Talmy's Typology Revisited: A Spanning Approach

Abstract. We dispute Folli and Harley's (2020) account of Talmy's typology, as it does not derive the unavailability of satellite-framed constructions in verb-framed languages, and it fails to predict the existence of weak satellite-framed languages like Latin and Slavic (Acedo-Matellán, 2016). We propose an alternative approach based on Spanning (Svenonius, 2016). Variation stems from the distribution of PF-interpretable features on the resultative head Res. Depending on the language, this head may or may not bear features triggering lexical access (w) and linearisation (@). Conforming with minimalist desiderata, our account captures a wider range of Talmian patterns and produces some novel successful predictions.

Keywords: Manner/Result complementarity, Head Movement, particles, prefixes, Talmy's typology, Spanning

1 Introduction

Predicates of change of state and location include two semantic components: *result* and *manner*. Talmy's (2000) typology captures the variation in how these components are expressed. Languages like English encode the result verbally (1a) or non-verbally (1b):

(1) a. The door was open and Nureyev entered$_{result}$ (dancing$_{\text{manner}}$).

b. The door was open and Nureyev danced$_{manner}$ in$_{result}$.

In other languages like Catalan the result of the event needs to be expressed verbally:

(2) a. La porta era oberta i Nureyev entrà$_{result}$ (ballant$_{\text{manner}}$).

b. #La porta era oberta i Nureyev ballà$_{manner}$ a dins$_{result}$.

As shown in (2a), Catalan allows the literal rendition of (1a): the verb *entrà* 'entered' encodes the result of Rudolf Nureyev being inside the hall, while the manner of the event is expressed as an optional adjunct, the gerund *ballant* 'dancing'. However, Catalan has no formal means of constructing a literal rendition of (1b). Example (2b), involving the verb *ballà* 'danced' and the locative adverb *a dins* 'inside', does not describe a change-of-location event of dancing *into* the hall, but an activity of dancing *in* the hall.

The same variation is attested in the case of change-of-state predicates:

(3) a. Cordelia flattened$_{result}$ the spoon.

b. Cordelia hammered$_{manner}$ the spoon flat$_{result}$.

(4) a. La Cordèlia aplanà$_{result}$ la cullera.

b. #La Cordèlia martellejà$_{manner}$ plana$_{result}$ la cullera.

Just like before, the only grammatical format in Catalan is the one in which the result

is encoded in the verb. This is shown in (4a), where *aplanà* encodes the result of the spoon being flat. Example (4b), where the manner verb *martellejà* is accompanied by the adjective *plana* 'flat', lacks a resultative interpretation. It is only possible on a depictive reading of *plana*, whereby Cordèlia hammered a spoon that was already flat.

Following standard convention, we call *satellite-framed* (SF) constructions those constructions in which the manner is encoded verbally and the result non-verbally, and SF languages those in which SF constructions are possible. By contrast, *verb-framed* (VF) languages like Catalan allow only VF constructions, with the result encoded verbally.

What accounts for the difference between VF and SF languages? In a recent article, Folli and Harley (2020) (F&H) argue for a syntactic, parametric account of Talmy's typology. They adopt a neo-constructionist approach to verb meaning, whereby all predicates of change are decomposed into two syntactic layers: the abstract verbal head denoting the event (labelled v) and the element expressing the path or the result (labelled Res). The structure assigned to VF constructions is diagrammed in (5a), with the result root merged and interpreted as a modifier of Res. The analysis of SF constructions is illustrated in (5b). In this case, the result is specified by a non-verbal XP, while the manner root modifies the eventive v head. From this theoretical perspective, the question is why both derivations are available in SF languages (e.g. Germanic, Finno-Ugric), but only the first one is grammatical in VF languages (e.g. Romance, Japanese).

(5) a. $[_{\text{VoiceP}}\ \text{DP}_1\ [\ \text{Voice}\ [_{\text{vP}}\ \text{v} \qquad\qquad [_{\text{ResP}}\ \text{DP}_2\ [\ \text{Res}\ \sqrt{\text{RESULT}}\ ]]]]$

b. $[_{\text{VoiceP}}\ \text{DP}_1\ [\ \text{Voice}\ [_{\text{vP}}\ \text{v}+\sqrt{\text{MANNER}}\ [_{\text{ResP}}\ \text{DP}_2\ [\ \text{Res}\ \{\text{AP/PP/Part.}\}\ ]]]]]$

F&H is the latest instantiation of a traditional approach to the difference between SF and VF languages, which assumes that VF languages are the explanandum and that

that some property of these languages prevents the derivation of SF constructions. The idea is that v and Res are obligatorily (morpho)syntactically associated in VF languages, blocking the adjunction of a manner root to v.[1] F&H model this association of v and Res in terms of Res-to-v movement. As in other cases of Head Movement, such as that of v to T, it can be parameterised: while Res-to-v movement is obligatory in VF languages, it is only optional in SF languages, allowing for the derivation of SF constructions.

In this reply paper, we challenge F&H's proposal, primarily on empirical grounds. We point out that F&H do not discuss or even mention the class of Weak SF languages like Latin, Classical Greek and Slavic, which have SF constructions, but which require the result to be realised as an affixal clitic. F&H not only do not deal with this type of SF languages, but their analysis can be shown to wrongly rule out their existence.

In the *construens* part of the paper, we put forth a new account of Talmy's typology, including Weak SF languages. Our analysis is minimalist in spirit, based on how PF interprets the universal outputs of narrow syntax. We dispute that VF languages are the explanandum. Instead, based on the arguably universal availability of the VF pattern, we treat it as a default (see also Real Puigdollers 2013). In turn, the SF pattern emerges in languages in which Res may be specified to form a domain of lexical access independent of the verb. We assume the Spanning approach to the syntax-PF interface, whereby syntactic objects are *spans*, contiguous sequences of heads in a head-complement relation (Svenonius 2016). While syntactic structures are strictly universal, languages may add features to particular functional heads that trigger either 1) access to the lexicon at that point in the derivation, which generates a phonological word: the w feature, or 2) a position where a set of exponents is linearised as a free-standing word: the @ feature. Strictly adhering to a Bare Phrase Structure (BPS) model of syntax, we show how in the SF pattern the manner root can only merge as a complement to v. In turn, this forces

ResP to be merged as a specifier. Since specifiers, by definition, form spans of their own, and spans need the w feature to access the lexicon, only ResPs endowed with the w feature on Res will lead to a convergent derivation at PF. This option is available to SF languages, which possess Res^{w}, and unavailable to VF languages, which only feature the unmarked variety of Res. Thus, the Spanning approach, coupled with BPS, grants us a straightforward account of why VF languages cannot generate SF constructions, and why the VF pattern, where there is no manner root and ResP is merged as a complement, rather than a specifier, is the unmarked, universal one. We also naturally account for the Weak SF pattern, in which the ResP specifier has w but lacks @, forming a phonological word that cliticises onto the verb. By contrast, F&H must rely on a non-BPS merger of the manner root as an adjunct to the head v, and the additional mechanism——a ban on uncategorised roots—that they invoke to account for the unavailability of SF constructions in VF languages incorrectly predicts the non-existence of the Weak SF pattern, which characterises Weak SF languages and is found in Strong SF languages.

This paper is organised as follows. Section 2 introduces the class of Weak SF languages. Section 3 reviews the empirical issues encountered in F&H. Section 4 sets the ground for our analysis. Section 5 presents our Spanning account, which capitalises on the distribution of w and @ features on Res. Section 6 concludes.

2 Extending Talmy's typology to Weak SF languages

In this section, we introduce the distinction between Weak SF and Strong SF languages. Talmy (2000: 102–104) observed that Latin and Russian are SF, and the result in these languages is typically encoded by means of verbal prefixes. We show his examples

below, translating the sentence 'The bird flew in' (6a, b, from Talmy 2000:104). We also add a translation into Classical Greek, a language with similar patterns (6c).

(6)

a.	b.	c.
Avis in- volavit	Ptica v- letela	Ho ornis eis- eptato
bird in- flew	bird in- flew	the bird in- flew
(Latin)	(Russian)	(Classical Greek)

As expected, prefixed constructions are also found in the expression of change of state:

(7) E$_{result}$- dormi$_{manner}$ crapulam, inquam.
out- sleep.IMP.SG intoxication.ACC say.SG
'Sleep off the intoxication, I said.' (Latin; Cic. Phil., Acedo-Matellán 2016:119)

(8) Adam wy$_{result}$- pisał$_{manner}$ długopis
Adam out- write.PRF.PST pen.ACC.SG
'Adam wrote the pen out of ink.' (Polish)

These examples feature so-called unselected objects, that is, objects that would not be selected by the unprefixed verb and that can be said, therefore, to be licensed by the prefix. Unselected objects, typical of SF languages, reveal that the prefix is the true predicate of the construction (see e.g. Hoekstra and Mulder 1990, Mateu 2002).

In addition, Acedo-Matellán (2016) shows that Latin, Slavic, and Classical Greek do not admit SF constructions in which the result is expressed in a free-standing AP or PP. Latin and Polish, for instance, cannot use a manner verb with a resultative adjective:

(9) a. #Cordelia coclear planum$_{result}$ tundit$_{manner}$.
Cordelia.NOM spoon.ACC flat.ACC.N.SG beat.PRS.3SG
Intended: 'Cordelia beats the spoon flat.'

b. #Adam pchnął$_{manner}$ okno otwarte$_{result}$.
Adam pushed.PRF window.ACC open
Intended: 'Adam pushed the window open.'

Acedo-Matellán (2016) concludes that there is some morphological requirement active

in SF languages like Latin, Slavic, and Classical Greek which forces the result component to form a single word with the manner verb. Such a requirement is systematic, and not specific to particular lexical items. On this basis, this author makes a typological distinction between *Weak SF* languages like Latin and *Strong SF* languages like English. Correspondingly, Weak SF constructions are those in which a manner verb co-occurs with a resultative affix, while Strong SF constructions are those in which the result is expressed as a free-standing word or a phrase, be it an AP, a PP, or a particle.

Taken together, VF, Weak SF, and Strong SF constructions form a gradual tripartite typology of expressions of change of state and location. This typology is naturally described in terms of the morphophonological integration of the result and the verb. Thus, in VF constructions the result is encoded in the exponent of the verbal root. In SF constructions the result is encoded in a different exponent, which can surface as an affixal clitic on the verb (Weak SF) or as a free-standing word or phrase (Strong SF).

3 Folli and Harley's (2020) Head-Movement approach

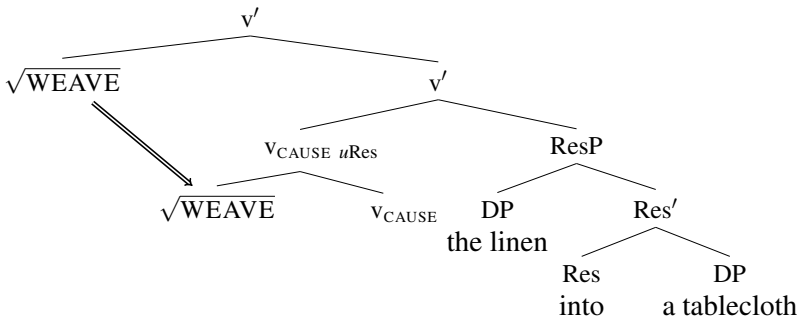
We now turn to the details of F&H's analysis, which recognises only a binary dichotomy between VF and SF languages. After summarising F&H's approach (section 3.1), we point out its conceptual and empirical problems, focusing on Weak SF constructions (section 3.2).

3.1 A brief summary

In line with syntactically-oriented approaches to Talmy's typology, F&H assume a basic universal skeleton for predicates of change of state and location, whereby the causative eventive head v_{CAUSE} selects for the functional head introducing the result: Res. Follow-

ing a proposal by Adger (2003), categorial selection is enforced via an uninterpretable feature on v, namely [uRes]. Res projects a specifier that is interpreted as the entity undergoing change, and can take a complement encoding the result, like an AP, a PP, or a DP, or it can have a root adjoined to it. A root can also be adjoined to vP, denoting manner. F&H (p. 452) analyse the SF construction *weave the linen into a tablecloth* as follows:

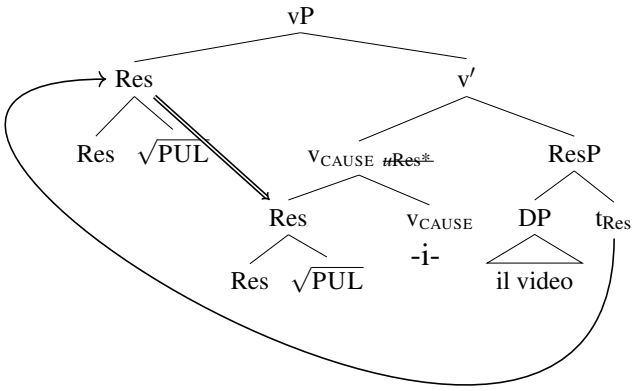
(10)



The association of the manner root with v (henceforth called *manner adjunction*) is implemented in two steps. First, the root merges with a projection of v, where it is interpreted as an event modifier. Then, it undergoes M-Merger, a post-syntactic operation whose input is two heads in a specifier-head configuration and whose output is a single head (Matushansky, 2006). M-merger is indicated by the double arrow in (10).

By hypothesis, the difference between SF and VF languages concerns the strength of the selectional feature [uRes] on v. In VF languages, this feature is strong, as [uRes*]. This means that it can only be checked by Res-to-v movement, capturing the fact that the result is always encoded in the verb in VF languages. An example of a VF construction with Res-to-v movement is the following one from Italian:

(11) *Maria a pulito il video* 'Maria has cleaned the screen' (F&H: 448)



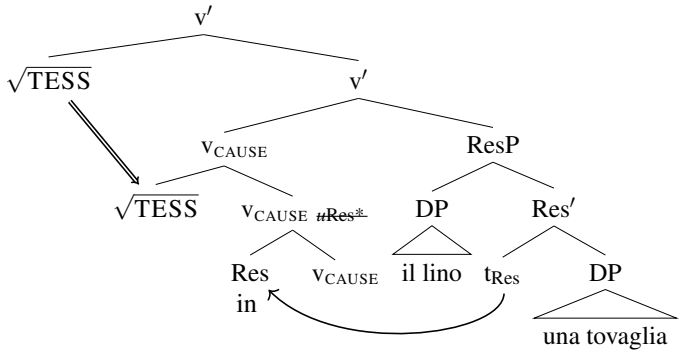
Note that F&H adopt Matushansky's (2006) implementation of Head Movement. On this approach, Head Movement is a composite operation with a syntactic step and a morphological step. In the syntax, the head moves to the root of the tree, becoming a specifier of sorts. In the morphology, the head lowers to the head of the root projection via M-Merger. This means that, while manner roots are integrated via *external* Merge and M-Merger, Res-to-v movement involves *internal* Merge and M-Merger. F&H thus argue that their account reduces Talmy's typology to a Head Movement parameter. In VF languages, only the strong [uRes*] feature is available, making Res-to-v movement obligatory. In SF languages, both weak [uRes] and strong [uRes*] variants are possible, which effectively renders Res-to-v movement optional. This optionality is needed to account for the fact that SF languages have both VF and SF constructions.

Crucially, we still need to explain what makes Res-to-v movement incompatible with the presence of a manner root, and what blocks, thereby, SF constructions in VF languages. F&H illustrate this incompatibility with the ungrammatical Italian example in (12). In order to avoid graphical clutter, v-to-Res movement is represented as a single step instead of two (i.e. internal Merge and M-Merger).

(12) a. *Gianni ha (in-)tessuto il lino (in) una tovaglia.
Gianni has in-woven the linen (in)to a tablecloth

Intended: 'Gianni wove the linen into a tablecloth' (F&H: 449/456)

b. *



The example shows what an SF construction would look like in a VF language like Italian, which has obligatory Res-to-v movement. What rules this derivation out? F&H reason as follows. Firstly, category-defining heads may categorise only one element (the first element that adjoins to them). Secondly, roots must receive a category in order to be legible at the interface.[2] In the case at hand, the Res head exhausts the categorisation potential of v, leaving the manner root uncategorised, and hence ill-formed.

3.2 Problems: Weak SF constructions and markedness

Head-movement approaches to Talmy's typology, in which Res either remains in situ or raises to v, encounter the problematic 'intermediate' case of Weak SF constructions.[3] This type of construction, which characterises languages like Latin, Classical Greek and Slavic, would seem to require Res-to-v movement, as in VF constructions, but also some additional technology allowing manner and result to be encoded in distinct exponents, as in Strong SF constructions. However, this is precisely the scenario ruled out by F&H's analysis of **in-tessere* in Italian. By banning the co-occurrence of Res-to-v movement to v and manner adjunction on general architectural grounds (since v cannot categorise both Res and $\sqrt{\text{TESS}}$), the analysis severely undergenerates, failing

to account for Weak SF constructions. Indeed, F&H themselves show that this type of construction is attested in other languages. Specifically, they argue that certain Res heads move to v in English, as in *com-* being prefixed to *pose* to form *com-pose*. Invoking studies like Acedo-Matellán (2010) and Real Puigdollers (2011), F&H take the prefixation of Res (*com-*) to be enforced via a statement in the Vocabulary Item for *pose* and similar roots (F&H: 462):

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

According to this VI, a root can only be interpreted as *pose* if it is bound with one of the prefixes *im-*, *re-*, *de-*, and so on. This filters out derivations in which Res remains in situ (e.g., **Pose the poem com*), and indirectly forces Res to adjoin to v. The derivation of *com-pose* thus involves the co-occurrence of Res-to-v movement (yielding *com-*) and manner adjunction to v (yielding *-pose*). However, F&H explicitly argue that these two operations cannot co-occur, due to the constraint on categorisation: if v categorises Res, then it cannot also categorise the manner root. The question then emerges why the pattern is grammatical in English but not in Italian. Can the categorisation requirement be parameterised, as suggested by an anonymous reviewer? We note that F&H take this constraint to be universally valid, and with good reason. For starters, it would be difficult to argue, both conceptually and empirically, that English and other SF languages allow roots to remain uncategorised, while Italian does not. Second, if that were the case, then Res-to-v movement would not be the only parameter of variation between SF and VF languages, thus greatly reducing the attractiveness of F&H's approach.

The discussion of English *com-pose* brings us directly to the challenge posed by Weak SF languages, unmentioned in F&H. Indeed, as we argued in section 2, in these languages the pattern instantiated by English *com-pose* is not only grammatical, but

actually the only admissible SF pattern, with a manner root and a resultative prefix coexisting in the same word. While the problem posed by *com-pose* in English could perhaps find a solution tailored to this particular prefix, the challenge posed by languages like Latin, Slavic, and Classical Greek cannot be solved at the level of individual Vocabulary Items. The morphological requirement that the result form a word with the verb is systematic in Weak SF languages. And yet, it is precisely this pattern that is ruled out by F&H's analysis of Italian **in-tessere* (see discussion in section 3.1). If the mechanism which bans **in-tessere* in Italian is general (like categorisation), then it should also ban analogous prefixed verbs in Weak SF languages like Latin, contrary to fact. We conclude that there is simply no natural way of extending F&H's proposal to Weak SF languages.

Finally, beyond the problem presented by Weak SF constructions, traditional approaches that explain Talmian variation through a specific grammatical requirement only active in VF languages, such as F&H, miss the fact that the VF format characterizing these languages is the least marked one. For F&H, the derivation of VF constructions requires the presence of a strong [uRes*] feature on v, while SF constructions involve the weak feature [uRes]. To the extent that the weak feature is unmarked (since it does not trigger Res-to-v movement), SF constructions are predicted to be typologically unmarked as well. However, the opposite is the case. While SF constructions are restricted to SF languages, VF constructions are arguably available in all languages: all languages have, for instance, change-of-state verbs (see also Mateu 2012:270). This strongly suggests that VF is the unmarked member of the VF/SF opposition. In line with Real Puigdollers (2013), we think that since the SF construction is more marked cross-linguistically, it is this construction that should be more 'costly' in derivational terms, and it is in SF languages that the burden of explanation should be placed.

In the next section, we put forward a novel account that derives the three-way distinction between VF, Weak SF, and Strong SF languages in a natural way, by appealing exclusively to PF mechanisms such as lexical access and linearisation. We furthermore derive the fact that VF constructions are the least marked cross-linguistically

4 Towards an alternative proposal

In our analysis of Talmy's typology, we assume, like F&H do, that a universal functional sequence of heads underlies the expression of result events: Res must merge with v, and v must merge with Voice. In addition, our take capitalises on two ideas. First, we argue that the mechanism of manner adjunction should be reconceptualised as the First Merge of v and a manner root. Adopting a purely configurational approach to the specifier/complement distinction, we argue that ResP is the specifier of v in SF constructions while being the complement in VF constructions. Second, we propose that, unlike LF, computation at PF is impacted by the specifier/complement distinction. This is because PF operates on spans of heads related by complementation. We deal with each of these ideas in turn.

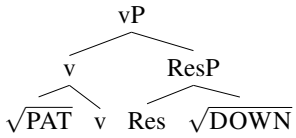
4.1 Rethinking manner adjunction

One of the main theoretical contributions of F&H is a novel implementation of manner adjunction, which is the mechanism combining the manner root with the eventive head v. F&H decompose manner adjunction into two separate steps: external Merge and M-Merger. We agree with F&H that manner adjunction needs to be rethought, but we propose a simpler implementation, which dispenses with M-Merger and relies only on Merge. In this way, we avoid the problems with root categorisation discussed in section

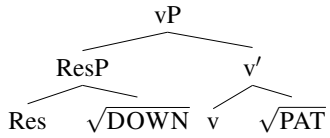
3.2.

The main idea is simple. In contrast with much previous work, which requires ResP to merge as the complement of vP, we allow ResP to merge in the specifier position. Consider the derivation of the Strong SF construction *The boy patted his hair down*, putting aside for the moment the syntactic position of the direct object. The traditional root-adjunction structure in (14) (e.g. Embick 2004, Mateu 2012, Acedo-Matellán 2016), with ResP as complement to v and the manner root $\sqrt{\text{PAT}}$ as an adjunct to v, can now be replaced with the one in (15), in which the manner root is complement to v and ResP is its specifier. Labelling conventions aside, the hierarchical relations between elements are exactly the same in both cases: v and $\sqrt{\text{PAT}}$ form a constituent, which forms an even larger constituent with ResP.

(14)



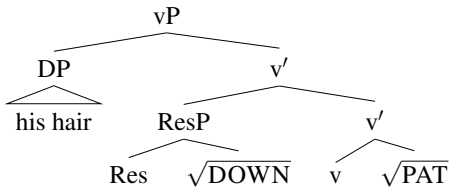
(15)



The only question is whether (15) gives us the right semantics. We contend that the answer is yes. On the standard approach to semantic composition à la Heim and Kratzer (1998), the meaning of a phrase is computed on the basis of two things: (i) the meaning of lexical items, and (ii) their hierarchical arrangement. Since the hierarchical relations are the same, the semantic derivation proceeds in exactly the same way for (14) and (15). First, the manner root modifies the eventive v head via Predicate Modification. Independently, Res, merges with $\sqrt{\text{DOWN}}$, establishing a state of "being down", to be predicated of an entity. ResP merges with vP, the combination being interpreted as 'an event causing a state', following the idea that 'change-of-state events [...] consist of an unbounded process v head that combines with a result state predication. This syntactic

constellation is interpreted at the CI-interface as a causative relation' (Alexiadou et al. 2015:15; see Ramchand 2008). Finally, as shown in (16), we take the direct object *his hair* to merge with the verbal projection, vP, as its specifier—in the case at hand, as a second specifier. This merger corresponds to the interpretation that the entity denoted by the direct object undergoes a change of state: it ends up being "down" as a result of a patting event.[4]

(16)



Now consider the derivation of a VF construction like (*The man*) *opened the door* (17). In the absence of a manner root, ResP merges directly with v. The result root $\sqrt{\text{OPEN}}$ is embedded in the complement of Res, where it is interpreted as a result modifier.

(17) $[_{\text{vP}}\ [_{\text{DP}}\ \text{the door}\ ]\ [\text{v}\ [_{\text{ResP}}\ \text{Res}\ \sqrt{\text{OPEN}}\ ]\ ]\ ]$ *VF construction*

Comparing (16) and (17), we see that the structural relation between v and ResP changes depending on the presence/absence of a manner root (see (18) below). This is an automatic consequence of two simple assumptions. Firstly, v may in principle merge with two things: a manner root and/or a result predicate. Secondly, the distinction between complements and specifiers is purely configurational: the first element that merges with H is the complement of H, any subsequent element is the specifier of H. In the case at hand, when vP and ResP merge, ResP will become the specifier, since there is a requirement that Voice merge with v. Crucially, there is no need for a special operation of manner adjunction in this system. All that is required is the primitive combinatorial operation Merge and the standard assumptions about the relation between hierarchical

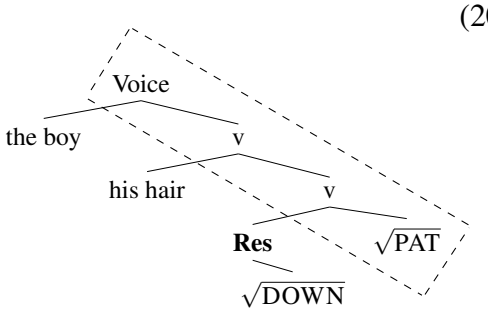
structure and semantic composition.

(18) a. VF construction: no manner root → ResP in Comp-vP

b. SF construction: manner root in Comp-vP → ResP in Spec-vP

While the status of ResP as a complement/specifier does not matter at the interface with LF, it does affect the mapping from syntax to PF. This is because linearisation and lexical access are sensitive to spans, defined as contiguous sequences of heads in a head-complement relation (Svenonius 2016:205; see also Williams 2003). To make this clear, we recast the syntax of SF and VF constructions in the more abbreviated format of Mirror Theory (19)-(20) (see Brody 2000a,b). Heads and phrases are represented by one and the same node, which is connected to its specifier by a leftward-sloping line and to its complement by a rightward-sloping line. Spans correspond to sequences of rightward-sloping lines. One thing immediately becomes clear: Res and v belong to the same span in VF constructions, but not in SF constructions. The relevant spans are boxed for clarity, with Res emphasised in bold.

(19)



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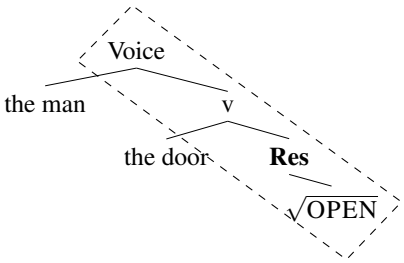


In this way, the descriptive labels 'verb-framed' and 'satellite-framed' receive an unambiguous structural interpretation, corresponding to 'Res inside the verbal span' and 'Res outside the verbal span', respectively. This idea will play a crucial role in our account in section 5.

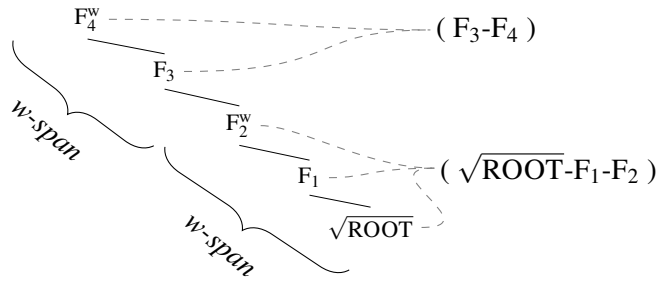
4.2 Spanning, lexical access and linearisation

Our proposal builds on the theory of the syntax-PF interface developed in Svenonius (2016, 2018, 2020), who in turn builds on Mirror Theory (Brody, 2000a,b). A central tenet of Svenonius's theory is that PF operations (lexicalisation, linearisation) are not restricted to heads or terminal nodes; rather, as indicated above, they are sensitive to spans, formally defined in (21).

(21) A span is a (potentially trivial) sequence of heads $\langle H_1, H_2, \ldots, H_n \rangle$ such that for every $i > 1$, H_i is the head of the complement of $H_{i\text{-}1}$.

In addition to spanning, the theory incorporates two PF-interpretable features, with which functional heads can be marked. The first feature, labelled w, is relevant for lexical access and word formation. This is illustrated in (22), where F_1, F_2, F_3, F_4 are segments of an extended projection (in the sense of Grimshaw 2005), and where F_2 and F_4 are marked with w as points of lexical access. Just like before, we use the representational format of Mirror Theory, with complements connected by rightward-sloping lines.

(22)



The role of w is to partition the extended projection into smaller PF domains in which exponents are retrieved from the lexicon and matched to the output of syntax.[5] A span with a single w feature on its highest head is known a w-span. Each w-span defines

a separate domain of word formation, mapping to a minimal word in the input to PF (Svenonius 2016:204). We enclose morphophonological words in round brackets, linking each head in the syntax to the corresponding word at PF with a grey dashed line. The order of morphemes within each word is determined by the Mirror Axiom (23), which states that suffixation is automatic, non-triggered, and which effectively allows us to dispense with Head Movement as a word-formation operation.

(23) Mirror Axiom (default)

If X dominates Y in a w-span, then X follows Y in the corresponding word.

We make the natural assumption that lexical access is obligatory. After all, lexical access is a process by which heads—abstract syntactico-semantic features—are replaced with exponents. For example, the insertion of *-ed* into T[PST] in English discharges the past-tense feature from the PF branch of the derivation. Consider what would happen if a head H did not undergo lexical access. Instead of being discharged, the syntactico-semantic feature would be handed over to phonological computation, where it would not receive a proper interpretation. For the derivation to converge at PF, every syntactic head must be discharged in the process of lexical access. If lexical access is obligatory, and if w-spans are the only domains of lexical access, then it follows that every syntactic head must be part of some w-span. This corollary is stated in (24).

(24) Obligatory Lexical Access

Every syntactic head must be part of some w-span.

The OLA ensures that all spans are endowed with an w feature on their topmost head. The other PF-interpretable feature adopted here is @. This feature determines the linearisation of a word with respect to specifiers and adjuncts, essentially instructing PF to

'linearise here'.

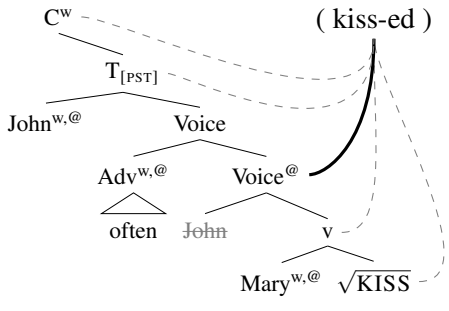
(25) The linearisation point feature @

A word is linearised in the position marked by the feature @.

This definition has the effect that a w-span x endowed with the @ feature on head X will yield a word linearising after all specifiers and adjuncts merged higher than X—and also after all the words, if any, yielded by the w-spans also endowed with @ that are in the same extended projection as x and dominate x. The placement of @ accounts for the familiar variation in word order between English and French (26)-(27) (Pollock, 1989)—traditionally accounted for via v-to-T movement in French and Lowering of T to v in English. Suppose that low adverbials like *souvent* 'often' adjoin at the level of VoiceP (the edge of the decomposed VP domain). The external argument originates in Spec-VoiceP, and then moves to check the EPP property on T in the usual way. The contrast between French and English can now be reduced to the distribution of the @ feature. In French, @ is located on T. In English, @ is located on some lower head, which we assume to be Voice. We adopt the convention of linking each word to its linearisation position by a black line.

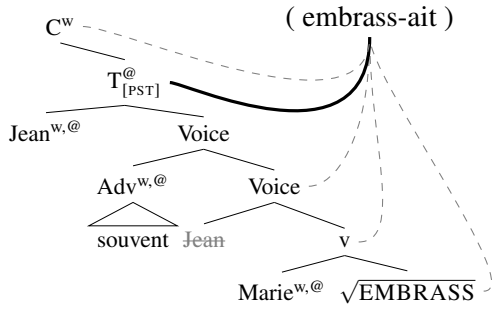
(26) a. John often kiss-ed Mary.

b.



(27) a. Jean embrass-ait souvent Marie.

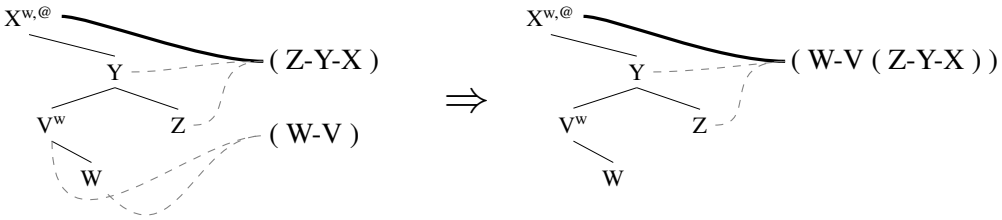
b.



Finally, a w-span which lacks the @ feature is said to be @-*defective*. Such spans are

linearly inseparable from the spans in which they are embedded, surfacing either as clitics or as incorporated words (Svenonius, 2016). We represent this process of incorporation as in (28). There are two w-spans in this structure, corresponding to two cycles of lexical access, but only one linearisation point @. Lacking its own linearisation position, the 'floating' word (W-V) necessarily incorporates into its host at PF.[6]

(28)



The system could also generate a scenario where an @-defective w-span has non-@-defective span dependents of its own. In section 5 we will argue that such scenario, essentially involving a clitic related to two hosts, would produce a crash at PF, and we will show how this accounts for the unavailability of AP and PP resultatives in Weak SF languages.

In line with Borer's (1984) conjecture that cross-linguistic variation emerges from differences in the abstract, stored characteristics of particular functional items (see also Chomsky 1986, Baker 2008), we assume that the distribution of w and @ on different functional heads can vary between languages. In the next section we apply this idea to Talmy's typology.

5 Deriving the tripartite typology

We are now in the position to derive the tripartite typology of Strong SF, Weak SF, and VF languages. A fundamental assumption is that the syntactic configuration sustaining the predicates that constitute the locus of this typology, namely, predicates of change of

state and location, involves the same functional projections in all languages (even if, as we have seen the exact configurations may change, due to the presence or absence of a manner root): the eventive head v and the resultative head Res. On this point, we are in agreement with F&H, who in turn are inspired by Ramchand's (2008) system. The variation emerges strictly from the distribution of w and @ features on the functional head Res. The diacritic w allows Res to undergo lexical access in a separate domain from that of the verb. The diacritic @ allows Res to form a free-standing word independent from the verb. The distribution of the different types of Res and the constructions they allow among the three types of language is summarised in Table 1.

	Res: VF const.	Res^{w}: Weak SF const.	$\text{Res}^{\text{w},@}$: Weak SF const.
VF langs	✓	×	×
Weak SF langs	✓	✓	×
Strong SF langs	✓	✓	✓

Table 1: Types of languages and types of Res available and constructions allowed.

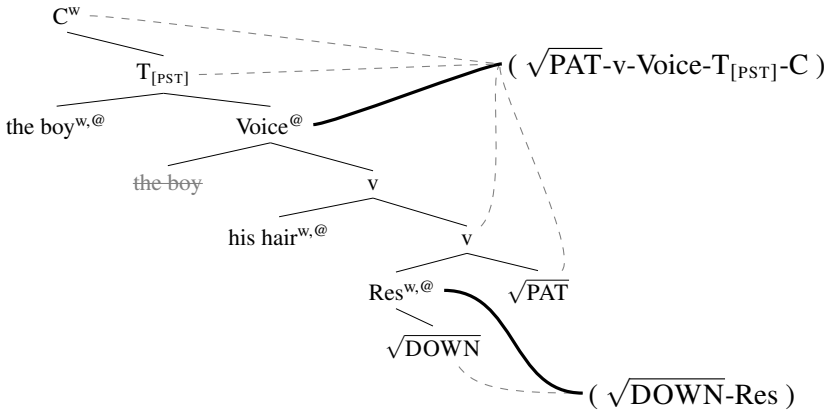
All languages have a bare Res available in their lexicons: we assume the bare versions of functional heads to be innately available rather than acquired. In addition, certain languages, i.e., SF framed ones, can add the feature w to this Res head, generating a Res^{w}. In turn, a portion of these languages, i.e., Strong SF ones, can add @ to Res^{w}. These optional associations account for the implicational universals expressed in the table.[7]

The parametric variation between SF/VF languages is driven by the presence/absence of the w feature on Res. Consider the English SF construction with the particle *down* in (29), repeated from (16) above, but now mapped to words at PF. There are two main spans in this structure (leaving aside that corresponding to the direct object): the verbal span $\langle$C, T, Voice, v, $\sqrt{\text{PAT}}\rangle$ and the particle span $\langle$Res, $\sqrt{\text{DOWN}}\rangle$. Both spans

are perfectly well-formed. The verb is pronounced in the position of Voice, following the subject (merged higher than Voice) and preceding the direct object (merged as the higher specifier of vP) and the particle (corresponding to ResP, which is merged as the lower specifier of vP).[8]

(29) a. The boy patted his hair down.

b.

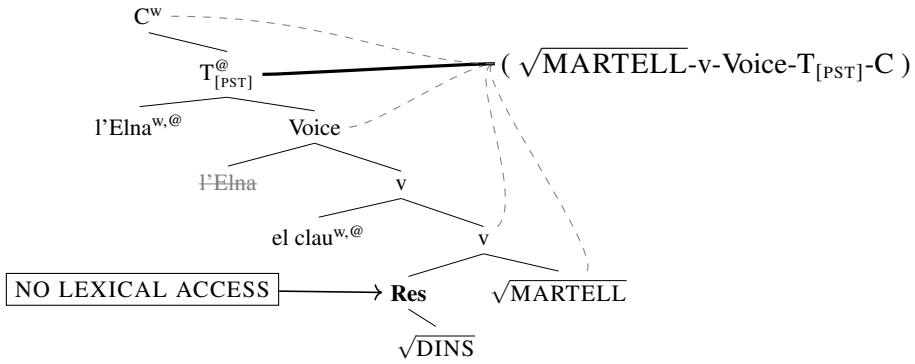


Crucially, SF constructions can be derived if and only if Res is marked with the lexical access feature w. This feature triggers the creation of a corresponding word at PF and initiates a cycle of lexical access. In the absence of w, the span $\langle$Res, $\sqrt{\text{DOWN}}\rangle$ would violate the Obligatory Lexical Access constraint (see (24) in the previous section). This is precisely the situation found in VF languages. By hypothesis, languages like Catalan do not mark Res with the w feature. The lack of w effectively prevents ResP from undergoing lexical access in SF constructions.[9] This is illustrated for the ungrammatical verb-particle construction in (30), but the derivation of complex AP and PP resultatives fails for the same reason: lacking its own w feature, Res cannot be discharged independently from the verbal span, causing the derivation to crash at PF.[10]

(30) a. *L'Elna martellejà el clau dins.
the.Elna hammered the nail in

Intended: ‘Elna hammered the nail in.’ (Catalan)

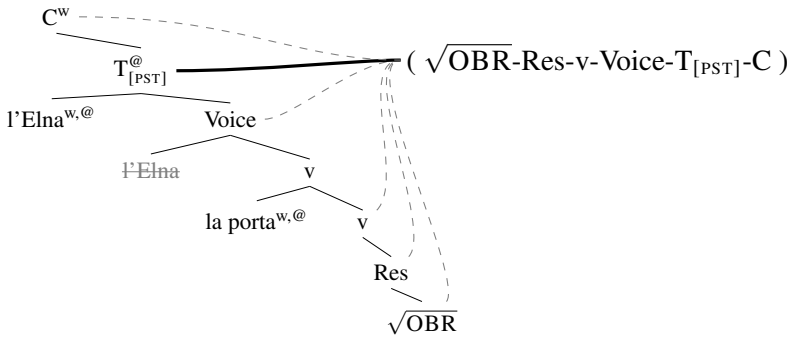
b. *



This brings us directly to VF constructions. As argued in section 4.1, if the manner root is missing, Res forms a single span with the verb. This allows Res to undergo lexical access as part of the verbal span ⟨C, T, Voice, v, Res, $\sqrt{\text{ROOT}}$⟩ without introducing its own w feature. Hence, VF derivations are correctly predicted to be grammatical in VF languages. This is shown for the Catalan VF construction *open the door* in (31).

(31) a. L’Elna obrí la porta.
Elna opened the door
‘Elna opened the door.’ (Catalan)

b.



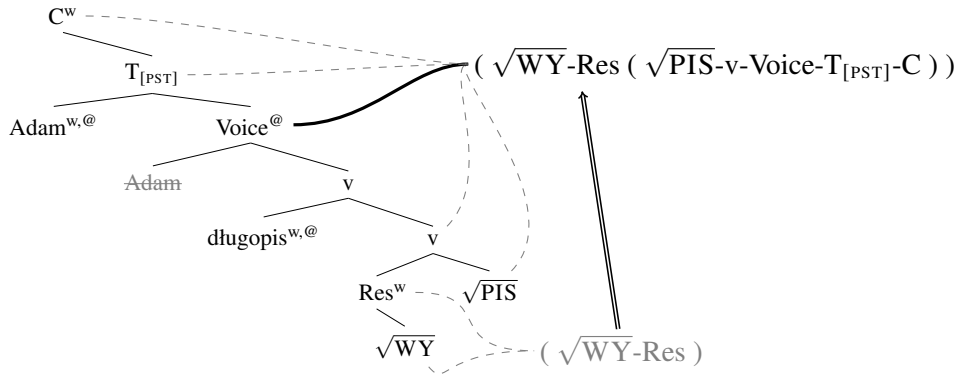
In previous approaches to Talmy’s typology, like F&H or Acedo-Matellán (2016), the VF construction is triggered by some diacritic on v, Res, or an analogous head. In our approach, the VF construction is not triggered. Rather, it results from the automatic packaging of the exponents of Res, v, etc, into a single word, as expected from the

absence of the w or @ diacritics on Res. Thus, since w and @ are privative features, we predict that the VF construction is the least marked way of spelling out a structure denoting change of location or state. Following the standard logic of markedness, a language cannot have the marked variant of a feature without having the unmarked variant, which means that all languages have an unmarked Res at their disposal. This naturally accounts for the fact that all languages seem to have VF constructions.

Furthermore, unlike F&H, our approach actively predicts the existence of Weak SF languages, which mark Res with w but not @. This is the analysis we assign to resultative prefixes in Latin, Classical Greek, and Slavic. We illustrate with an example from Polish. Just like the Strong SF construction before, and leaving aside the subject and the object, the Weak SF structure in (32) contains two main w-spans ⟨C, T, Voice, v, $\sqrt{\text{PIS}}$⟩ and ⟨Res, $\sqrt{\text{WY}}$⟩.[11] However, there is only one linearisation point @ (situated on Voice) for these two spans. Since the resultative span is @-defective, its exponent incorporates into the embedding @-span, surfacing as a clitic on the verb.

(32) a. Adam wy-pisał długopis
Adam out-write.PST pen.ACC.SG
'Adam wrote the pen out of ink.'

b.



Since Strong SF languages have Res^{w}, they are also predicted to allow the Weak SF

pattern, for particular choices of roots. We thus account for prefixed verbs like English *com-pose* (see section 3.2) or Dutch *be-planten* 'cover with plants' (Hoekstra and Mulder 1990). The prefixes *com-* and *be-* result from the use of Res^{w}, requiring, in this case, $\sqrt{\text{COM}}/\sqrt{\text{BE}}$ as its complement. All in all, in the same way in which VF constructions are predicted to be available in all languages, Weak SF constructions are predicted to be available in all SF languages, since they are a less marked type of SF construction.

While our analysis predicts that the exponent of the Res span has to be part of the same free-standing word as the inflected verb in weak SF languages, we also expect the resultative prefix and the inflected verb to belong to different phonological domains, since they correspond to different w-spans. Diverse facts prove the felicitousness of this prediction. For Slavic, phonological evidence shows that a word boundary separates the prefix from the rest of the verbal complex (see Pesetsky 1985, Matushansky 2002, Gribanova 2009, Blumenfeld 2012). Classical Greek and Latin illustrate the point even more vividly, since part of the inflectional material is prefixal rather than suffixal. For instance, we find a prefixal reduplication procedure to form perfect stems (see Schreiner 2021 for Classical Greek and McIntyre 1992:36–84 for Latin). Crucially, in verbs with resultative prefixes (Gr. *kata* in (33a), Lat. *de* in (34a)), the reduplicated syllable (*be*, *cu*) obtains parts of its phonology from the root (*bē*, *curr*) and is always adjacent to it. We never find this syllable before the resultative prefix (whether parasitic on the phonology of the the prefix as *ke*, *de* or on the phonology of the root as *be*, *cu*):

(33) *Classical Greek*

a. kata- **be**- bē -k -a
down- PRF- step -PRF -1SG
'I have walked down'

b. ***ke**-kata-bē-ka, ***be**-kata-bē-ka

(34) *Latin*

a. de- **cu**- curr -i
down- PRF- run -PRF.1SG
'I have run down'

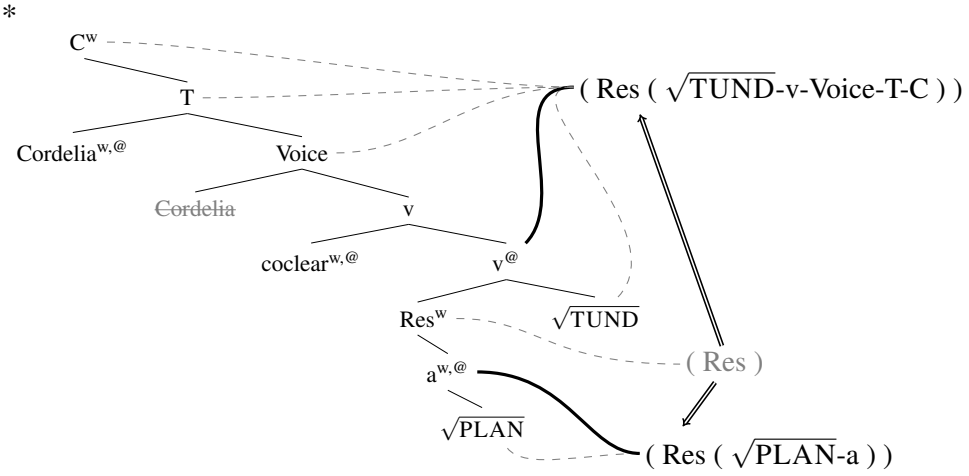
b. ***de**-de-curr-i, ***cu**-de-curr-i

Whereas any theory would have to stipulate the prefixal character of the exponent for the perfect in the above examples, this is in fact the only bit of extra machinery that our account needs to derive the right order. Indeed, we fully expect the exponents of the inflected verb to be retrieved and linearised in a cycle that is different from that of the resultative prefix, which only procliticises to the verb once the latter is 'fully formed'.[12]

Finally, as pointed out in section 2, the obligatory prefixation of Res in Weak SF languages goes hand in hand with their inability to sustain Strong SF constructions. This is illustrated with the invented Latin example in (35a), repeated from (9a). The adjective *planum* 'flat' cannot be interpreted as resultative, only as depictive or attributive.

(35) a. #Cordelia coclear planum$_{result}$ tundit$_{manner}$.
Cordelia.NOM spoon.ACC flat.ACC.N.SG beat.PRS.3SG
Intended: 'Cordelia beats the spoon flat.''

b. *



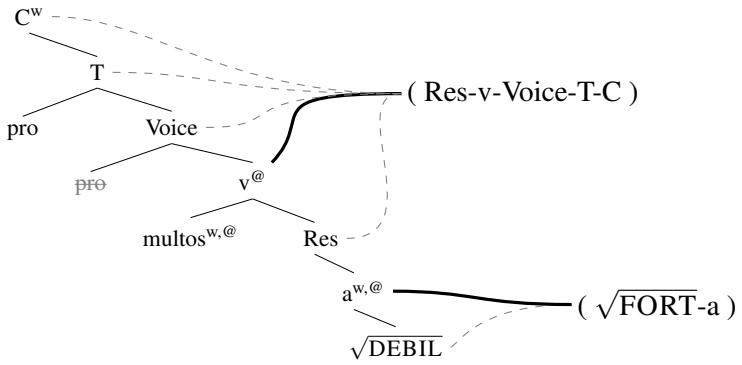
Our account derives the ban on Strong SF constructions in Weak SF languages. Specifically, we argue that such constructions involve a conflict in linearisation. We assume that the adjective consists of a category-defining head, a, and the root $\sqrt{\text{PLAN}}$. The a head forms a w-span of its own (as a separate extended projection), and it is endowed

with @, which is, by hypothesis, related to the fact that the adjective bears agreement morphology in Latin (i.e., *-um*: neuter, accusative, singular).[13] Crucially, when the structure in (35b) is flattened out, the grammar must compute a linearisation statement for every pair of adjacent w-spans A and B, outputting either A $\prec$ B or B $\prec$ A. In this context, consider the w-spans $\langle C^{w}$, $T^{@}$, Voice, v, $\sqrt{\text{TUND}}\rangle$, $\langle Res^{w}\rangle$ and $\langle a^{w,@}$, $\sqrt{\text{PLAN}}\rangle$. The adjectival span is not a dependent of the verbal span (not a specifier, adjunct or complement thereof), just of the Res span, and therefore can only linearise with respect to Res. However, since the Res span is @-defective, the only way to compute the required linearisation statement involves incorporation, yielding the morphological structure (Res ($\sqrt{\text{PLAN}}$-a)). In the next step, Res is linearised with respect to the verbal span; otherwise, the linear position of the embedded a-span in the clause could not be determined. The problem is that Res is @-defective so, once again, the only way to compute this linearisation statement involves incorporation, resulting in (Res ($\sqrt{\text{TUND}}$-v-Voice-T-C)). Since a clitic cannot have two hosts at once, the derivation crashes at PF. We thus derive on principled grounds the constraint that an @-defective span (a clitic) cannot intervene between two @-spans (free-standing words), which in turns rules out the derivation of Strong SF constructions in Weak SF languages.

The same logic leads us to expect that, in the absence of a manner root, it should be possible to derive resultative constructions based on APs or PPs in Weak SF languages. This is indeed what we find. We illustrate with the simple AP resultative in Latin (36a) (for more examples from Latin and Classical Greek, see Acedo-Matellán 2016:212 and Asyllogistou 2019:269, respectively). Note that *re-ddo* 'back-give' is a light change-of-state verb that does not specify manner, and thus does not involve a manner root. Since it is orthogonal to present purposes, in the tree we have not represented the discourse-driven movement of the object *multos* to sentence-initial position.

(36) a. Multos re-dd-it debiles.
many.ACC.M.PL back-give-PRF.3SG lame.ACC.M.PL
'Many he rendered lame.' (Phaedr. app. 10, 11)

b.



In the absence of a manner root, Res merges as the complement of v, thereby forming a span with it. We propose that *re-* is inserted directly into ⟨Res⟩, in the absence of a semantically contentful particle, while *dd* is an exponent of ⟨Voice, v⟩ inserted in the context of *re-* (since v and Res undergo lexical access in the same cycle). In this way, we derive the existence, in Latin, of simple AP (and PP) resultatives *without manner*, employing the VF strategy. Our theory of manner adjunction, coupled with our assumptions about linearisation, is the right tool to predict the incompatibility of resultative APs/PPs with manner and their compatibility with light change-of-state verbs in Weak SF languages.

6 Comparison and conclusions

In this paper, we have developed a critique of F&H's Head-Movement approach to Talmy's typology, focusing on an empirical issue: its inability to account for the class of Weak SF constructions. We have offered an alternative theory that derives the distinction among VF, Strong SF, and Weak SF languages in a natural way.

Two basic features are shared by both accounts. First, one and the same universal syntax sustains the expression of change of location/state across languages, articulated around the resultative head Res and the eventive head v. Second, we assume the existence of acategorial roots, as objects manipulated by syntax. The non-trivial differences lie in our assumptions about how roots are integrated in the configuration, our understanding of manner adjunction, and the view of the syntax-lexicon interface.

While F&H decompose manner adjunction into two steps (external Merge with v′ followed by M-Merger), our mechanism boils down to merging the root with v (as a complement) prior to the merger of ResP with v. We have shown how this is the simplest analysis in a purely Merge-based syntax, and how it affords a principled explanation for the revised, threefold typology, when coupled with the Spanning approach to lexicalisation. This approach is based on the idea that the lexicon assigns exponents to sequences of heads in a head-complement relation (spans) and that particular functional heads can be endowed with diacritics for lexical access (w) and linearisation (@).

By contrast, F&H's adoption of Matushanskyan Head Movement does not succeed in explaining the infelicitousness of manner adjunction in VF languages. It also does not accommodate the intermediate case of Weak SF languages, in which the Res head, while expressed by a distinct exponent, must affix onto the manner verb. The binary distinction between strong [uRes*] and weak [uRes] is simply not sufficient to capture the three-way distinction between VF, Strong SF, and Weak SF languages. To make matters worse, any idiosyncratic post-syntactic filters designed to explain cases like the English Weak SF pattern in *com-pose* are, first, incompatible with F&H's own assumptions about the categorisation requirement on roots, and, second, not extendible to Weak SF languages, where the Weak SF pattern is the only available SF pattern.

As regards the VF construction, we correctly predict it to be the default way of

expressing change of location/state, since it involves a variety of Res that is unmarked and therefore available in every language. By contrast, in Head-Movement approaches like F&H, the VF construction is triggered, in their case by a feature on v that forces Res-to-v movement. In this sense, we, but not F&H, naturally derive the fact that the VF construction, unlike the SF construction, is present in all languages (e.g., VF Italian and SF English). Similarly, we also felicitously predict that the Weak SF construction, less marked than the Strong SF construction, is found in both Weak and Strong SF languages.

Finally, our approach makes two predictions concerning the morphosyntax of Weak SF languages, which we have shown to be correct. First, resultative constructions involving a free-standing result are grammatical in these languages as long as the construction features a simple verb of change; they are ungrammatical when the verb expresses manner. Second, even if the result must be affixed to the verb, the two pertain to different phonological domains, a state of affairs that Head-Movement approaches require more machinery to derive and that has been illustrated with the patterns of inflection in the perfect tense in Classical Greek and Latin.

Notes

[1]Previous proposals based on similar assumptions include Klipple (1997), Mateu (2002), Mateu and Rigau (2002), and Acedo-Matellán (2016), among others. See Acedo-Matellán and Mateu (2015) and Levin and Rappaport Hovav (2019) for recent overviews.

[2]F&H (p. 456) claim to have adopted this categorisation requirement (i.e., that 'uncategorised roots are ill-formed') from Embick (2010). In addition, F&H (section 2.5 and endnote 29) report that Embick (2010) 'exploits' this requirement to explain the difference between VF and SF languages. A thorough perusal of his monograph, however, reveals that Embick (2010) never states any such categorisation

requirement on roots (although he does mention that a root becomes categorised when combined with a little head categoriser, cf. Embick 2010:31) and does not deal with Talmy's typology at all. This said, we did find a formulation of the Categorisation Assumption in Embick and Noyer (2007:296).

[3]We leave out of the discussion the problems inherent to Head Movement itself, pointed out in diverse critiques for decades now (at least since Chomsky 1995). See Dékány (2018) for a recent overview.

[4]F&H locate the direct object at Spec-ResP. We follow here other approaches like Baker (2003), Williams (2008), and Kwapiszewski (2022), which take the result projection and the verbal projection to combine directly, before the object is introduced.

[5]The existence of w is motivated by the fact that languages can introduce several domains of lexical access within the well-established, universal phasal domains like CP and DP. Take the DP, for instance. English realises plurality within one and the same domain of lexical access and linearisation as the noun (e.g. *cow-s*). By contrast, Tongan uses a free-standing word to express plurality (e.g. *fanga pulu* 'cows'; Dryer 1989:875, apud Svenonius 2016:210f.). This variation can be captured by proposing that the category-defining head n is marked with the w feature in Tongan but not in English. For consistency, we assume that phase heads (C, for instance), which trigger transfer to the interfaces, are automatically marked with w, enforcing lexical access.

[6]Nothing in the system forces this floating word to incorporate before or after the host, that is, to proclicitise or to encliticise. Although all the cases that are considered in this paper involve procliticization, we would like to leave the system open to the possibility that in some languages the preference is for encliticization, as Kwapiszewski (2022:91–94) proposes for shifted particles in English. Whether the preference for pro- or encliticization depends on more general prosodic properties of the languages is an interesting issue that we must leave for future research. We thank an anonymous reviewer for raising this point.

[7]We also expect a w-less $\text{Res}^{@}$ to be possible. It would yield VF constructions with the verb linearised very low.

[8]The head $\text{Res}^{w,@}$ should also be compatible with the absence of a manner root. In that case, we would obtain a light verb (spelling out the span containing v) accompanied by a result-naming word (spelling out the span containing Res), as in English constructions like *Make something clear/available*. Thanks to an anonymous reviewer for pointing out this possibility.

[9]As pointed out by a reviewer, our system produces the expectation that languages should vary more

generally, that is, beyond the domain of Talmian variation, as to the categories that they license as specifiers, via the assignment of the w diacritic. Due to the constraints of space, we must leave a full exploration of this interesting prediction for the future. We just note that phrases like DPs and CPs, commonly encountered as specifiers, are robustly expected to be licensed as such in all languages, since they are headed by phasal categories (D, C) introducing an independent spell-out domain (cf. Svenonius 2016).

[10]Concerning our implementation of manner adjunction, a reviewer wonders whether, in principle, narrow syntax could allow v to merge with ResP first, and then with the manner root in SF constructions. This would render the manner root a specifier or an adjunct of vP, resulting in a configuration similar to the one advocated by F&H. However, this configuration would lead to a crash at PF, since the manner root in Spec-vP would be outside the main verbal span. Assuming that only functional heads can be provided with w, the manner root would not belong to any w-span, violating Obligatory Lexical Access.

[11]We abstract away from the aspectual layer AspP, which encodes (im)perfective aspect in Polish.

[12]In Head-Movement approaches like the one in F&H, deriving the orders attested in (33)-(34) is far from straightforward. ResP (e.g., $[_{\text{ResP}}$ Res $\sqrt{\text{DE}}]$ in the Latin example), v (M-Merged with the manner root, e.g. $\sqrt{\text{CURR}}$), and the inflectional material on top of v would all belong to the same PF cycle (following the standard model of Embick 2010). Moreover, since linearisation and vocabulary insertion take place from the bottom up, they would apply to ResP and v before applying to inflectional morphemes. Thus, even if the exponent of the perfect were prefixed, rather than suffixed, to the verb, it would be linearised farther from the root than the resultative prefix, as in the unattested orders (33b)/(34b).

The more general point is that inflectional affixes and resultative prefixes must be integrated with the verb via different mechanisms (linearisation of morphemes within a w-span and incorporation of an @-defective span, respectively). In principle, a Head-Movement theory which recognises two different mechanisms could handle the morphophonological data discussed in this section. For example, Arregi and Pietraszko (2021) make a distinction between Generalised Head Movement (GenHM) and M-Merger, arguing that the former is syntactic and the latter post-syntactic. If we assume that inflectional morphology is integrated via GenHM while resultative prefixes are incorporated via M-Merger, this theory would generate similar morphological structures to ours, with resultative prefixes situated at the edge of the verb. However, just like F&H, Arregi and Pietraszko (2021) propose that Head Movement is triggered by some diacritic, which they call [hm]. This predicts that VF constructions are derivationally more 'costly' than SF constructions, which is not the case, since VF constructions are cross-linguistically unmarked.

[13]Our hypothesis that the @ character of the a-span in Latin is related to the obligatory agreement morphology on the adjective in this language (and also Slavic and Classical Greek) generates the prediction that in the absence of agreement morphology, a resultative AP could in principle also be prefixed to a manner verb. This prediction is borne out, as first explored for Icelandic (from a different theoretical perspective) by Acedo-Matellán (2010). Icelandic has two types of adjectival resultative constructions, one following the Strong SF pattern (see ia) and one following the Weak SF pattern (see ib):

(i) a. Hann skrúbbaði pönnurnar hrein-ar.
he scrubbed pot(F).the.ACC.PL clean.ACC.F.PL
'He scrubbed the pots clean.' (Whelpton 2006)

b. Hrein-skrúbbuðu pönnurnar.
clean-scrubbed.NOM.F.PL pot(F)the.NOM.PL
'Clean-scrubbed pots.' (Whelpton 2007)

Crucially, the adjective can only be appended to the verb in the absence of inflection. In our terms, Strong SF Icelandic would allow the Weak SF pattern with non-inflected adjectives by using an @-less a in these cases. See Acedo-Matellán (2016) for evidence that Mandarin, with no agreement morphology on the adjective, also features adjectival resultative constructions of the Weak SF type.

Bibliography

Acedo-Matellán, V. (2010). *Argument structure and the syntax-morphology interface: A case study in Latin and other languages*. Ph. D. thesis, Universitat de Barcelona.

Acedo-Matellán, V. (2016). *The Morphosyntax of Transitions*. Oxford: Oxford University Press.

Acedo-Matellán, V. and J. Mateu (2015). Parameters and argument structure i: Motion predicates and resultatives. In A. Fábregas, J. Mateu, and F. Schäfer (Eds.), *The Handbook of Parameters*, pp. 99–122. London: Bloomsbury.

Adger, D. (2003). *Core Syntax*. Oxford: Oxford University Press.

Alexiadou, A., E. Anagnostopoulou, and F. Schäfer (2015). *External Arguments in Transitivity Alternations: A Layering Approach*. Oxford: Oxford University Press.

Arregi, K. and A. Pietraszko (2021). The ups and downs of head displacement. *Linguistic Inquiry 52*(2), 241–290.

Asyllogistou, A. (2019). *Result in the diachrony of Greek*. Ph. D. thesis, Ulster University.

Baker, M. (2003). *Lexical categories: verbs, nouns, and adjectives*. Cambridge: Cambridge University Press.

Baker, M. (2008). The macro-parameter in a micro-parametric world. In T. Biberauer (Ed.), *The Limits of Syntactic Variation*, pp. 351–373. Amsterdam: John Benjamins.

Blumenfeld, L. (2012). Vowel–zero alternations in Russian prepositions: Prosodic constituency and productivity. In *Russian language studies in North America*, pp. 43–69. London: Anthem Press.

Borer, H. (1984). *Parametric syntax: Case studies in Semitic and Romance languages*. Dordrecht: Foris Publications.

Brody, M. (2000a). Mirror theory: Syntactic representation in perfect syntax. *Linguistic Inquiry 31*(1), 29–56.

Brody, M. (2000b). Word order, restructuring, and Mirror Theory. In P. Svenonius (Ed.), *The Derivation of VO and OV*, pp. 27–43. Amsterdam: John Benjamins.

Chomsky, N. (1986). *Knowledge of language: Its nature, origin, and use*. New York: Praeger.

Chomsky, N. (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.

Dékány, E. (2018). Approaches to head movement: A critical assessment. *Glossa 3*(1), 1–43.

Dryer, M. (1989). Plural words. *Linguistics 27*, 865–895.

Embick, D. (2004). On the structure of resultative participles in English. *Linguistic Inquiry 35*(3), 355–392.

Embick, D. (2010). *Localism versus globalism in morphology and phonology*. Cambridge, MA: MIT Press.

Embick, D. and R. Noyer (2007). Distributed morphology and the syntax-morphology interface. In G. Ramchand and C. Reiss (Eds.), *The Oxford Handbook of Linguistics Interfaces*, pp. 289–324. Oxford: Oxford University Press.

Folli, R. and H. Harley (2020). A head movement approach to Talmy's typology. *Linguistic Inquiry 51*(3), 425–470.

Gribanova, V. (2009). Phonological evidence for a distinction between Russian preposi-

tions and prefixes. In G. Zybatow, D. Lenertová, U. Junghanns, and P. Biskup (Eds.), *Studies in formal Slavic phonology, morphology, syntax, semantics and information structure: proceedings of FDSL 7*, pp. 383–396. Frankfurt: Peter Lang.

Grimshaw, J. (2005). Extended projections. In J. Grimshaw (Ed.), *Words and Structure*, pp. 1–73. Stanford, CA: CSLI Publications.

Heim, I. and A. Kratzer (1998). *Semantics in Generative Grammar*. Oxford: Blackwell.

Hoekstra, T. and R. Mulder (1990). Unergatives as copular verbs: Locational and existential predication. *The Linguistic Review 7*, 1–79.

Klipple, E. (1997). Prepositions and variation. In A.-M. D. Sciullo (Ed.), *Projections and Interfafce Conditions: Essays on Modularity*, pp. 74–108. Oxford: Oxford University Press.

Kwapiszewski, A. (2022). *The Morphosyntax of Aspect and Event Structure: Polish as a Weak Satellite-Framed language*. Ph. D. thesis, University of Oxford.

Levin, B. and M. Rappaport Hovav (2019). Lexicalization patterns. In R. Truswell (Ed.), *Oxford Handbook of Event Structure*, pp. 395–425. Oxford: Oxford University Press.

Mateu, J. (2002). *Argument structure. Relational construal at the syntax-semantics interface*. Ph. D. thesis, Bellaterra: Universitat Autònoma de Barcelona.

Mateu, J. (2012). Conflation and incorporation processes in resultative constructions. In V. Demonte and L. McNally (Eds.), *Telicity, Change, and State: A Cross-Categorial View of Event Structure*, pp. 252–278. Oxford: Oxford University Press.

Mateu, J. and G. Rigau (2002). A minimalist account of conflation processes: Parametric variation at the lexicon-syntax interface. In A. Alexiadou (Ed.), *Theoretical Approaches to Universals*, pp. 211–236. Amsterdam: John Benjamins.

Matushansky, O. (2002). On formal identity of Russian prefixes and prepositions. In

A. N. O. V. Anikó Csirmaz, Zhiqiang Li and M. Wagner (Eds.), *Phonological Answers (and their Corresponding Questions)*, Volume 42 of *MIT Working Papers in Linguistics*, pp. 217–253. Cambridge, MA: MIT Press.

Matushansky, O. (2006). Head movement in linguistic theory. *Linguistic Inquiry 37*(1), 69–109.

McIntyre, L. L. (1992). *Classical reduplication*. Ph. D. thesis, The University of North Carolina at Chapel Hill.

Pesetsky, D. (1985). Morphology and lexical form. *Linguistic Inquiry 16*, 193–245.

Pollock, J.-Y. (1989). Verb movement, universal grammar, and the structure of IP. *Linguistic Inquiry 20*(3), 365–424.

Ramchand, G. (2008). *Verb Meaning and the Lexicon: A First Phase Syntax*. Cambridge: Cambridge University Press.

Real Puigdollers, C. (2011). Towards a non-syntactic approach of manner incorporation. Paper presented at the Workshop on Verbal Elasticity, Universitat Autònoma de Barcelona, 3–5 October.

Real Puigdollers, C. (2013). *Lexicalization by Phase. The Role of Prepositions in Argument Structure and its Cross-linguistic Variation*. Ph. D. thesis, Universitat Autònoma de Barcelona.

Schreiner, S. L. R. (2021). Span–conditioned allomorphy and late linearization: Evidence from the Classical Greek perfect. *Glossa: a journal of general linguistics 6*(1), 1–28.

Svenonius, P. (2016). Spans and words. In D. Siddiqi and H. Harley (Eds.), *Morphological Metatheory*, pp. 201–222. Amsterdam: John Benjamins.

Svenonius, P. (2018). Delimiting the syntactic word. Presented at *Linguistics at Santa Cruz*, March 10, 2018, UCSC.

Svenonius, P. (2020). A span is a thing: A span-based theory of words. In Asatryan, Song, and Whitmal (Eds.), *NELS 50: Proceedings of the Fiftieth Annual Meeting of the North East Linguistic Society*, pp. 193–206. GLSA.

Talmy, L. (2000). *Toward a cognitive semantics. Vol. 2, Typology and process in concept structuring*. Cambridge, MA: MIT Press.

Whelpton, M. (2006). Resultatives in icelandic. a preliminary investigation. (Ms.) University of Iceland.

Whelpton, M. (2007). Building resultatives in Icelandic. Paper presented at On Linguistic Interfaces, University of Ulster, June 2007.

Williams, A. (2008). Word order in resultatives. In C. B. Chang and H. J. Haynie (Eds.), *Proceedings of WCCFL 26*, pp. 507–515. Somerville, MA: Cascadilla Press.

Williams, E. (2003). *Representation Theory*. Cambridge, MA: MIT Press.