lexical layer (VP or \sqrt{P}). The higher, functional layer introduces the external argument and causative/agentive semantics, and the lower, lexical layer introduces the internal argument and the core lexical semantic content of the verb. At the same time, a separate line of research explored the syntactic correlates of event-structural distinctions, linking syntactic behaviors like case or valence alternations to functional projections that encode semantic event-structural properties like telicity or causativity (see, e.g., Tenny 1992, Borer 1994, 1998, Ritter and Rosen 1998, Travis 2000; see Rosen 1999 for a review and summary of these developments). These two lines of investigation converged robustly in the analysis of change-of-state predicates, which denote a (caused or spontaneous) process leading to a result state. For example, the subject vP layer of Chomsky 1995, or the VP1 of Hale and Keyser 1993, or the VoiceP of Kratzer 1996 mapped naturally to the AspPP of Borer 1994, or the FPInitiation of Ritter and Rosen 1998, or the VP1 of Travis 2000; all these projections introduced the external argument, and the event-structural proposals argued that it also introduced the initiating event in change-of-state predicates. Similarly, the VP2 of Hale and Keyser 1993 or the VP of Chomsky 1995 and Kratzer 1996 mapped naturally to the AspPQ of Borer 1994 or the FPDelimitation of Ritter and Rosen 1998; this projection is related to the structural licensing or introduction of internal arguments, and also to the second subevent in change-of-state predicates, the achievement of the result state.

Ramchand 2008 is a good example of the modern synthesis of these ideas, providing an explicit semantics linking subevents to particular syntactic projections and predicting the existence of event-related syntactic phenomena crosslinguistically. Her proposal for the decomposed VP syntactic skeleton is shown in (3), with annotations indicating the event-structural contribution of each node. She notes the affinity between her *initP* and the external-argument-introducing vP.

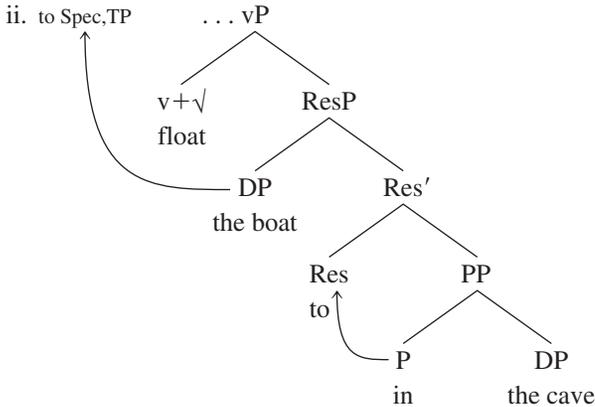


In this article, we argue that Talmy's lexical-semantic effects are properly viewed through the lens of this subevent syntax. Talmy's typological claim depends on the decomposition of directed-motion events into a path/process subevent and a goal/result subevent. This suggests a direct mapping to the syntactic substructures of the decomposed verb phrase (as proposed in, e.g., Folli and Ramchand 2001, Folli 2002, Folli and Harley 2006). The typology can be viewed in a new way: as having to do with language-specific parameters governing the movement (or not) of the heads expressing the separate subevents, in a way exactly parallel to other head movement parameters that have long been established in the literature. Head movement assembles heads that express separate features into single words. If we were describing V-to-T movement in the Talmian idiom, for example, we could say that languages with V-to-T movement "express Tense in the verb," while a language that strands T has a "satellite" expression of Tense. In the same way, if Res is a syntactic head separate from *v* as in (3), a language could require Res-to-*v* movement, with the consequence that Result must be "expressed in the verb." Another language might allow Res to remain in situ, stranding it separately from the verb and thus expressing Res in a "satellite." This is the core of our proposal: Italian has a Res-to-*v* head movement requirement, requiring the result of a change of state to be "expressed in the verb," while English permits Res to remain in situ, stranding it separately from the verb and allowing for a "satellite" expression of Result. We sketch this proposal for the basic motion example in (4), simplifying to a two-projection view of *vP* for ease of exposition.⁴

⁴ We show the complex English preposition *into* as a combination of the preposition *in* plus the satellite Res head *to*; see our discussion of "decomposed Res" in section 5.3. Directed-motion predicates are unaccusative, so the subject DP in both English and Italian is generated *vP*-internally and moves to Spec,TP to derive the final word order.

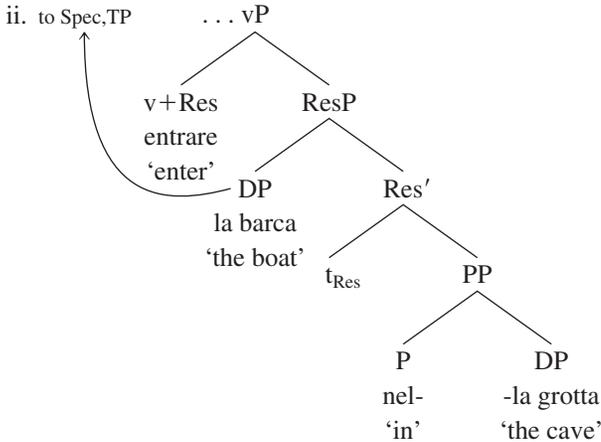
(4) a. *English*

i. The boat floated into the cave.

b. *Italian*

i. La barca entrò nella grotta.

the boat entered in.the cave



We propose that because English *v* need not combine with *Res* via head movement, it can instead combine with an adverbial root ($\sqrt{\quad}$), producing a manner verb, adapting the proposal in Embick 2010. The adverbial $\sqrt{\quad}$ enters the structure via external Merge (e-Merge) to a projection of *v*, and then m-merges with *v* to produce the same head adjunction structure as head movement, following Matushansky 2006.

Since *Res* must undergo head movement to *v* in Italian, no satellite realizations of *Res* are possible in Italian, whether PPs as in (*float*) *into the cave*, adjectival resultatives as in (*knock*) *X silly*, or verb-particle constructions as in (*lock*) *X out*. Because *Res* must be head-adjoined to *v* and realized within the same complex head as *v*, Result must be “encoded in the verb.”

On this view, the verb-framed/satellite-framed distinction is part of a well-accepted paradigm for syntactic typological variation. However, most previous approaches to Talmy's typology require an entirely new type of "deficiency"-based parametric variation. One variety ascribes a lexical deficiency to verb-framed languages; the other a syntactic deficiency. Neither is compatible with the "minimal design" desiderata laid out for Minimalist syntactic analyses. In the next section, we briefly review each type of approach and discuss their relationship to the semantic composition of complex event types.

2.2 Lexical Deficiency Approaches

Proposals focusing on the different lexical inventories of the two types of languages have ascribed the distinction to the absence of certain kinds of prepositions from verb-framed languages. Our representative of this type of approach will be Folli 2002 (but see also Higginbotham 2000, Folli and Ramchand 2005, Fábregas 2007, Ramchand 2008, Acedo-Matellán 2010, among others).⁵ The claim is that verb-framed languages lack nonverbal lexical items encoding Path semantics, a literal implementation of Talmy's characterization of verb-framed lexicalization patterns. The lexicons of satellite-framed languages, in contrast, have Path-denoting items in other syntactic categories. For example, the preposition *to* in English includes a Path component, while the preposition *a* in Italian is purely locative, and hence is better translated by English locative prepositions such as *at* or *in*. The impossibility of a motion interpretation in the English sentence in (5b) is thus parallel to the analogous Italian sentence with *a* in (5c).

- (5) Italian *a* = English *at/in*; Italian lacks an equivalent of English *to*.
- a. The car shuddered to a stop. (Only motion to an endpoint; i.e., 'to a halt')
 - b. The car shuddered at a stop. (Only activity at a location; *a stop* is a place)
 - c. La macchina ha scricchiolato alla fermata (dell'autobus).
 the car has screeched to.the stop (of.the bus)
 OK: 'The car screeched at the bus stop.' (Only activity at a location)
 Not: 'The car screeched to a stop.'

Even with Italian verbs that clearly encode a motion event, such as *navigare* 'sail' or *viaggiare* 'travel', it is impossible to add a Goal PP using these simple locative prepositions. In Italian, directed-motion constructions take the *essere* 'be' auxiliary (Hoekstra and Mulder 1990, Folli and Harley 2005). This auxiliary is available only with dedicated directed-motion verbs like *andare* 'go' (see (8)), not with *navigare* 'sail' or *viaggiare* 'travel', which require the *avere* 'have' auxiliary and permit only a locative interpretation for a PP.

- (6) Gianni ha/*è viaggiato a Roma.
 Gianni has/is traveled at Rome
 OK: 'Gianni has traveled in Rome.'
 Not: '#Gianni has traveled to Rome.'

⁵ In contrast, Zubizarreta and Oh (2007) and Demonte (2014) have challenged the claim that Spanish lacks complex accomplishment prepositions like *to*.

Folli (2002) notes that the ability of the locative prepositions *in* and *at* to appear in copular constructions, unlike the motion-related prepositions *to* and *into*, also supports the notion that the locative prepositions make a purely locative semantic contribution that the motion-related prepositions cannot (7a). Italian *nel* ‘in the’ is well-formed in a copular context (7b), again patterning with the locative English prepositions.

- (7) a. The ball is in/*into the basket.
 b. La palla è nel canestro.
 the ball is in.the basket
 ‘The ball is in the basket.’

The framing idea is that the lack of an equivalent of *to* (= Path) prevents Italian from expressing a directed-motion meaning with a non-directed-motion verb. Only directed-motion verbs like *andare* ‘go’ are able to compose with locative prepositions to express directed motion (see section 5.3 for treatment of exceptions). Since such verbs encode Path themselves, their Goal can be introduced as a simple location PP.

- (8) Gianni è andato nel negozio.
 Gianni is gone in.the shop
 ‘Gianni went in the shop.’

In sum, the key idea of this view is that Italian has a lexical deficiency. This prevents it from expressing a motion event by combining a manner verb and a prepositional Goal phrase. Italian prepositions are not able to encode Path semantics, but English prepositions are not so limited.

2.3 Syntactic Deficiency Approaches

In the second type of approach, the hypothesized difference resides in the kinds of syntactic or semantic operations available to the grammar (e.g., Mateu 2002, 2008, McIntyre 2004, Harley 2005, Mateu and Acedo-Matellán 2012). These analyses propose that verb-framed languages lack a structural operation that satellite-framed languages use to create manner-of-directed-motion constructions. The parametric operation is sometimes a morphosyntactic one, called “manner incorporation” in Harley 2005; “m-conflation” in McIntyre 2004; and “conflation” in Mateu 2002, 2008, 2012, Mateu and Acedo-Matellán 2012, and Acedo-Matellán and Mateu 2013. In other variants of this view, the operation might be (morpho)lexical (e.g., Snyder’s (1995) Compounding parameter) or semantic (e.g., Rule R as in Beck and Snyder 2001, or telic-pair formation in Higginbotham 2000).⁶ English is able to deploy this operation, while Italian is not. We take Harley’s (2005) proposal as our representative of this type of approach.

Harley (2005) posits that resultative constructions as in (9) and directed-motion constructions as in (10) share an underlying argument-structural frame, in which a light verb takes a small clause complement and expresses a transition to the result state or location.

⁶ Since Higginbotham (2000) links the lack of telic-pair formation to the absence of accomplishment prepositions, this is also a kind of variant of the lexical deficiency approach; consequently, it is subject to the problem of the lexical deficiency accounts’ lack of generality as well as to the syntactic accounts’ Minimalist implausibility (see below).

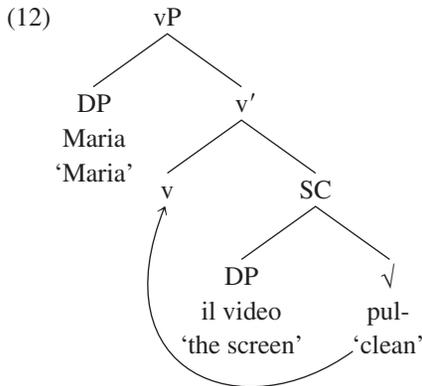
- (9) a. Mary [_{VP} make [_{SC} John sick]]
 b. John_i [_{VP} become [_{SC} t_i sick]]
- (10) a. Mary [_{VP} send [_{SC} John to the store]]
 b. John_i [_{VP} go [_{SC} t_i to the store]]

Harley proposes that in manner-of-directed-motion constructions, the light verb (denoting 'cause' or 'become') is modified by another verb root that describes a manner—a verb whose meaning by itself has no directed-motion component. This can be seen in (11); it is effectively a syntactic implementation of the lexical-conceptual structure for these constructions proposed by Levin and Rappaport Hovav (see, e.g., Levin and Rappaport Hovav 1998:253), itself an adaptation of Jackendoff's (1990) proposal.

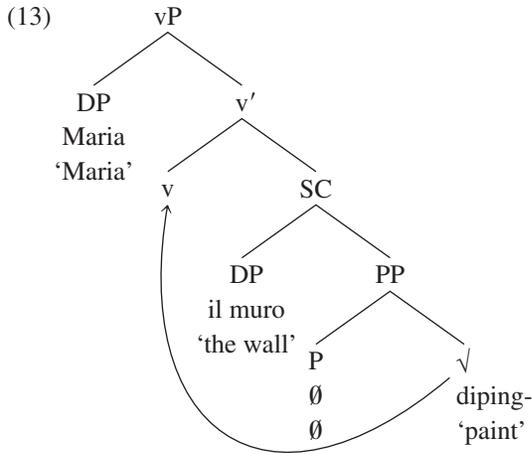
- (11) a. Mary [_{VP} CAUSE (by FLOATING) [_{SC} the canoe into the cave]]
 (Mary floated the canoe into the cave.)
 b. The canoe_i [_{VP} BECOME (by FLOATING) [_{SC} t_i into the cave]]
 (The canoe floated into the cave.)

In Harley 2005, the central idea is that English can build such a structure and Italian cannot—the syntactic possibilities in English are a superset of those in Italian.

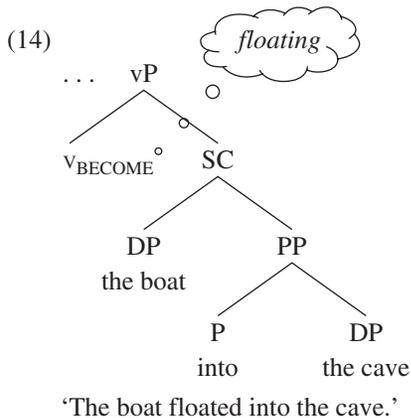
Harley (2005) assumes that both English and Italian can build a straightforward change-of-state verb (e.g., *clean/pulire*) by incorporating an element from the small clause predicate into v, as in the partial tree structures for *Maria ha pulito il video*/*Maria cleaned the screen* in (12) and *Maria ha dipinto il muro*/*Maria painted the wall* in (13).⁷

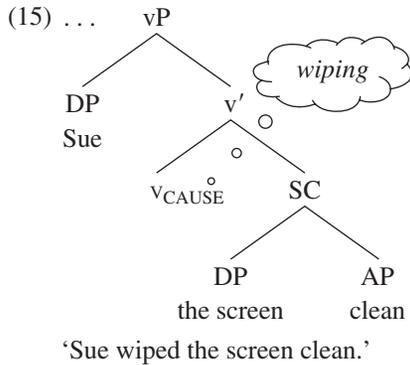


⁷ The treatment of $\sqrt{\text{diping-}}$ as monomorphemic here is an oversimplification. See section 4.2 for further discussion of the locus of incorporated Ps. Note also that although in these illustrative structures we do not notate the phonological content of v, we assume that in the English verb *clean*, v is phonologically null, while in the Italian verb *pulire* v is associated with the theme vowel *-i*, following Arregi and Oltra-Massuet (2005) (see also footnote 19). The phonological realization of v depends on the element that is morphologically merged with it; in English, it is often null, but sometimes it has realizations such as *-ize*, *-ify*, or *-ate*, among others.



However, resultatives and manner-of-directed-motion constructions involve structures where the verb fails to get its lexical content via incorporation from the small clause predicate, and instead gets it by manner incorporation. Harley (2005) remains agnostic about the specifics of the structural operation involved, for technical reasons, and represents manner incorporation with thought balloons, as in (14) (directed motion) and (15) (resultative).





Mateu (2002, 2008) and Acedo-Matellán (2010, 2012) propose variants of Hale and Keyser’s (1993, 2002) operation to model this head modification pattern; Mateu and Acedo-Matellán (2012) and Mateu (2012, 2017) adapt Haugen’s (2009) distinction between “conflation” and “incorporation” head modification processes to account for it. In these treatments, as in Harley’s, because directed-motion predicates take a (locative) small clause complement, manner-of-directed-motion constructions admit the same manner incorporation operation as resultatives, which take an adjectival small clause complement, thus unifying the two cases.

In summary, in this second approach, a transitional light verb with an unincorporated small clause complement permits a language to add lexical information to the verb via a “manner incorporation” operation that English possesses but Italian lacks. This gives rise to a superset effect, such that English has all the structures available in Italian, plus the extra ones made possible by manner incorporation.

2.4 *Contrasting the Lexical and Syntactic Deficiency Approaches*

A comparison of the two approaches reveals strengths and weaknesses in each. Borer’s (1984) insight that parameterization should be morpholexical is most compatible with lexical deficiency approaches. The notion that languages differ in their inventory of (quasi-)functional lexical items is natural, and syntactic variation resulting from such differences is expected. In contrast, syntactic deficiency approaches require a truly computational parameter, according to which a particular structure-building operation is globally unavailable in some languages. This does not comport well with standard views in which the combinatorial operation Merge is the only fundamental structure-building universal, which cannot vary across languages. This problem is even more acute for approaches that posit a semantic parameter. The conceptual-intentional interface should work identically across languages, since the general cognitive system is presumably identical across speakers, and the same interpretive operations therefore should be available across the board (pace Chierchia 1998, among others).

Nonetheless, the lexical deficiency approaches also face problems. Why couldn’t a language simply borrow a Path-referring preposition? Or why couldn’t a language lexicalize some Paths as verbs and others as prepositions? For example, why couldn’t a language have manner-of-directed-motion constructions for movement *to* but not movement *from*? Most crucially, these

approaches have difficulty in dealing with the macroparametric quality of the effect across constructions. Why should the unavailability of a preposition lexicalizing Path semantics affect the availability of adjectival resultatives, or double object constructions, or verb-particle constructions? The lexical deficiency approach misses the broader generalization that the syntactic deficiency approach captures.

2.5 *A Morphological Turn*

A third category of analyses has more recently espoused the idea that there is a postsyntactic morphological filter that rules out manner-of-directed-motion constructions in verb-framed languages. One such approach ascribes particular formal morphological properties to verbal lexical items in this class of languages (Acedo-Matellán 2006, 2010, Real Puigdollers 2011). The idea is that the relevant syntactic operation is indeed universally available, but the output of that operation cannot be realized morphologically.⁸ A related approach is espoused by Embick (2010), who characterizes the filter somewhat differently: in verb-framed languages, verb roots that fail to incorporate into *v* cannot be realized, since they are morphologically bound. Leaving the Path element unincorporated would therefore produce morphologically ill-formed structures in these languages. (See discussion in section 5.2 below.)

These morphologically driven accounts are consistent with Minimalist desiderata, in that no variation is present at the level of the syntax. These approaches have things in common with both of the deficiency approaches outlined above. As in lexical deficiency approaches, the variation is not syntactic, and as in syntactic deficiency approaches, the effect applies to all verbal elements in verb-framed languages, and so is expected to persist across constructions, unifying manner-of-directed-motion, resultative, and verb-particle constructions.⁹

In our proposal below, the parameter depends on the language-specific properties of the particular *v* that occurs in change-of-state/location constructions, and so unifies these constructions. However, unlike global morphological constraints, our account also correctly predicts that some verb frame alternations are permitted in Italian. We illustrate this with a review of the *spray/load* alternation in English and Italian, and then highlight a new case of the manner+change-of-state constraint applying within a single verb class, by examining Levin's (1993) *carve/sculpt* alternation in detail in both languages.

3 Change-of-State Constructions in Italian and English

3.1 *The Lexical Resources of Italian*

Well-established syntactic parameters typically ascribe different-but-equal status to the lexical features that drive variation: weak vs. strong (Chomsky 1993); uninterpretable vs. interpretable (Chomsky 1995); features associated, or not, with the EPP property (Chomsky 2000); or valued

⁸ One could consider the Spanning-style approach proposed by Svenonius (2008) to be of this type as well.

⁹ In our account, there is still work for morphological well-formedness constraints on individual lexical items, but we argue in section 5.4 that such morphological constraints are better employed to account for verb class differences *within* satellite-framed languages, not for the overall typology.

vs. unvalued (Chomsky 2001). Analyses that use such technology to characterize parametric variation assume that languages arrive at equivalent LF representations given equivalent ingredients. Typological variation in the availability of movement constructions is due to variation in the timing of feature-checking relations within the tree—for example, whether features are checked in the “overt” syntax or the “covert” syntax. Parameters do not typically ascribe a broader inventory of LF representations to one language and a narrower inventory to another. (Of course, it is this very issue that puts manner of directed motion at the center of the neo-Whorfian debate; see the summary in Blomberg 2007, describing Lucy 1992, Slobin 1996, Bohemeyer, Eisenbeiss, and Narahimsan 2001, Finkbeiner et al. 2002, Gennari et al. 2002, Papafragou, Massey, and Gleitman 2002, Zlatev and David 2003, Pourcel 2005).

If we want to recast the verb-framed/satellite-framed parameter in syntactic terms, we must establish whether the fundamental ingredients available in both classes of languages are similar, as for other syntactic parametric cases mentioned above, or different, as in the case of variation in lexical or featural content in gender systems, honorific systems, and so on. It is clear that Italian and other verb-framed languages have the same kind of rich inventory of change-of-state and caused-change-of-state constructions as satellite-framed languages (16a–b), including change-of-location constructions (16c). The fundamental ingredients in change-of-state structures are identical in Italian and English.

- (16) a. La zuppa è raffreddata. (Deadjectival change of state)
 the soup is cooled
 ‘The soup cooled off.’
- b. Gianni ha raffreddato la zuppa. (Causativized change of state)
 Gianni has cooled the soup
 ‘Gianni cooled off the soup.’
- c. La palla è rotolata sotto il tavolo. (Change of location)
 the ball is rolled under the table
 ‘The ball rolled under the table.’

The locus of variation, then, is not in the presence or absence of a particular frame, but in the morphosyntactic combinatoric possibilities of the frames that exist in both languages. Furthermore, Italian verbs are not generally morphosyntactically inflexible—there are verb frame alternations in Italian. For example, there are plenty of *spray/load* (*spruzzare/caricare*) alternations in the language, illustrated in (17); indeed, Italian has an additional frame that is unavailable in English (17c). (See for example Damonte 2005 for discussion of the Italian alternation, pace Lewandowski 2014 on the more restricted character of the Spanish equivalents.)

- (17) a. Gianni ha caricato la paglia sul camion.
 Gianni has loaded the hay on.the truck
 ‘Gianni loaded the hay on the truck.’
- b. Gianni ha caricato il camion con la paglia.
 Gianni has loaded the truck with the hay
 ‘Gianni loaded the truck with the hay.’

- c. Gianni ha caricato il camion di paglia.
 Gianni has loaded the truck of hay
 ‘Gianni loaded the truck with hay.’

These events all involve a Theme moving into or out of a Location (hence, this is usually termed the “locative alternation,” establishing a Figure-Ground relationship between the Theme and the Location). The example in (17a) illustrates the *pour*-variant, in which the direct object is the Theme and the locational Goal is specified in a PP. The example in (17b) illustrates the *fill*-variant, in which the direct object is the Goal and a PP specifies the Theme, the moving material. Example (17c) illustrates a variant that is not broadly attested in English, the *of*-variant. In this variant, the direct object is the Goal and the Theme is contained in an *of*-PP. These cases also show that change-of-state/location structures, complete with Path semantics, are clearly well-formed in Italian (see Levin and Rappaport Hovav 1988 for the original motivation for this idea, and Beavers 2017 for a recent overview of the voluminous literature on this alternation). They also show that verb frame alternations are possible; indeed, they behave in a productive, predictable way, as expected if they are syntactic in character. (See Alexiadou and Anagnostopoulou 2011 for documentation and discussion of the productivity of this same class of locative alternations in modern Greek, another verb-framed language.) Because verb frame flexibility exists in both kinds of languages, there is no general morphological filter ruling out such flexibility in Italian.

We can now lay out the landscape of alternation possibilities in Italian as follows: Change-of-state structures that involve encoding the result in the verb are well-formed (*raffredare* ‘cool’ and *caricare* ‘load’ above). Motion or creation events that are described as occurring in a certain manner, encoded in the verb, are also well-formed; the manner-of-motion example in (1c), *galleggiare* ‘float’, illustrates a manner verb in a (nondirected) motion construction, of course; we illustrate a manner verb in a creation construction with *dipingere* ‘paint’ in (18).

- (18) Marco ha dipinto un cielo.
 Marco has painted a sky
 ‘Marco painted a sky.’

In Italian, then, we have all the usual ingredients of constructional meaning: manner predicates, result predicates, and constructions denoting changes of state, motion, and creation. Further, the language is flexible in permitting lexical predicates to occur in different constructions as long as their lexical-semantic contribution is appropriate.

Why, then, are manner-of-directed-motion constructions, and related constructions, ruled out? We propose to subsume all of these under a single description: what is impossible in Italian are change-of-state structures where the result is not encoded in the verb. Framed as a positive, rather than a double negative, the generalization is that when a change-of-state event is described in Italian, the result must be encoded in the verb. This is, we claim, the right description of the whole pattern of Italian lexical syntax, the correct framing of the Talmian parameter.

We can motivate this descriptive point in detail by looking at the *carve/sculpt* verbs in both English and Italian. This alternation is an ideal minilaboratory for this purpose because both languages show lexical-syntactic flexibility with this class of verbs, allowing both a manner-of-

creation structure and a result-naming structure. However, the range of flexibility for these verbs in Italian is constrained precisely in cases expressing a result predicate outside the verb. English permits three variants of the *carve/sculpt* alternation; Italian, only two. This allows us to pinpoint the application of the Talmian constraint within a single verb class with precision.

Here are the three frames documented by Levin (1993) for English verbs of the *carve/sculpt* class; we name each class after its characteristic semantic profile.¹⁰

- (19) a. Maria carved a doll. (Product/Creation)
 b. Maria carved the wood. (Material/Result)
 c. Maria carved the wood into a doll. (Created Result)

(19a) illustrates the Product/Creation reading, where the direct object refers to an item that is created by the activity denoted by the verb. (19b) illustrates the Material/Result reading, where the direct object refers to the material affected by the activity denoted by the verb; we will argue that the verb names the result of the event in both Italian and English. In English, a third reading is also possible, illustrated in (19c), in which the direct object refers to the affected material as in the Material/Result reading, and a Goal PP is added naming the item that is created by the event. We will call this the *Created Result* reading. In Italian, these verbs alternate between Product/Creation and Material/Result readings; the Created Result frame is absent.¹¹

- (20) a. Maria ha intagliato una bambola. (Product/Creation)
 Maria has carved a doll
 'Maria carved a doll.'
 b. Maria ha intagliato un pezzo di legno. (Material/Result)
 Maria has carved a piece of wood
 'Maria carved a piece of wood.'
 c. *Maria ha intagliato un pezzo di legno in una bambola. (Created Result)
 Maria has carved a piece of wood in a doll
 'Maria carved a piece of wood into a doll.'

The ungrammaticality of (20c) shows that adding a Goal PP specifying the created result is impossible in Italian. We claim that the absence of the Created Result construction with these

¹⁰ As we explain in section 3.3, the claim that the *carve/sculpt* alternation includes a result interpretation is not well-established in the literature; consequently, we present different tests to confirm this hypothesis. However, the analysis we propose for the larger parametric difference between English and Italian would still be valid even if the reader remained unconvinced that *Maria carved the wood* expresses a change of state; the account will still cover the core motion, resultative, particle, and double object cases of the parameter. We thank a reviewer for pointing this out to us.

¹¹ It has been claimed that Romance languages lack 'creation' readings of change-of-state verbs like *bake* altogether (Atkins, Kegl, and Levin 1988, as cited in Mateu 2003; see also Levin and Rappaport Hovav 2009), and some have suggested that "manner-of-creation" structures are generally impossible in verb-framed languages (Mateu 2003, Harley 2005). However, the data we present have been checked and cross-checked with Italian speakers, and the creation reading of adjectival participles of these verbs is robustly attested in corpora. See also Melloni's (2012) discussion of several subclasses of Italian creation verbs in the context of examining their nominalizations. We consider it incontestable that Italian allows Product/Creation readings for this type of verb. It is true that Italian does not have an exact translation equivalent of English *bake*, but that does not mean it lacks all manner-of-creation verbs; *cucinare* 'cook', for example, is exactly such a verb. Thanks to a reviewer for alerting us to Melloni's work.

verbs in Italian is another case of the Talmian effect. Created Result is a resultative construction in which the result is not encoded in the verb. It thus joins the inventory of constructions listed above confirming the robustness of Talmy's parameter and its syntactic character.

This paradigm is particularly striking in that these verbs can name results: the Material/Result structure is precisely a construction where the verb root is interpreted as naming the result, rather than a manner. The ill-formedness of the Created Result reading, then, is not just another example of a manner verb's lexical inability to name a result. This alternation highlights the syntactic character of the prohibition on satellite result phrases in Italian.

To bring this descriptive point home, we will first show that *carve/sculpt* verbs in the Product/Creation frame behave as pure manner verbs, as established by Levin (2009), among others. We then show that in the Material/Result frame they name a result, following Levinson (2014). They entail a change in the Theme argument and pattern with Levinson's "root creation" verbs. That is, these verbs behave as members of two verb classes, in one of which they name a manner and in the other of which they name a result, analogously to Levin's (2009) proposal for verbs of cooking. With this polysemy in mind, it seems clear that the absence of the third frame with these verbs in Italian but not in English is due to the Talmian parameter.

3.2 *Carve/Sculpt Verbs in the Product/Creation Frame*

In a discussion of the manner/change-of-state ambiguity of *bake* verbs, Levin (2009) uses *carve* to illustrate prototypical creation-directed manner verb behavior. *Carve/Sculpt* verbs participate in a characteristic pattern of verbal alternation; in particular, they permit the unspecified object alternation (21b) and the benefactive alternation (21c).

- (21) a. Sam carved the doll.
 b. Sam carves in the evenings.
 c. Sam carved me a doll.

We agree with Levin that this pattern shows that *carve/sculpt* verbs contribute manner to the verbal event in the Product/Creation frame. This reading licenses object drop and benefactive structures. However, following Levinson (2014), we claim that the Material/Result and Created Result structures in (19) depend on *carve/sculpt* verbs being ambiguous between two senses. This means that *carve/sculpt* verbs are also members of another verb class. We turn to this next.

3.3 *Carve/Sculpt Verbs in the Material/Result Frame*

We argue that the difference between the Product/Creation reading and the Material/Result reading is the difference between a manner-naming use and a result-naming use of the same root—that is, that manner/result ambiguity is a feature of this lexical class of verbs. These verbs thus are particularly useful in illustrating that the ill-formedness of Created Result structures in Italian is a syntactic, not a lexical-semantic, effect.

As noted above, these verbs have been treated as pure manner verbs in most previous literature, for example by Levin (2009), and it is certainly the case that they are not canonical change-of-state verbs like *break* or *fold*, which are impossible in manner verb environments such as

unspecified and unsubcategoryed object constructions. The *carve/sculpt* verbs, which are compatible with such constructions, thus do behave as manner verbs in the bipartite manner/result dichotomy established by Rappaport Hovav and Levin (1998 et seq.).

Levinson (2014), however, argues that this class of verbs exhibits root polysemy. She proposes that they exhibit a systematic alternation as predicates of events on their manner reading and as predicates of entities on their result reading. We first establish that there is a result entailment in the Material/Result reading, using tests established in Beavers 2010, and we then show that in this construction, these verbs fall into Levinson's "root creation" class in both English and Italian.

Beavers (2010:836) proposes a four-level hierarchy of entailments with respect to degrees of affectedness of the Theme in verbs that entail change: quantized change, nonquantized change, potential change, and unspecified change. The location of a predicate on this Affectedness Hierarchy is established by the particular subset of affectedness entailments it introduces. For example, a quantized change-of-state predicate is necessarily telic (22a), while a nonquantized one is not (22b).

- (22) a. The tailor lengthened the jeans to 32 inches in/??for an hour.
 b. The tailor lengthened the jeans for/??in an hour.
 (Beavers 2010:834)

Similarly, the difference between nonquantized change and potential change can be diagnosed by a contradiction arising from a continuation test. Nonquantized change predicates entail that some change has occurred, while potential change predicates do not; hence, a continuation such as *but nothing is different about Theme* is contradictory with the former (23a) but not the latter (23b). Typical nonquantized-change predicates include degree achievement verbs (which participate in the inchoative/causative alternation).

- (23) a. #The tailor lengthened the jeans, but nothing is different about them.
 b. John hit/slapped the car, but nothing is different about it.
 (Beavers 2010:834)

The *carve/sculpt* verbs in the Material/Result reading entail change in the Theme, yielding contradiction with the *nothing is different* test (24).

- (24) #The sculptor carved the wood, but nothing is different about it.

The telicity test gives variable results; a telic reading is permitted (when the whole object is affected by the event) but so is an atelic one (25).

- (25) The sculptor carved the wood in/for an hour.

The Italian equivalents behave the same on both tests. We conclude, then, that the Material/Result reading expresses at least a nonquantized change of state.

Levinson (2014) argues that the roots of verbs of this class are polysemous, having both a manner variant, which gives rise to the Product/Creation reading, and a result variant. In the result variant, she proposes that the verb root is a predicate of entities, describing an object that

is the result of transforming or manipulating the Theme. This result object can be modified by a “pseudoresultative,” a predicate that does not delimit the change undergone by the Theme but rather describes a property of the resulting object named by the verb root. In (26a), for example, the predicate *thin* describes the resulting slice, not the loaf of bread that is the Theme; in (26b), *tight* describes the resulting braid, not the hair that is the Theme.

- (26) a. The baker sliced the bread thin.
b. She braided her hair tight.

With *carve/sculpt* verbs in the Material/Result reading, an object that is the result of manipulation of the Theme can indeed be identified. *Carve/Sculpt* verbs exhibit a productive ambiguity in their event nominalizations: they can also be result nominals, referring to a resulting object whose physical properties can then be described, as in (27). Event nominalizations of other change-of-state verbs such as *lengthen*, or manner verbs like *wipe*, lack such resulting-object readings.

- (27) a. Maria carved the wood. The carving was angular.
b. Maria wove the wool. The weaving was thick.
(28) a. The tailor lengthened the pants. #The lengthening was striped.
b. The cook wiped the table. #The wiping was green.

The *carve/sculpt* verbs also permit modification targeting the resulting entity introduced by the verb root, as Levinson shows root creation verbs do.

- (29) a. Maria carved the wood intricately.
b. Maria wove the wool tight(ly).
c. Maria clumsily sculpted the clay beautifully.

Italian verbs of this class behave in the same way. For example, *tessere* ‘weave’ has a result-naming nominalization (30a) and allows modification of the verb-named entity (30b).

- (30) a. Maria ha tessuto la lana. La tessitura era spessa.
Maria has woven the wool the weaving was thick
‘Maria wove the wool. The weaving was thick.’
b. Maria ha tessuto la lana finemente.
Maria has woven the wool finely
‘Maria wove the wool finely.’

Most tellingly, in the Material/Result frame, Levinson (2014) shows that the benefactive alternation is impossible, contrasting with the Product/Creation frame (compare (21c) with (31b,d)).

- (31) a. Maria carved the wood.
b. *Maria carved Sue the wood.
(OK: Maria carved Sue a doll.)
c. Maria wove the wool.
d. *Maria wove her daughter the wool.
(OK: Maria wove her daughter a scarf.)

The failure of the benefactive construction is particularly striking given that Levin (2009) uses the possibility of benefactivization as a diagnostic for manner roots.¹² Levinson proposes a type-theoretic treatment of the polysemy, noting that as predicates of entities in the Material/Result frame, these roots are incompatible with applicativization, which requires predicates of events, but in the Product/Creation frame, where they are manner modifiers of events, applicativization is predicted to be possible. For present purposes, the key takeaway is that Beavers's and Levinson's diagnostics confirm that the Material/Result uses of *carve/sculpt* verbs pattern with other clearly result-naming verbs.

3.4 Carve/Sculpt Verbs in the Created Result Frame

So, both English and Italian exhibit verb flexibility with the *carve/sculpt* class of verbs, permitting alternations between manner-of-creation (19a)/(20a) and result (19b)/(20b) structures. This confirms that Italian is not prohibited from participating in a manner/result alternation by any blanket constraint. But crucially, the third version of the English alternation, where the verb functions as a manner of result, is impossible in Italian ((19c) and (20c), repeated in (32a–b)). The prohibition is specific to manner-of-change-of-state constructions. This, we claim, is a reflex of the Talmian parameter: in Italian, any result predicate must be in the verb, but in the Created Result frame, the result is in a satellite PP.

- (32) a. Maria carved the wood into a doll. (Created Result)
 b. *Maria ha intagliato un pezzo di legno in una bambola.
 Maria has carved a piece of wood in a doll
 'Maria carved a piece of wood into a doll.'

The reason we focus on these verbs in particular is their polysemy. Because they do have a 'result' reading, they mitigate against a lexicalist verb-framed description of this effect. The created-result construction ought to be able to count as verb-framed if the verb *can* name a result. The fact that it is ungrammatical underlines our point that the problem for Italian is the result-satellite syntax, not the verbal semantics.

As outlined above, we propose that Italian has a positive setting for a head movement parameter which requires that the head of a result-naming projection undergo head movement to *v*. What sets this view apart from previous approaches is the idea that verb-framed languages have an extra requirement, not a prohibition, on the construction: the syntax imposes the requirement that the result of a change-of-state construction must be "encoded in the verb." The Talmian parameter is thus not driven by the lexical specifications of individual verbs.

4 Head Movement Parameters

Our model for a general account of the relevant type is based on a well-understood domain of verbal syntax: the V-to-T head movement parameter that is set differently in French (and other

¹² Unlike the other tests described here, we cannot transfer this result to Italian as applicatives behave differently in Italian; they are formed with an *a*-phrase and are robustly productive with transitive verbs regardless of class.

Romance languages) than in English, or the T-to-C movement parameter that is set differently in French than in, for example, German. (See Roberts 2012 for an overview.)

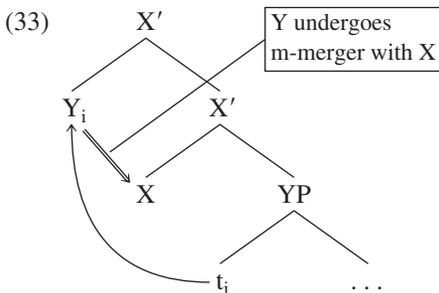
The intuition we develop below is that in verb-framed languages, there is a “Result-to-v” parameter that is set to “on”: feature checking between change-of-state *v* and Result requires overt head movement. In satellite-framed languages, the same parameter is set to “off.” That is, in satellite-framed languages, checking between a change-of-state *v* head and the Result in its complement can occur with the Result in situ, just as feature checking between T and V in the traditional account of the verb-raising parameter occurs with V in situ in English.

Crucially, we need to be able to distinguish, syntactically, between change-of-state *v*, which selects for a Result, and creation/activity *v*, which does not. Although the semantic contrast between these primitives is widely recognized to be important in argument structure, here we need a syntactic contrast, yielding differences in head movement behavior. We accomplish this by ascribing different featural content to different “flavors” of *v* (Folli and Harley 2005), drawing an analogy with the different head movement behavior of English auxiliary verbs and main verbs.

4.1 Technical Implementation I: V-to-T Movement

We first outline a formal feature-checking implementation of the V-to-T movement parameter on which to model our account of the Res-to-*v* movement parameter. Our treatment is framed within Matushansky’s (2006) theory of head movement in conjunction with Adger’s (2003) theory of selection by categorial feature checking.

In Matushansky’s account, moving heads undergo internal Merge (i-Merge) at the root node, just as phrasal movement does. However, heads so moved immediately undergo an m-merger operation adjoining them to the closest local head, the head of the root projection; see (33).¹³ (Matushansky’s m-merger is equivalent to Embick and Noyer’s (2001) lowering operation.)¹⁴



¹³ The *m-* in *m-merger* stands for *morphological*, to distinguish it from Chomsky’s (1995) purely syntactic Merge operation.

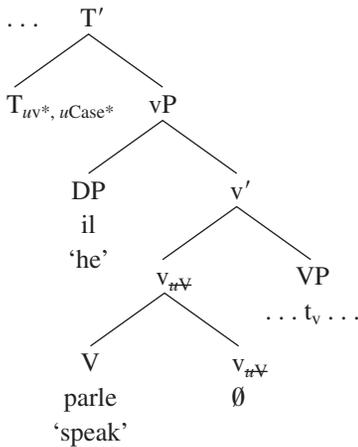
¹⁴ As we will discuss in detail below, manner modifiers are attached to *v* by the same series of operations, but are adjoined to the root of the tree by e-Merge, rather than i-Merge. They subsequently undergo m-merger in exactly the same way, however; indeed, the existence of head-adjoined adverbial modification of this kind is a prediction of Matushansky’s (2006) proposal.

To drive the initial i-Merge movement of a lower head, we assume a simplified version of Adger's (2003) feature system in which all complementation involves categorial feature checking. Movement of a category is triggered when an EPP feature is associated with an unvalued feature; such a movement-triggering EPP property is indicated with *, following Adger. Head movement from a complement XP is thus triggered by an EPP feature linked to the very *uF* that triggers complementation on the selecting head, *uF**.

For example, T selects for a *vP*, so T bears a *uv* feature that requires complementation by *vP*.¹⁵ In French, the *v* head moves to T, so we conclude that French T bears not just *uv*, but *uv**. The *uv** feature on French T triggers movement of *v* followed by m-merger: the *v* head adjoins to T', checking *uv**, and then m-merges with T, producing *v*-to-T verb raising.

We work through a toy derivation of French V-to-T movement in (34) and (35). Each (re)Merge operation is a cycle in which Matushansky's (2006) m-merger operation can apply. In the partially derived tree in (34) of the French sentence *Il parle* 'He speaks', V has already undergone one such operation, checking *v*'s categorial selection *uV** feature. V has therefore adjoined to *v'*, due to the EPP property of *uV** on *v*. V and *v* have subsequently undergone m-merger to create the complex [*v+V*]_v node. (The *v* also has triggered e-Merge of the external argument DP.) We join the derivation at the point at which T merges with the complete *vP*.¹⁶

(34) At the point of merger of T:



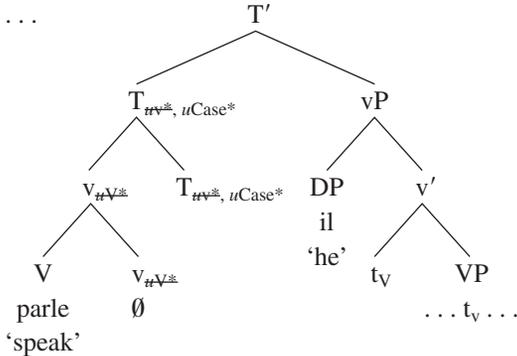
¹⁵ An Asp layer is likely present between *v* and T, but as with VoiceP/*vP* we have kept to T for simplicity of exposition. Nothing about the mechanics described above would change in a more detailed spine; instead, *uv* and *uv** would be located on Asp, rather than T.

¹⁶ Although we assume the copy theory of movement (Chomsky 1995), we use *t* as shorthand for an unpronounced copy in our structures.

We conflate Voice and *v* heads here for ease of exposition; this is not to be taken as a claim that the two heads are not distinct. See Harley 2013, among others, on the empirical necessity of separating the two projections.

Due to the c -selectional uv^* feature on French T , the element that occupies v undergoes head movement and adjoins to T' . (We assume that every category type bears an interpretable feature of that category type; indeed, following Matushansky (2006) and Panagiotidis (2014), that is likely what it means to *be* a category of a given type. So v has iv , T has iT , and so on, against which corresponding uv , uT features can be checked. See Panagiotidis 2014 for an extended discussion.) Following movement and adjunction of v to T' , m -merger applies, producing the $[[v+V]_v+T]_T$ complex head illustrated in (35).

(35) After head movement (re-Merge + Lowering/ m -merger) of v to T has applied:



In contrast, in English, T bears simple uv , not uv^* —the English T head lacks the additional movement-triggering EPP property. English T 's uv feature is checked against v in situ, and so lexical verbs need not raise higher than v in English. In contrast, English auxiliary verbs *do* raise to T . Auxiliaries, then, represent a distinct subcategory (or “flavor”) of v ; call it v_{Aux} . The English T element that selects v_{Aux} bears a uv_{Aux}^* feature. The same process outlined for French above then raises English auxiliaries to T .¹⁷

The key ingredients of our analysis are summarized in (36).

- (36) a. uF triggering complementation by a category headed by iF
 b. uF^* triggering complementation by a category headed by iF and head movement from iF
 c. Different “flavors” of the same category that can have different $*$ values (that is, different head-movement-triggering EPP properties)

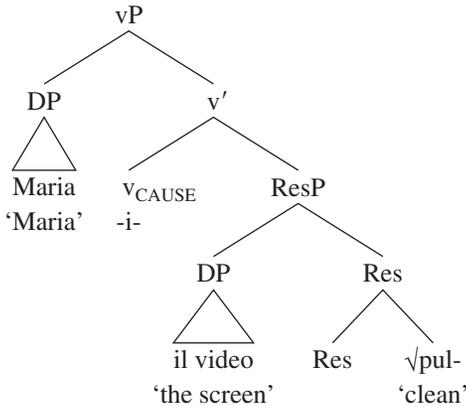
We now apply this technology to the problem of the Talmian parameter.

¹⁷ One clear distinction between English v_{Aux} and regular v is that the former selects for a participial form of the verb, presumably itself categorially identified—for example, as a projection of a PrtcP . The details of this lower selection are not important for our illustration here but see, for example, Carnie 2012 for some discussion of how such a selectional process could be implemented.

4.2 Technical Implementation II: Res-to-v Movement

Our central assumption is that change-of-state *v* heads like v_{CAUSE} and v_{BECOME} share a *c*-selectional feature that ensures they take a result-denoting complement, which we call Res(ult)P, following Ramchand's (2008) terminology.¹⁸

(37) Underlying *v*P substructure of *Maria ha pulito il video*



In (37), the root $\sqrt{\text{pul-}}$ ‘clean’ expresses the result.¹⁹ However, as we have shown, many distinct categories can denote result states, including PPs and adjectives as well as verb roots with appropriate semantic content like $\sqrt{\text{pul-}}$. The interpretability of a given root in a position is determined by the interaction of the lexical semantics encoded by the root and the truth conditions imposed by the structure in which it is introduced. The notion that roots are introduced in an “exoskeletal” functional frame that has an independent structural meaning is central to constructionalist approaches to verb frame alternations like the one developed here. We follow Levinson (2007),

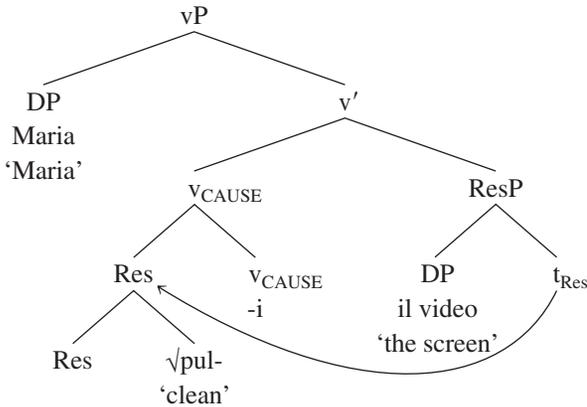
¹⁸ The central proposal here is compatible with a broad range of theoretical variations on the *v*P analysis, including Ramchand's (2008) further articulated structure including a ProcessP, or Pykkänen's (2002), Alexiadou, Anagnostopoulou, and Schäfer's (2006), and Harley's (2013) further articulated structure involving VoiceP, or Travis's (2010) structure including AspP. Alexiadou, Anagnostopoulou, and Schäfer (2015) and Alexiadou (2018) propose to capture some of the effects of our “flavors-of-*v*” proposal (Folli and Harley 2005) by base-generating Causers and Agents in separate projections, Spec,*v*P and Spec,VoiceP, respectively. It is possible that this amendment might allow us to dispense with “flavors” of *v* and ingredient (36c) entirely, in which case there would just be a single change-of-state *v*; see, for example, Alexiadou, Anagnostopoulou, and Schäfer 2015 for discussion. In the context of our proposal here, this *v* would have the *u*Res selectional properties we ascribe to v_{CAUSE} and v_{BECOME} . Crucially, this *v* would have to be absent in non-change-of-state frames, which would raise questions about creation frames like *Maria carved a doll*: Can Voice without *v* act as a categorizer of an adjoined $\sqrt{?}$ Can Voice itself be manner-modified? Due to these and other concerns (e.g., to allow for Voice-less but not *v*-less embedding of all classes of transitive verbs under *faire-par*-style causative predicates; see Folli and Harley 2007, Harley 2013), we think “flavors” are still necessary, but we look forward to further investigation.

¹⁹ We follow Arregi and Oltra-Massuet (2005) in assuming that theme vowels in the Romance languages are associated with *v*; rather than fully illustrate their more detailed structure indicating postsyntactic adjunction of Th to *v*, we locate the theme vowel directly in *v* for simplicity's sake.

among others, in assuming that roots are introduced via adjunction. Here, the root $\sqrt{pul-}$ is adjoined to Res (and m-merged with it), since it provides the predicate of result.²⁰

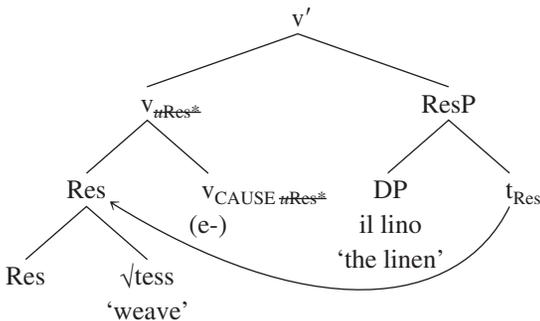
We have shown that Result must be “in the verb” in verb-framed languages. We implement this requirement syntactically by proposing that the complement-selecting feature on change-of-state v is $uRes^*$, requiring head movement from Res to v . The syntactic requirement that Res move to v will ensure that any result-denoting morph occurs in the verb, as illustrated in (38).

(38) *vP substructure of Maria ha pulito il video following Res-to- v movement*



Now consider the derivation of *tessere* ‘weave’ on the Material/Result reading discussed in section 3.3. In such a case, the root of *tessere* names the result, the weaving, and so the root $\sqrt{tess-}$ is adjoined to Res. The derivation of a Material/Result structure, *Maria ha tessuto il lino* ‘Maria wove the linen’, is fully illustrated in (39). The ResP is constructed, denoting the result state $[[il\ lino]\ [Res\ \sqrt{tess-}]_{ResP}$. A change-of-state v bearing the c-selectional feature $uRes^*$ selects the ResP. In consequence, the result-denoting head Res is required to adjoin to v' , checking the $uRes^*$ feature and undergoing m-merger with v .

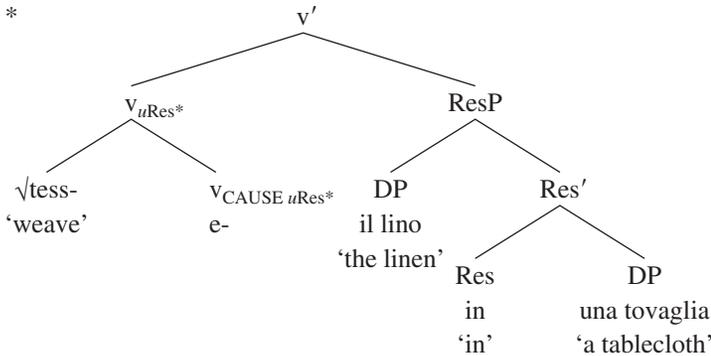
(39)



²⁰ The ResP category is equivalent to what Harley (2005) treats as a “small clause,” in the structures in (11). Note that naming this functional category Res after the syntacticosemantic features that it abbreviates follows standard practice in the field. For example, the syntactic category T is named after the tense features that constitute it; mutatis mutandis for AspP, MoodP, and a host of others.

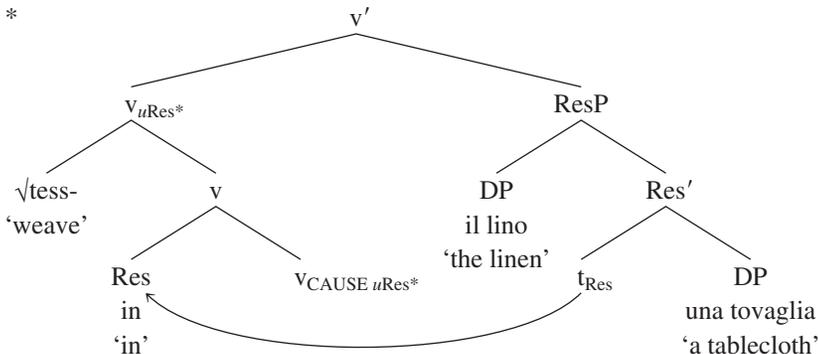
The upshot of the Res-to-v head movement requirement is that no Res can be left stranded in verb-framed languages. This entails that there can be no adjectival resultatives, no verb-particle constructions, and no manner-of-directed-motion constructions: all of them involve stranded Results. Since the Goal PP in the *carve/sculpt* Created Result structure also names the Result, no Created Result structures can occur in Italian, because there can be no structures where Res does not incorporate into v. This is illustrated in (40) for the ungrammatical **Maria ha tessuto il lino in una tovaglia* ‘Maria wove the linen into a tablecloth’.

(40) *Ill-formed due to unchecked uRes* feature*



There are two further derivations made possible by this system of assumptions that we need to consider and rule out. The first involves a derivation with the same base structure as (40), but in which Res moves and m-merges with v before a manner root √ undergoes e-Merge with v', and subsequently m-merges with it in the way described in section 4.3.²¹ The would-be output of this derivation is illustrated in (41).

(41) *

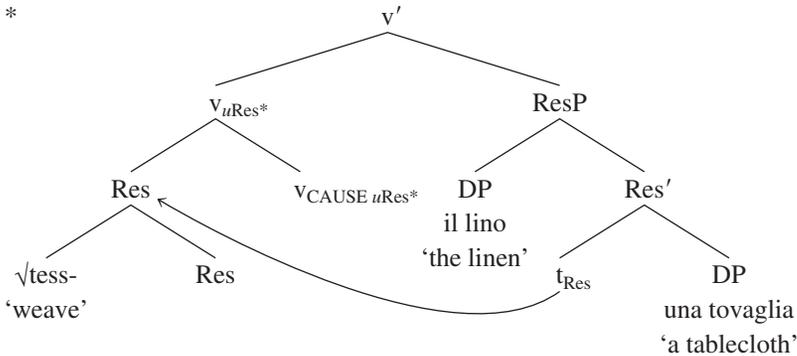


²¹ Prefiguring our later decomposition of Res into the more clearly prepositional Path and Loc, we locate the preposition *in* in the Res head here. We can also rule out a derivation in which Res is itself morphologically null but takes the PP as a complement via our implementation of manner/result complementarity; see the discussion in section 5.2.

This structure violates the manner/result complementarity constraint (e.g., Rappoport Hovav and Levin 1998, 2010). We postpone a full account until section 5.2, after we have presented the technology we adopt for manner incorporation in section 4.3. In a nutshell, we propose that manner incorporation cannot occur *in combination with* Res movement because of the restricted categorization potential of “little-x” heads like *v*, *a*, and *n*.

The second derivation made possible by this system involves adjoining a root as a modifier of Res in a Created Result structure, and then incorporating that complex head into *v*, thereby checking the μRes^* feature of *v* while stranding the DP complement of Res (the “created result”).

(42) *



Nothing intrinsic to the formal system rules out this derivation. What, then, goes wrong? Let us consider carefully what this derivation would mean. How would a structure with both a bare root adjoined to Res and a DP complement of Res be interpreted? If Levinson (2014) is correct about the contribution of *carve/sculpt* verbs adjoined in the Res position, the problem here is not syntactic, but semantic: the structure contains two different specifications of the result of the verbal event. According to Levinson, a verb root of the *carve/sculpt* class adjoined to a Res head is a predicate of entities, not events. The predicate itself names the created result of the event. If both a DP complement of Res and a $\sqrt{\text{ }}$ adjunct of Res are included in the derivation, we have a structure in which a single event role is specified twice, which is prohibited by most theories. The prohibition has been formalized in various ways in the literature, from Chomsky's (1981) θ -Criterion to Heim and Kratzer's (1998) constrained set of compositional rule types. Carlson (1998) argues that the restriction should be derived from the way the cognitive interface individuates events, namely, by virtue of the uniqueness of their participant roles. In short, the derivation in (42) is ruled out because the structure involves a double specification of the Result role.²²

Let us now consider how this system interacts with the other alternation patterns we have discussed above. First, let us look at the *spray/load* alternation in Italian. As shown in (17), a

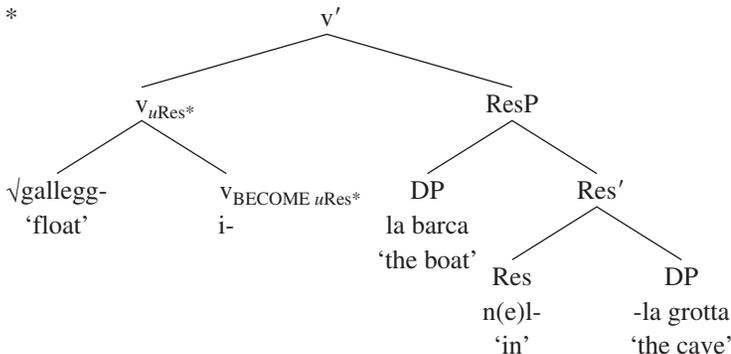
²² Pesetsky's (1995) Target/Subject Matter restriction on the realization of Causer arguments would represent a parallel case, in which the lexical syntax would seem to have room for two elements that are independently able to satisfy the same role, but where including both in a single derivation creates a fundamentally uninterpretable structure.

verb like *caricare* 'load' alternates, appearing in either a Figure-Ground frame or a Ground-Figure frame. The explanation is straightforward: Italian 'spray'/'load' are flexible because they can be understood as naming either of two different result states, as argued by Tenny (1992), Rappaport Hovav and Levin (2005), and others. In the case of 'load', the root can characterize either the state of a container that has been loaded or the state (of a specific amount) of a Theme that has been loaded. Both involve interpreting the verb as a result; that is, they involve adjunction of the verb root to Res, so both are fine in Italian. The PPs in such examples (*con la paglia* 'with the hay' and *sul camion* 'on the truck') do not themselves name the entailed result; rather, they modify it.²³

Turning to English, without the * on *uRes*, (40) is the appropriate structure for the created-result frame *weave the linen into a tablecloth*. The *uRes* complementation feature on English change-of-state *v* is able to check against the satellite Res in situ. Hence, English allows Created Result structures.

Similarly, in manner-of-directed-motion constructions the PP is structurally an unincorporated Res. Hence, it is compatible with English and its in-situ Res-checking, but not with Italian and its *uRes** feature on *v*. The relevant structure for an impossible manner-of-directed-motion construction such as (1b) **La barca galleggiò nella grotta* 'The boat floated into the cave' is illustrated in (43). (See section 5 for discussion of why combining Res-movement with manner-modification of *v* is ungrammatical.)

(43) *Ill-formed due to unchecked uRes* feature*



Again, to derive the corresponding well-formed English sentence, it suffices to remove the head movement requiring * on *v*'s *uRes* feature.

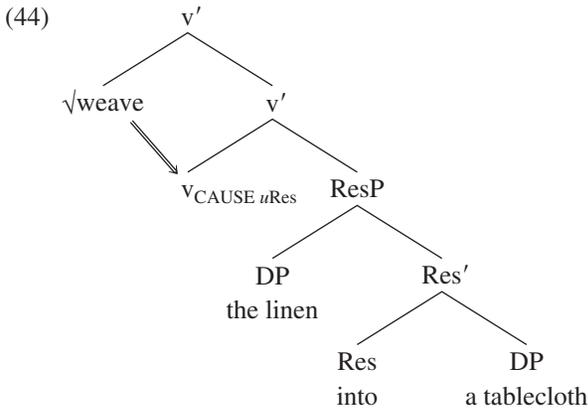
²³ Among other things, these PPs can be dropped; (ia–b) are grammatical without the relevant PPs.

- (i) a. Gianni ha caricato il camion.
Gianni has loaded the truck
'Gianni loaded the truck.'
- b. Gianni ha caricato la paglia.
Gianni has loaded the hay
'Gianni loaded the hay.'

4.3 Technical Implementation III: Manner Incorporation

Given the discussion above, then, we understand how a result-denoting complement such as *into a tablecloth* or *into the cave* can be expressed separately from the verb in English, but not in Italian. How, then, does a manner-denoting element such as $\sqrt{\textit{weave}}$ or $\sqrt{\textit{float}}$ come to be realized in the *v* position in the English sentence?

The head movement mechanism proposed by Matushansky (2006:86–89) predicts the existence of just such a possibility. We propose that manner incorporation is implemented via the e-Merge equivalent of Matushansky’s i-Merge head movement structure. If, instead of selecting an element from *within* the complement for Merge (i.e., instead of i-Merge), the derivation selects an element from the Numeration, that element can be e-Merged at the root of *v*’ and undergo merger to adjoin to *v*, exactly as illustrated above for the i-Merge option. Given Matushansky’s technology, it would be surprising if such an operation did not exist; e-Merge and i-Merge are equally predicted to be possible, from a Minimalist viewpoint. This portion of the derivation is illustrated in (44).



The interpretation of the adjoined $\sqrt{\textit{weave}}$ element as a manner adverbial follows naturally from this structure: the sister-to-*v*’ position is the classic locus for adverbial modification in general (see, e.g., Carnie 2012). Alexiadou and Lohndal (2011) also make exactly this point about the adverbial interpretation of e-Merged roots. The fact that the root subsequently undergoes merger with the *v* head does not affect its LF interpretation, which proceeds as for any adverbial; $\sqrt{\textit{weave}}$ is interpreted as an event modifier, contributing its content via Predicate Modification precisely as expected within a neo-Davidsonian event semantics (see, e.g., Pylkkänen 2002, Levinson 2007, Ramchand 2008).

Note that this operation is just as available in Italian as in English; in fact, it provides the content for Res in Product/Creation structures like *tessere la tovaglia* ‘weave the tablecloth’. Nothing about the syntax or morphology of Italian prevents e-Merge of a manner-denoting verb root at the *v*’ level. Manner-of-result clauses are unavailable because of the need for EPP *uRes**-feature checking in the Italian *v*, not because e-Merge is impossible in Italian.

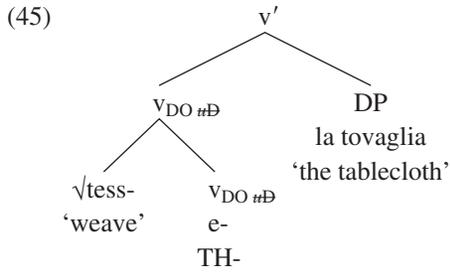
In the next section, we spell out our structural analysis of Product/Creation structures, propose an explanation for manner/result complementarity, and develop the internal structure of Res and some consequences of the account.

5 Implications and Consequences

Having established the technical details of our proposal in terms of Res-to-*v* movement parameterization, we now discuss how it relates to several issues in the Talmian landscape. First, we discuss whether the parameter is a property of all elements of category *v* in a given language or varies with *v*'s featural content. As noted above, we consider that variation in subtypes of *v* is important, given the availability of the Product/Creation structure in Italian; we discuss this point in more detail in section 5.1. Having established our analyses of the full *carve/sculpt* paradigm, we turn to the implementation of the manner/result complementarity constraint: why can't a verb simultaneously host a Res head and a manner-denoting root? We propose that this is because little *v*, as a categorizing head, can only categorize a single incorporated item (section 5.2); this, we assume, is a general property of categorizing heads. Next, we turn to the well-documented problem of the multifaceted behavior of certain verbs in otherwise relatively strict languages; accounting for these subpatterns requires elaborating the internal structure of Res into Path and Location projections, along lines previously developed in the literature (section 5.3). We then look in further detail at satellite-framed English, which allows Result to be either expressed as a satellite or incorporated into the verb; this requires a slight adjustment to the conception of the *uRes* parameter, such that the movement-triggering *uRes* feature on *v* is underspecified for * in English, rather than mandatorily lacking * (section 5.4).

5.1 Other Flavors of *v*

Is *v* in general subject to a *uRes*-checking requirement in Italian? Or are there different subtypes of *v* with different checking requirements? In fact, it is clear that the Res-checking requirement applies only to the change-of-state flavors of *v*: CAUSE and BECOME. On the creation reading of *tessere* 'weave', the verb root is interpreted as a manner modifier; it describes the manner in which the creation of the tablecloth comes about. We conclude that the creation reading involves a different flavor of *v*—namely, *v*_{DO}. The *v*_{DO} head does not take a ResP complement; rather, it selects for a DP (Folli and Harley 2005). This DP does not undergo head movement into *v*; thus, *v*_{DO} has a simple *uD* feature determining its selectional properties. Since this selectional feature of *v*_{DO} allows checking of *uD* in situ, a manner element *v*_{tess-} may e-Merge, adjoining to *v*', and undergo m-merger with *v*_{DO}, producing *tessere la tovaglia* 'weave the tablecloth'; see (45). We thus exploit the idea that the syntax of Italian is able to realize e-Merge of a manner element, as long as the *v* in question does not select for ResP.



Confirmation of the view that the availability of $\sqrt{\text{e-Merge}}$ depends on the particular flavor of v comes from the interaction of animacy with the creation vs. result interpretations of these verbs. In Folli and Harley 2005, we show that inanimate external arguments are felicitous as Causer subjects of v_{CAUSE} in both Italian and English, but infelicitous as subjects of activity verbs. There, we attribute this to the typical inanimate argument's inability to serve as a true Agent subject of a v_{DO} predicate, which requires teleologically capable external arguments (Folli and Harley 2008); most inanimate external arguments are not teleologically capable.²⁴ This difference manifests itself as a preference for a resultative small clause in constructions with inanimate (teleologically incapable) subjects. The reflex of the presence of a small clause in the following examples is the particle *up* in English, and the reflexive *si* and auxiliary *essere* 'be' in Italian:

(46) The washing machine chewed the laundry #(up).

(47) Il mare #ha/si è mangiato la spiaggia.
 the sea #has/REFL is eaten the beach
 'The sea ate the beach up.'

These facts suggest that we can use animacy (appropriately controlling for teleological capability) as a diagnostic for the flavor of a given v : a verb that insists on an animate external argument is likely to involve v_{DO} , with consequences for the kinds of complementation structure it can select (Folli and Harley 2005, 2007, 2008, 2012). The v_{DO} flavor typically selects a nominal complement (sometimes an event-denoting nominal), while, as discussed earlier, v_{CAUSE} selects a ResP (small clause) complement. Martin (2015) and Alexiadou, Martin, and Schäfer (2017) develop this connection between (in)animacy, causation, and result entailments further, providing additional tests and data in French and German.

Applying this diagnostic to our Italian alternating verbs, we discover that the Product/Creation interpretation is infelicitous with inanimate subjects (48a), pace footnote 24, while inanimate subjects are felicitous with the change-of-state Material/Result reading (48b).

²⁴ Note that emission verbs involve v_{DO} predicates and also permit inanimate external arguments (*The kettle whistled*, etc.); the crucial constraint on these atypical inanimate subjects of v_{DO} is that they be teleologically capable; they are the exception that proves (i.e., tests) the rule. In the case of creation verbs, a teleologically capable inanimate subject might be something like a printer: *The ink-jet printer printed the photo*, with *print* as a manner-of-creation verb. See Folli and Harley 2008 for discussion of teleological capability.

- (48) a. #La roccia che è rotolata giù ha modellato una farfalla (sulla spiaggia).
 the rock that is rolled down has modeled a butterfly (on.the beach)
 'The rock that rolled down modeled a butterfly (on the beach).'
- b. La roccia che è rotolata giù ha modellato la sabbia.
 the rock that is rolled down has modeled the sand
 'The rock that rolled down modeled the sand.'

We take this pattern to suggest that the two readings of these verbs involve distinct flavors of *v*: the creation reading (whose object is a true Incremental Theme in the sense of Dowty 1991) requires v_{DO} and hence is infelicitous with an inanimate Causer subject that cannot serve as a teleologically capable Agent.²⁵ The corollary is that the complement to *v* on the Product/Creation reading of these verbs is itself the created nominal. This is consistent with the treatment in Folli and Harley 2005, where true Incremental Themes, whose extent measures out an event, must be complements of v_{DO} .²⁶ The pattern in (48a) shows that creation frames do not have a ResP complement whose Res head denotes a state of being-in-existence; more generally, it mitigates against any small clause analysis that treats creation verbs as change-of-state verbs involving a null existence predicate as the end state (contra the spirit of the treatment in Beavers 2008 and Dobler 2008). In contrast, (48b) shows that the change-of-state Material/Result reading of these verbs does require a ResP (small clause) complement, which in turn is compatible with an inanimate external argument serving as the Causer argument of the selecting v_{CAUSE} .

The key point for the current discussion is that the *uRes** feature setting in Italian is only relevant for flavors of *v* that select a ResP, as expected. Flavors of *v* that select some other type of complement, such as v_{DO} , are compatible with direct manner modification; hence, the Product/Creation structure illustrated in (45) is available in Italian.²⁷

5.2 Manner/Result Complementarity

Rappaport Hovav and Levin (1998, 2010, among others) observe that there seems to be a prohibition against “dual” lexicalization of both manner and result content in a single verb, and they propose (2010:25) to encode this restriction as a constraint on the way that verb roots are associated

²⁵ Modulo the constraints on teleologically capable inanimates mentioned in footnote 24. A reviewer raises an example found with a Google search: *Il fiume ha intagliato il canyon . . .* ‘The river carved the canyon . . .’. The first author finds the Italian example infelicitous on a creation reading. However, insofar as it is possible—and in English, where the expression is well-formed—we assume that a river counts as a teleologically capable inanimate agent for the purposes of canyon-creation.

²⁶ Schäfer (2012) extends the proposal to a variety of causal constructions, demonstrating the broad validity of a strong connection between the presence of v_{CAUS} and a resultative structure.

²⁷ Thanks to Jaume Mateu for discussion of this point. An account that rules out manner modification for Italian-type languages quite generally predicts that verbs of creation with manner-denoting roots should not be well-formed in these languages; as noted above, the fact that these languages differentiate between creation verbs and change-of-state verbs in this regard illustrates the need for a more fine-grained analysis, made possible here by attending to the different selectional properties of different types of *v* head. See Martínez-Vázquez 1998 for relevant discussion.

with event structure schemata: a root can only be associated with one position in a given lexical-conceptual structure.²⁸

In the current framework, the problem is slightly different. Our formalism inherently encodes manner/result complementarity for monomorphemic roots, in that a given root can only be adjoined to one position in the exoskeletal verbal structure. However, in our account, the syntax, including adjunction, is fully productive in both Italian and English, so we expect both e-Merge and i-Merge to be possible in both languages. What, then, prevents a manner-modifying root from e-Merging with *v* in addition to an i-Merged Res complement? Such a derivation, illustrated in (41), would produce a kind of V-V or P-V compound, where one element encoded Manner and the other Result, something like *Gianni ha scolpi-intagliato il pezzo di legno* ‘Gianni has sculpt-carved the piece of wood’ or *Gianni ha in-tessuto il legno* ‘Gianni has in-woven the wool’ (or *tess-in-ito il legno* ‘wove-in-en the wool’), yet such dual-specification structures are absent from both English and Italian.

We argue that manner/result complementarity derives from a restriction imposed by the morphology-syntax interface. The syntactic operations needed to generate such a structure are available, but a well-formedness constraint is violated when a root undergoes m-merger with a *v* head that has already undergone m-merger with something else.

Several approaches are possible. Perhaps the m-merger cycle can be calculated only once for a given projection (see Choi and Harley 2019 for a constraint of this type on another morphological operation). Perhaps there is a morphological constraint in nonincorporating languages such as English or Italian against having two roots in a single *v* (see Choi 2011 for relevant discussion). However, another, more fully fleshed-out proposal already exists in the literature, in the form of a categorization constraint proposed by Embick (2010). We adopt his approach here.

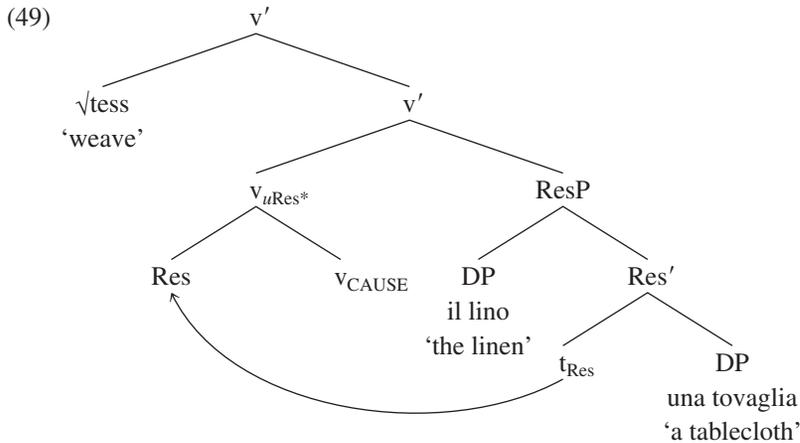
Embick (2010) argues that roots are subject to a categorization restriction. Roots *must* combine with a “little-*x*” head to receive a category; uncategorized roots are ill-formed.²⁹ In combination with this, Embick proposes the key constraint that we make use of here: a single *v* head can categorize only one element. The idea is that little-*x* categories determine or check the category of an element they undergo m-merger with only once.

Let us assume that the m-merger operation entails categorization of whatever element is undergoing m-merger. This idea is central to syntactico-centric accounts of derivational morphology: [*category*]_n becomes adjectival [[*categori*]_n-*al*]_a because incorporating and m-merging into the little-*a* head realized by *-al* is the very operation that changes the category of *category*. We

²⁸ See, however, Beavers and Koontz-Garboden 2012 for a contrary view. For a reply in defense of the complementarity hypothesis, see Levin and Rappaport Hovav 2013.

²⁹ Embick (2010) exploits his categorization constraint in analyzing the Talmian parameter. His notion is that the problem with manner-of-directed-motion structures in verb-framed languages is that their result-denoting verb roots would be ill-formed if stranded, since without incorporation/conflation with *v* they would remain uncategorized. For Embick, then, the Talmian pattern is due to root stranding, not (as in the current proposal) any requirement of the *v* head. Unlike the current proposal, however, Embick’s approach fails to explain why adjectives, PPs, or particles cannot occur in Result position downstairs in verb-framed languages. They are categorized, certainly, so the root categorization constraint would not be violated by such structures. In essence, Embick’s proposal is a morphological variety of a deficiency account: Italian lacks roots that can occur on their own in the Result position.

assume that root elements are special in that they *must* undergo m-merger with a categorizing head. (Though common in the literature, this assumption is not always adopted. See Alexiadou and Lohndal 2017 for a recent overview of approaches to root categorization.) On the present view, a root cannot simply remain standing alone in a phrasal adjunct position, sister to v' , for it does not itself have a category and is therefore not legible at the interface. If, as Embick proposes, a given v head can categorize only once, we derive manner/result complementarity. Consider the derivation that would produce the ill-formed structure illustrated in (41). The step prior to the structure in (41) is illustrated in (49), where the root has e-Merged with v' but has not yet undergone m-merger with v .



Here, a manner root \sqrt{tess} is e-Merged with a v' that has already undergone m-merger with an i-Merged Res. The v head has recategorized Res by virtue of m-merging with it (the Res head is now part of a result-naming verb). The manner root \sqrt{tess} , e-Merged with v' , now cannot be categorized by m-merger with the v , which has already used up its categorization abilities. The manner root thus has to remain adjoined and uncategorized, which roots cannot do.³⁰ The appeal of this approach is that it produces the complementarity result by ascribing a general property to all category-bearing heads, rather than stipulating a restriction that applies specifically to verbs.

5.3 Manner Leakage in Verb-Framed Languages: Decomposing Res

Although the Talmian parameter is clearly active in Italian in that manner-of-directed-motion constructions are quite rare and certainly not productive in comparison to English, the literature

³⁰ Note that in previous analyses of bimorphemic change-of-state verbs involving particles such as *di-* or *in-*, it has been proposed that the particle realizes a Result while the root $\sqrt{\quad}$ is a v -adjoined manner element, with incorporation of Res into v creating the complex verb $[[de]_{Res}-[[stroy], \emptyset_v]]_v$ (Marantz 2001, Harley 2007). The proposal made here entails that this is not correct. Instead, these predicates must involve adjunction of the root element to the Res head realized by the particle; they are thus categorized by Res, not by v . Subsequent head movement of Res to v recategorizes the whole Res complex, as in (38).

has identified certain exceptions in Italian and related languages. As has frequently been noted (see, e.g., Folli 2002; and see Beavers, Levin, and Tham 2010 for a comprehensive review of this issue), certain manner-of-motion verbs like *correre* ‘run’ and *volare* ‘fly’ can cooccur with a Goal-denoting PP complement in Italian.

- (50) a. Gianni è corso al negozio.
Gianni is ran to.the store
‘Gianni ran to the store.’
b. L’aereo è volato sotto il ponte.
the.plane is flown under the bridge
‘The plane flew under the bridge.’

How can the head movement parameter we propose be adapted to allow for such lexeme-specific “leakage”?

In fact, the feature-based checking account can be relatively easily adapted to allow specific verbs to permit stranding of Goal PPs, just as English allows the subclass of auxiliary verbs to undergo head movement to T. The feature-based view of parameter setting due to Borer (1984) and espoused by Chomsky (1993 et seq.) is well-suited to provide for such lexeme-specific behavior.

Folli (2002) showed that the class of apparent manner verbs that permit the expression of a Goal PP in Italian in fact have Path semantics contained within them (just like *andare* ‘go’, the generalized motion verb), so they are not true exceptions to the general pattern of Italian: the verb root encodes the Path component of meaning. The question is why these verbs allow a prepositional expression of the location that serves as the endpoint of the path.

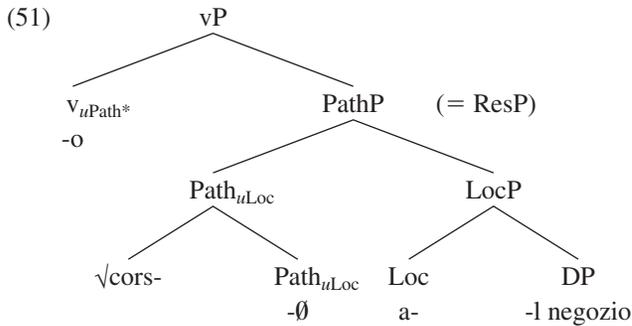
The key to this variation is the fact that the category “Result” is actually complex, decomposing into two independent semantic components: the path of motion and its location endpoint (as reflected in English complex prepositions *into*, *onto*, and so on, illustrated in (4)). Following Koopman (2000), Gehrke (2008), Ramchand (2008), and Svenonius (2008), among others, we now present a fuller, fine-grained internal structure for ResP, decomposing it into (minimally) two components: a scalar projection, which we label *PathP*, and a terminus point specification, labeled *LocP*.³¹ (It is worth noting that Levinson (2014), in her treatment of the Product/Creation vs. Material/Result alternation, proposes exactly this structure as well.) Rather than *uRes** *simpli-citer*, the Italian *v* head has a *uPath** feature requiring movement of Path to *v*, expressing the idea that the Path component of the Result semantics is encoded in the *v* head.³²

³¹ In such approaches, English examples like (19c) wear this complex internal structure on their sleeve: in the verb phrase *carve the wood into a doll*, *to* realizes the Path head while *in* realizes the Loc head.

³² The necessary presence of the scalar projection within the ResP complex is consistent with Bobaljik’s (2012) generalization concerning the morphological implications of the forms of deadjectival verbs built from suppletive adjectives. Scalar structure must be present in such verbs to account for the fact that they are built from the comparative forms rather than the positive forms of their adjectives: *to better*, not **to gooden*; *to worsen*, not **to bad(den)*; also *migliorare* ‘to better’, from *migliore* ‘better’, not **buonare* ‘to gooden’, from *buono* ‘good’; ditto for *peggiore* ‘worsen’, from *peggio* ‘worse’, rather than **cattivare* ‘to badden’, from *cattivo* ‘bad’.

The key to these exceptional verbs lies in varying the selectional properties of the lower Path head. Almost all change-of-state predicates in Italian also require conflation of the endpoint with the scalar component. That is, the Path head usually has a *uLoc** feature requiring overt checking, and subsequently the *uPath** feature of *v* ensures that all the separate components of the complex Result complement are conflated and realized in the verb. (This is why we were able to treat “Res” as a simplex unit in the basic analysis presented in section 4.2.) Result verbs—including *intagliare* ‘carve’ and *tessere* ‘weave’ on the Material reading, *caricare* ‘load’ on either of its readings, and all other normal change-of-state verbs such as *pulire* ‘clean’—require head movement from Loc into Path and thence to *v*. Such verbs form a class. Any Path head of that class selecting a LocP will have a *uLoc** feature, mandatorily triggering head movement.

The exceptional facts in (50), however, show that a few verbs involve a Path that can strand Loc—that is, a Path that has a *uLoc* feature, rather than a *uLoc** feature. For these verbs and these verbs only, a terminus-specifying Locative PP may be left downstairs in Italian, as in (51).



As argued by Folli (2002), then, these apparent “manner” verbs are not manner verbs at all; their lexical content is actually the Path head of the structure. This is apparent in the bleaching of the verbal entailments related to manner in sentences with and without the Goal PP.

- (52) a. Gianni ha corso. #Ha preso la macchina.
 Gianni has run has taken the car
 ‘Gianni ran. #He took the car.’
- b. Gianni è corso al supermercato. Ha preso la macchina.
 Gianni is run to.the supermarket has taken the car
 ‘Gianni ran to the supermarket. He took the car.’
- c. Gianni è/*ha volato a casa (quando ha saputo che suo figlio stava male).
 Gianni is/*has flown to home (when has known that his son was poorly)
 ‘Gianni flew home when he learned that his son was unwell.’

The verb root in (52b–c) is a modifier of the PathP constituent, rather than of the vP constituent; consequently, it is interpreted as entailing something about the traversal of the path, not about the manner of motion. In (52b), the content of *corso* is communicating simply that Gianni traveled rapidly along the path, not that he actually ran using his legs. Similarly, in (52c) Gianni did not take a plane to get home; rather, he just went home speedily.

This in turn relates to the discussion in Folli and Harley 2006 regarding the presence or absence of temporal overlap between the manner and either the causation or path component in verbs of caused-manner-of-motion in English. Following observations by Levin and Rappaport Hovav (1995, 1999) and Ritter and Rosen (1998), in Folli and Harley 2006 we note that when the manner verb modifies (i.e., adds entailments to) the causation component of a motion construction, there need be no temporal overlap between the manner event and the result event, as in (53a). In contrast, when the manner verb introduces an entailment concerning the traversal of the path, the result event of motion and the manner event must be completely contemporaneous, as in (53b).

- (53) a. Mary whistled the dog to her side.
 whistle(e) > [temporal precedence] go.to.side(dog, e)
 b. Mary rolled the log to the pile.
 roll(e) = [temporal coincidence] go.to.pile(log, e)

We are seeing the same effect here as in (52): the verb *correre* is interpreted as a manner of path traversal rather than a true manner of motion due to its location as a modifier of PathP; this interpretation is a straightforwardly compositional one. Within the framework we have proposed, this is the only kind of “leakage” that is permitted. See Tomioka 2011 for a related analysis of different positions for verb roots in Japanese complex motion predicates.

A similar analysis accounts for the behavior of “pure” change-of-state verbs in Romance, which permit adjectival complements in the same way a Germanic resultative construction does. Such verbs include Italian *rendere* ‘render’ and *divenire* ‘become’.

- (54) a. La guida ha reso più interessante la visita.
 the guide has rendered more interesting the visit
 ‘The guide made the visit more interesting.’
 b. La visita è divenuta più interessante.
 the visit is become more interesting
 ‘The visit became more interesting.’

These predicates necessarily incorporate Path (i.e., they entail a change of state), but select for the *uLoc* variety of Path, rather than the normal Italian *uLoc** Path. (In this case, LocP could be perspicaciously renamed StateP or something similar, but its contribution to the composition of event structure is parallel, providing a nonlocational threshold defining the endpoint of the scalar change introduced by Path.) Consequently, with these verbs, the end state of the change can be syntactically independent, encoded as a stranded resultative adjective that does not need to undergo head movement to Path and thence to *v*. (Thanks to a reviewer for helping us clarify this point.)

5.4 Satellite-Framed Languages: Optionality vs. Requirement

We have proposed that in satellite-framed languages, change-of-state *v*’s *uRes* feature (strictly speaking, its *uPath* feature, as we have just noted) may be checked without triggering head movement, allowing for manner incorporation in change-of-state structures via e-Merge of a

manner element, followed by m-merger. English makes very productive use of this option, permitting manner incorporation in a number of “unselected object” constructions, including the *way*-construction, the fake reflexive construction, and others, illustrated with the naturally occurring examples in (55).

- (55) a. Babe Ruth homered his way into the hearts of America.
(Jackendoff 1990:219)
b. Peggotty, with some uneasy glances at me, curtsied herself out of the room without replying.³³
c. It amazed the cast and crew with its ability to smoke the tires into oblivion.³⁴

However, it is clear that satellite-framed languages like English also permit Res-movement. Res-to-v movement in satellite-framed languages is sometimes mandatory, as with verbs like *compose*, which reject resultative and particle constructions, and sometimes optional, as with *open*, which can occur either as a verb on its own (a case of Res-movement of $\sqrt{\text{open}}$) or in a particle construction (Res-stranding+manner incorporation of $\sqrt{\text{open}}$).³⁵

- (56) a. John opened the window. (Res-moving, $\sqrt{\text{open}}$ = Result)
b. John opened the window up. (Res-stranding, $\sqrt{\text{open}}$ = Manner)

The different structural sources of the verb root in the two sentences above can be diagnosed by *re*-prefixation, which requires movement from Res, as proposed in Harley 2004 (but see Marantz 2001 for a different perspective).

- (57) a. John reopened the window. (Res-moving i-Merge, *re*-affixation possible)
b. *John reopened the window up. (Manner-adjunction e-Merge, no *re*-affixation possible)

We have proposed that the i-Merge requirement in Italian is due to the Res* selectional feature on v. Given that this requirement is not present in English, we can think of the English setting of the parameter in one of two ways. It could be that English change-of-state v *necessarily* lacks the Res* feature (that would be a kind of negative version of the positive setting), or it

³³ In *David Copperfield*, by Charles Dickens. See <https://books.google.com/books?id=9g0ws-kwubYC&dq=David+Copperfield>.

³⁴ <http://www.hotrod.com/features/history/stories/1407-behind-the-scenes-of-1970-pontiac-gtos-from-dazed-and-confused/>, accessed on 1 June 2016.

³⁵ Indeed, as noted by a reviewer, this alternation also occurs with the Material reading of *carve* in English: *Mary carved the wood* (Res-moving, $\sqrt{\text{carve}}$ = Result) vs. *Mary carved the wood up* (Res-stranding, $\sqrt{\text{carve}}$ = Manner). The creation reading of *carve*, on the other hand, forbids the addition of a particle (**Mary carved the whistle (*up)*, impossible on the reading where *the whistle* is created by the carving). This is predicted by our analysis, where created objects are the complement of v_{DO} and serve as Incremental Themes, measuring out the event. There is no ResP in the structure of a creation verb that could be lexicalized by a particle. The reviewer suggests an alternative account according to which the creation reading involves a null existence particle in Res, in necessarily complementary distribution with *up*. See the discussion of (48a–b) for why we do not entertain this possibility. Thanks to the reviewer for bringing this paradigm (from Hopper 1985) to our attention.

could be that *v* simply doesn't care what kind of Res feature it is bundled with (an underspecified approach to the "off" setting). If we adopt the latter view, we can think of English as permitting *optional* bundling of the * feature with change-of-state *v*'s selectional Res feature. This captures the intuition behind deficiency approaches, which observe that satellite-framed languages seem to allow a superset of the structures permitted in verb-framed languages. There is an analogy here with phonological typology: languages that permit syllables with coda consonants, for example, also permit syllables without codas, while the reverse is (obviously) not true. Optional bundling of the movement-triggering Res* feature with *v* is expected if we adopt an underspecification approach to the parameter.

A similar approach is needed for unergative verbs and light verb constructions in both Italian and English. There are often two legitimate realizations of unergative structures with v_{DO} : English *dance* vs. *do a dance*, and Italian *camminare* 'walk' vs. *fare una camminata* 'do a walking', and so on. See Folli and Harley 2012 for discussion of the latter. If v_{DO} 's complementation feature is underspecified for the EPP property and is thus optionally bundled with *, the variation observed in unergative N-incorporation can be accounted for.

Here, however, the need for morphological filters related to those proposed by Acedo-Matellán (2006, 2010) or Real Puigdollers (2011) becomes evident. Specific Vocabulary items' morphological requirements can override *uRes*~*uRes** optionality in English. With such items, truly morphological requirements constrain the free application of syntactic possibilities. In particular, derivations of verbs with morphologically bound roots will fail in the morphological component if they happen to be selected by a *v* bundled with *uRes* rather than *uRes**, since the structure would strand the root. As noted above, English *compose* rejects occurrence with a particle, in contrast to semantically similar *write*—one can *write up an idea* but not **compose up an idea*. James Higginbotham (pers. comm.) frequently commented on the very salient difference between 'come in' languages and 'avanti' languages, or 'give up' and 'resign' languages. Our proposal is that at the point of Vocabulary Insertion, a bound verb stem like \sqrt{pose} is conditioned by one or more of the particular particles in Res. For example, \sqrt{pose} might be realized by a contextually conditioned Vocabulary item of the type in (58).

$$(58) \sqrt{\ } \leftrightarrow pose / [\{ \{ com-, im-, re-, de-, trans-, op-, pro- \} \}_{Res} [\text{ — } v]]_v$$

If the context for insertion does not match the structural description that conditions a particular Vocabulary item, the form will not be generated, even if the syntax produces it. It is important, however, that the morphological component acts as a filter on derivations, not as a driver of them (contra Acedo-Matellán 2006, 2010, Real Puigdollers 2011). See, for example, Harley 2014 for discussion of morphological conditions on root insertion.

6 Conclusions

We have argued that the lack of flexibility in change-of-state constructions in verb-framed languages is a reflex of a head movement requirement in those languages. We modeled this requirement as a feature-checking requirement on change-of-state *v* flavors: Italian has a *uRes** on its change-of-state *v*, not a simple *uRes*. The proposal is a typical parametric account, which can

group together the varied phenomena of Talmy's generalization, including directed manner of motion, verb-particle, and adjectival resultative. It is a parameter of a very well-studied type, a syntactic, feature-based one that does not depend on assuming that verb-framed languages are deficient in either their syntax or their lexical inventory.

We have not yet addressed, however, how the account extends to two other constructions that have been suggested to correlate with Talmy's parameter: double object constructions and compounding (example (2)). We will end with a few brief comments on them.

The prohibition on manner-of-directed-motion, verb-particle, and adjectival resultative constructions derives from the requirement that *uRes** be checked in verb-framed languages. How could this requirement explain the absence of double object constructions in these languages?

It is possible that the availability of double object constructions can be unified with the account of verb-particle constructions. Harley (2007) highlights the idea first proposed in Pesetsky 1995 and later taken up in Harley 2002 that double object constructions involve a null particle. Although *to*-dative structures are derived in the usual way, with the verb root base-generated in Res and moving to *v* (see Bruening 2010), double object structures involve a null particle denoting possession. (The null particle is labeled G in Pesetsky 1995, P_{HAVE} in Harley 2002.) This particle is base-generated in the Res position. The verb root in double object structures must then be manner-adjoined to *v* (at least in cases where the verb is not itself the light verb; contrast *mail John a letter* with *give John a letter*). If this general approach is on the right track, it clearly interacts with the current account to predict that Italian will lack double object structures, as they are effectively disguised verb-particle constructions, and verb-particle constructions are impossible in a *uRes** language like Italian.³⁶ The proposal thus has the potential to capture in a unified way the key typological characteristics mentioned in (2), in a Baker-style "macroparametric" fashion (Baker 1996, 2001).³⁷ See also Snyder 1995, 2001 and Beck and Snyder 2001, which

³⁶ In relation to English, the proposal also has the potential to explain the long-debated difference in the productivity of double object constructions between Latinate verbs like *exhibit* and Anglo-Saxon verbs like *show*. Verbs like *exhibit* and *compose* require *uRes** as part of their licensing condition, with *ex-* and *com-* base-generated as the realization of Res. They hence cannot occur in the double object construction. The roots of verbs like *show* do not require a *uRes** feature to license insertion and permit both prepositional datives and double object constructions. See Harley 2009 for explicit consideration of the overall pattern and a detailed application of the analysis to the within-English variation.

³⁷ A reviewer notes that the resultative/double-object-construction correlation still requires careful typological investigation, citing Japanese and Russian as potential counterexamples. While it is true that detailed, language-specific research on this topic is certainly called for, we simply note that the correlation has been identified in previous work and our account predicts that it should exist. On the other hand, the existence of other dative-accusative structures exhibiting double-object-construction asymmetries does not necessarily bear on the predictions made by the account, given the independent possibility of applicative structures (Pylkkänen 2002, Anagnostopoulou 2005, among many others).

Independently, another reviewer raises the question of how applicative structures might interact with the current proposal, asking whether a *uRes** setting is incompatible with a null Appl. We think that standard treatments of applicatives are perfectly compatible with our analysis. For example, within the current framework, it is easy to imagine a technical approach to applicatives in resultative structures, involving sequences of Res-feature checking: Result-state Appl would bear a Res feature that *v*_{CAUSE} could check, and itself select for a ResP. This is a subcase of a bigger issue with applicatives: applicatives intervene between two projections that would normally stand in a selectional relationship (e.g., between Voice and *v*P, or between *v* and ResP), but do not interfere with the satisfaction of this selectional relationship. See Wood and Marantz 2016 for an analysis that addresses this issue.

demonstrate a correlation between these structures in acquisition; our proposal allows for a treatment of this pattern as a clear example of parameter setting via positive evidence.³⁸

In the current framework, however, we do not predict any correlation with noun-noun compounding, of the kind suggested by Snyder (1995). We have no reason to think that a change-of-state *v* is involved in the formation of noun-noun compounds in either English or Italian. If valid, this correlation would have to find another explanation.

To conclude, we have presented a syntactic implementation of the Talmian parameter that captures the parametric character of variation between verb-framed and satellite-framed languages, and appropriately groups the relevant constructional correlates of the parameter together. The specific implementation nonetheless allows for the possibility of mixed behavior to be associated with specific lexical items in both typical verb-framed and typical satellite-framed languages. This is very much in the spirit of Beavers, Levin, and Tham (2010), who note that the picture that emerges when a broader range of languages is taken into consideration requires an account of complexity that draws on a range of grammatical properties.

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³⁸ Thanks to Luigi Rizzi for discussion of this point.

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