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Lena Borise, Andreas Pregla, Balázs Surányi

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Abstract

In this paper, we investigate the principles governing the ordering restrictions on postverbal adverbs and PP-adverbials in verb-final languages, expanding on Neeleman and Weerman's (1999) and Neeleman's (2017) study of postverbal PPs in Dutch. We provide novel data from several languages typologically similar to Dutch (flexibly verb-final, allowing for (i) verb-raising in certain constructions and (ii) postverbal adverbs and PP-adverbials) – namely, Hungarian, Udmurt (both Uralic), and dialectal (Bizkaian and Navarrese) Basque. Based on the data from these languages, we show that several other neutral patterns of (non-right-dislocated) postverbal PP-adverbial placement emerge. While they appear to present several challenges for the conclusions made based on Dutch, we show that these challenges can be addressed or attributed to independent factors.

1. Introduction

Developing a general theory of neutral word order between heads and dependents has been an important research pursuit for Ad Neeleman (including in collaboration with Klaus Abels), as demonstrated by Abels & Neeleman (2009, 2012), Neeleman (2015, 2017) and Abels (2016), among other publications.[1] The theory that is developed in this series of works aims to account for the cross-linguistic variability in typologically attested neutral word orders as well as the variability in neutral word orders within a given language, and is argued to be viable for any category of heads and dependents.

Abels & Neeleman (2012) first presented their theory as a symmetric alternative to Cinque's antisymmetric (2005) treatment of Universal 20 in the nominal domain, where the noun (N) acts as the head and descriptive adjectives (ADJ), numerals (NUM),

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and demonstratives (DEM) as dependents. The possible orders of dependents in what became known as Greenberg's Universal 20 (U20) pattern is shown in (1). According to this pattern, in neutral word orders, the relative order of dependents that precede the head is fixed, and that of those that follow the head is flexible. Later, Abels (2016) applied the same theory to the cross- and intra-linguistic variability in Germanic verb clusters, where the lexical verb acts as the head and modals, control verbs, (semi-)auxiliaries, and verb particles as dependents.

(1) *Possible orders of heads and their dependents, as captured by the Universal 20 (Neeleman 2015); X = head, YP, ZP = dependents, grayed out cell = unattested.*

ZP YP X	X YP ZP
YP ZP X	X ZP YP

The account of this pattern proposed in Neeleman's and Abels's work (as well as their joint work) rests on the axioms in (2) (Abels & Neeleman 2012; Neeleman 2015, 2017; Abels 2016). Going forward, we will call it the symmetric U20-based approach (SUBA).

(2) The axioms of SUBA

a. There are independent merger hierarchies. The order of merge is only restrained within each merger hierarchy.

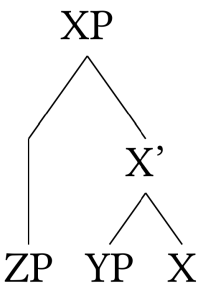
b. Merge is symmetric. Structure building can take place to the left and to the right.

c. Neutral orders are base-generated or derived by X^+-movement (where X^+-movement refers to movement of the head or a constituent containing the head).

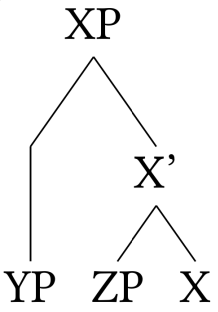
d. X^+-movement is asymmetric: it must be leftward.

Taken together, these axioms only allow for a single hierarchical order for pre-head elements but several distinct structures for post-head elements, as was shown in (1). To illustrate, given the hierarchy YP > ZP, which means that YP has to be merged earlier/closer to the head than ZP, the only available (head-final) structure that obeys the axioms in (2) is (3a). (3b) would involve a violation of the merger hierarchy, and (3c) would involve rightward movement of X, which violates (2d). As a result, there is no way to neutrally derive the surface word order YP ZP X, which corresponds to the grayed-out cell in (1).

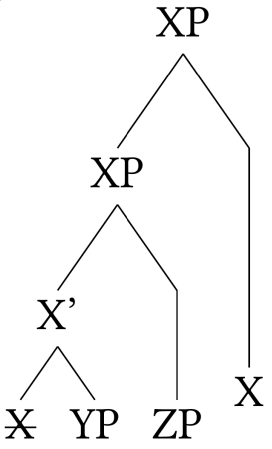
(3) a.



b. *

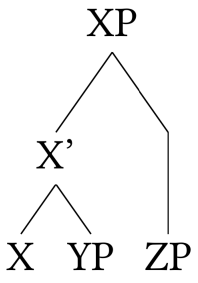


c. *



The axioms in (2) also allow for deriving the word-order variability among the dependents that follow the head. Here, the hypothesis that merge is symmetric, (2b), allows for creating the mirror image order of (3a): X YP ZP, as in (4a). Additionally, leftward X-movement can derive the order X ZP YP, (4b), from the baseline ZP YP X, as in (3a). Finally, (4c) shows that e.g. the surface string X YP ZP, identical to that in (4a), can also be derived via X^{+}-movement from the underlying structure [ZP [X YP]]. Multiple derivations being available for surface strings, as with X YP ZP and (4a,c), illustrate that the structure of a surface string may vary between languages and specific constructions.[2]

(4) a.



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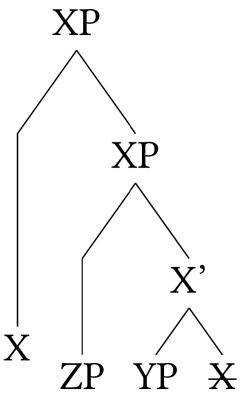
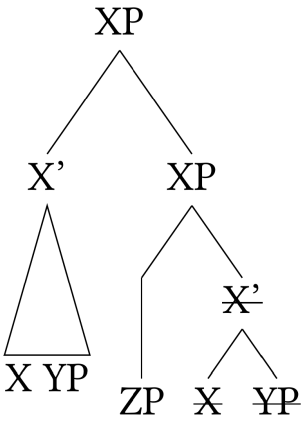


c.



Accordingly, the axioms in (2) allow for the conclusion that the order of dependents that precede the head directly reflects structural dominance, with precedence

[2] A surface string within a given language may also be structurally ambiguous, as Janke & Neeleman (2012) demonstrate for the prepositional dative construction. The reason for why surface X YP ZP might be derived via (4c) instead of (4a) likely has to do with other properties of these constructions – e.g., featural requirements of ZP in (4c), which may be satisfied by X^{+}-movement taking place over it; see further discussion in section 2.2.2.

mapping to dominance. Among the dependents that follow the head, though, precedence does not map to dominance: here, the structural relations among elements can be obscured by X^+-movement to the left.

The central application of SUBA for the purposes of the present paper is Neeleman (2017). There, it is used to account for the variable possible orders of adverbial PPs in the Dutch verbal domain, which became known as the *PP over V* generalization. The distribution of PPs in Dutch was first described and analyzed by Koster (1973, 1974), who observed that, in embedded clauses, PPs can either precede or follow the verb, but in the latter case their relative order becomes the mirror image of the former – i.e., it switches from 321V to V123. This is illustrated in (5), with the examples from Neeleman (2017):

(5) a. dat hij [door een stuurfout]$_3$ [met een knal]$_2$ [op het hek]$_1$ **strandde**
that he by a steering-error with a bang on the fence got.stuck
'that he got stuck on the fence with a bang because of a steering error'

b. dat hij **strandde** [op het hek]$_1$ [met een knal]$_2$ [door een stuurfout]$_3$
that he got.stuck on the fence with a bang by a steering-error

The facts in (5) show that the PPs are merged in the same hierarchical order, but to the right or left of the verb – in accordance with the axioms in (2). This led Koster (1974) to conclude that "*PP over V* is a mirror rule with the verb as the natural center". This is schematized in (6):

(6) …PP_n…PP_i…PP_{i-1}…PP_1…V …PP_1…PP_{i-1}…PP_i…PP_n…

Building on Koster's work, Neeleman (2017) showed that several more subpatterns of PP-placement are available in Dutch. For example, verb-raising required for V2 in main clauses in Dutch leads to several more postverbal orders being felicitous. This is illustrated with the V312 order in (7). The surface string is derived by base generating [3 [[V 1] 2]] followed by the verb moving leftward in order to satisfy V2, resulting in the V312 string (Neeleman 2017):

(7) Hij **strandde$_i$** [[door een stuurfout]$_3$ [[t_i [op het hek]$_1$] [met een knal]$_2$]].
he got.stuck by a steering-error on the fence with a bang
'He got stuck on the fence with a bang because of a steering error.'

The full range of surface PP-over-V strings discussed for Dutch is provided in (8). Neeleman (2017) observed that the pattern in (8) is a more elaborate version of the pattern in Cinque (2009) and Neeleman (2015) for the neutral order of heads and their dependents in general.

(8) *Possible order of the verb and PP adverbials in main and embedded clauses in Dutch (Neeleman 2017:20); greyed out cells = unattested.*

	I	II	III	IV
a.	$PP_3\ PP_2\ PP_1\ V$	$V\ PP_1\ PP_2\ PP_3$	$V\ PP_3\ PP_2\ PP_1$	$PP_1\ PP_2\ PP_3\ V$
b.	$PP_3\ PP_2\ V\ PP_1$	$PP_1\ V\ PP_2\ PP_3$	$PP_3\ V\ PP_2\ PP_1$	$PP_1\ PP_2\ V\ PP_3$
c.	$PP_3\ PP_1\ V\ PP_2$	$PP_2\ V\ PP_1\ PP_3$	$PP_1\ V\ PP_3\ PP_2$	$PP_2\ PP_3\ V\ PP_1$
d.	$PP_3\ V\ PP_1\ PP_2$	$PP_2\ PP_1\ V\ PP_3$	$V\ PP_2\ PP_1\ PP_3$	$PP_3\ PP_1\ PP_2\ V$
e.	$PP_1\ PP_3\ PP_2\ V$	$V\ PP_2\ PP_3\ PP_1$	$V\ PP_3\ PP_1\ PP_2$	$PP_2\ PP_3\ PP_1\ V$
f.	$PP_1\ PP_3\ V\ PP_2$	$PP_2\ V\ PP_3\ PP_1$	$V\ PP_1\ PP_3\ PP_2$	$PP_2\ PP_3\ PP_1\ V$

As (6) and (8) show, the axioms in (2) greatly restrict the number of possible postverbal orders, so that only a subset of logically possible ones is actually attested. Consider, e.g., cell (II.e) in (8), with the order *V PP_2 PP_3 PP_1, or *V231. This order could only be derived by either violating the merger hierarchy for PPs, or by employing rightward phrasal movement, which is not allowed (in neutral orders).[3] In other words, symmetric merge cannot generate *V PP_2 PP_3 PP_1, or *V231, because there is no permutation of (6) in which PP_3 can appear between PP_2 and PP_1, since PP_1 and PP_2 are embedded under PP_3. Leftward V^+-movement is also not sufficient because it would still involve a permutation where PP_3 appears between the PP_2 and the {V, PP_1} set. As before, this is not possible because both PP_2 and {V, PP_1} are embedded under PP_3.

In contrast, all non-greyed out cells in (8) can be derived from (6) via the axioms in (2), because symmetric merge basically ensures that every set permutation of a constituent structure is possible. For example, the embedded set { PP_3, { PP_2, { PP_1, V }}} has the set permutations [PP_3 [PP_2 [PP_1 V]]], as in (I.a) in (8), but also [PP_3 [[PP_1 V] PP_2]], (I.d), and [[PP_2 [V PP_1]]PP_3], (II.c), all of which are attested.

Our aim in this paper is to investigate the behavior of postverbal PP-adverbials in three languages that are typologically similar to Dutch in that they are flexibly verb-final and allow for postverbal PP-adverbials and adverbs: Udmurt, Hungarian, and certain dialects of Basque (Bizkaian and Navarrese). We use the term 'PP-adverbials' to refer to predominantly optional, adverb-like constituents like comitatives (*with a friend*), locatives/directionals (*in the park/ to the park*) and temporal expressions (*on Monday*; *yesterday*), which may have an overt or covert P^0 (for a silent adpositional analysis of adverbial NPs, see McCawley 1988). All three

[3] We assume that in the cases we discuss in the paper rightward movement is literally rightward (rather than involving multiple leftward movements).

languages also allow for multiple postverbal PP-adverbials, but their relative orders differ between the languages, and also pattern differently with respect to preverbal order of PP-adverbials in a given language.

In a nutshell, we show that these languages present a more complex picture than what can be expected given the axioms in (2) and the Dutch facts in (5-6). Specifically, we show that Udmurt, as compared to Dutch, only allows for a subset of orders of postverbal PP-adverbials, and does not allow for merging PP-adverbials on the right, as would be predicted by (2b). These facts suggest that symmetric merge is subject to further qualifications, as some only allow for merging PP-adverbials on the left.

Hungarian demonstrates remarkable flexibility and allows for any order of postverbal PP-adverbials, including *V231, which is disallowed as a neutral word order by SUBA. This makes the Hungarian facts hard to account for within SUBA, where movement to the right is disallowed in neutral word orders – or within most other strictly syntactic approaches, for that matter. We suggest that the postverbal PP-adverbial can be obtained via PF-movement, and provide evidence supporting the non-syntactic conditioning of the process that derives their surface placement.

Finally, certain Basque dialects, where postverbal PP-adverbials and/or adverbs are allowed, present a somewhat similar challenge for SUBA as Hungarian, since, given the existing approaches to Basque clausal structure, their placement cannot be generated as part of the underlying structure, and rightward movement – which could, in principle, derive their placement – is not allowed to derive neutral word orders under SUBA. We show that some – though not all – of the SUBA-violating Basque facts also exhibit non-syntactic properties. We also propose an alternative syntactic approach, which involves an overhaul of the clausal structure but makes the relevant Basque dialects SUBA-compliant. Overall, the data brought to light here shows that SUBA can account for surface PP-placement in a variety of languages, if certain assumptions about the clause structure are made and if supplemented by a number of other syntactic and/or post-syntactic processes.

2. The Udmurt facts: no rightward merge and unrestricted verb movement

2.1 The relevant Udmurt data

Udmurt is a flexibly verb-final Uralic language with an underlyingly head-final VP (Pregla 2024). Descriptively speaking, in neutral contexts, the verb can appear in any position other than the clause-initial one (Asztalos 2018, a.o.). This is shown in (9) with the help of angled brackets.

(9) Mon <vetli> [$_{PP}$ Mašaen] <vetli> [$_{PP}$ arńapumyn] <vetli>
1SG.NOM go.PST.1SG Masha.INS go.PST.1SG weekend.IN go.PST.1SG
[$_{PP}$ ńulesky] <vetli>.
forest.ILL go.PST.1SG
'I went with Masha to the forest on the weekend.'

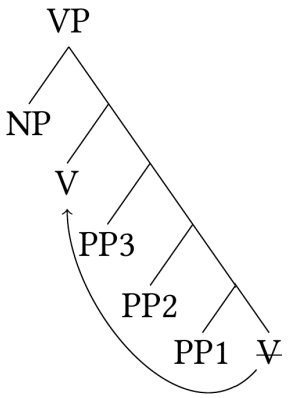
The crucial way in which the Udmurt postverbal PP-adverbials are different from the Dutch ones is the absence of the mirror image effect. (9) already shows that the relative order of the PP-adverbials is the same pre- and postverbally. Under general syntactic diagnostics and SUBA, the absence of mirror image effects indicates the absence of rightward merge and the presence of verb movement in (9).

Furthermore, inverting the order of e.g., the directional PP-adverbial (low) with the other two PP-adverbials in (9) would lead to a non-neutral word order both pre- and postverbally, as shown in (10): here, the rightmost adverbial, *arńapumyn* 'on the weekend', is narrowly focused, regardless of the position of the verb. This also indicates that the structural configuration among the PPs is the same pre- and postverbally, thus pointing to the presence of verb movement.

(10) Mon <vetli> [$_{PP}$ Mašaen] [$_{PP}$ ńulesky] [$_{PP}$ ARŃAPUMYN] <vetli>.
1SG.NOM go.PST.1SG Masha.INS forest.ILL weekend.IN go.PST.1SG
'I went with Masha to the forest ON THE WEEKEND.'

Taken together, the distribution of PP-adverbials in Udmurt suggests that postverbal PP-adverbials are solely derived by leftward verb movement, as illustrated in (11).[4]

(11)



Therefore, the distribution of Udmurt postverbal PP-adverbials fits with SUBA. However, in stark contrast to Dutch, Udmurt lacks rightward merge. This prevents neutral variation in the order of postverbal PP-adverbials that would be predicted to occur when both rightward merge and leftward verb movement are present in a language (as they are in Dutch).

2.2 Accounting for the unexpected structural properties

2.2.1 Lack of rightward merge

First, how can the lack of rightward merge in Udmurt be accounted for? While many other generative formalisms (e.g., HPSG, LFG, CCG) specify the directionality of selection in the lexical entry, the nature of linearity in merger is seldomly touched

[4] For a detailed discussion of the Udmurt facts, see Pregla (2024).

upon in mainstream generative theorizing.[5] To address this issue, Abels & Neeleman (2012, 66) introduce *ordering statements* that determine word order in 'treelets' (subtrees of a single binary branching mother node with its two daughter nodes). To account for the fact that adverbs and DPs can only appear preverbally in Dutch, the ordering statement in (12a) is used. In contrast with DPs, PPs can appear either preverbally or postverbally because the PP-specific ordering statement is underspecified or missing, (12b).

(12) a. In the structure [$_{VP}$ DP VP], order DP before VP. (Dutch)

b. In the structure [$_{VP}$ PP VP], – . (Dutch)

In line with this approach, we propose that, in Udmurt, a PP-specific ordering statement exists, as in (13a), which enforces PP merger on the left. It contrasts, e.g., with the ordering statement for high modal adverbs, such as *dɨr* 'probably', which neutrally appears clause-finally (Svetlana Edygarova, p.c.).

(13) a. In the structure [$_{VP}$ PP VP], order PP before VP. (Udmurt)

b. In the structure [$_{CP}$ Adv CP], order Adv after CP. (Udmurt)

Taken together, (13a-b) show that adverbial modification in Udmurt does not have uniform directionality but instead is governed by several distinct ordering statements.

2.2.2 Unrestricted verb movement

The other property of Udmurt that differentiates it from Dutch is the variable height of the verb and the apparent optionality of verb movement that derives it. This contrasts e.g., with the V2 requirement in Germanic, which is obligatory in the relevant contexts, only targets finite verbs and strands all but one constituent to the right of the finite verb. In Udmurt, however, there is no predictable context for verb movement, both finite and non-finite verbs can move, and there is no predetermined, fixed landing site. Therefore, the number and types of the stranded postverbal constituents depend on the height of the verb in a given construction. In sum, in comparison to the Germanic V2 and other movement operations, the Udmurt verb movement seems to be *untriggered* and *lacking a fixed landing site.*

Prima facie, the axioms in (2) do not state anything about triggers of head movement or the number of head movement steps involved in deriving a permissible word order. Any restriction in that regard would originate from a different, more general set of principles, to prevent overgeneration. If no such further principles were assumed (e.g. economy of derivation), the Udmurt pattern of untriggered verb movement would be fully expected under (2).

[5] One exception is Sheehan (2013), who introduces directionality into c-selection, turning the LCA (Kayne 1994) into a last resort mechanism that operates for pairs that lack ordering statements.

Nonetheless, untriggered (and optional) head movement would be unexpected for two reasons (Ad Neeleman, p.c.). First, neutral word orders that involve X^+-movement are less frequent than base-generated ones. To illustrate this with an example from the nominal domain, U20 patterns that require N-movement according to SUBA have been shown to be cross-linguistically less frequent than purely base-generated ones. According to Dryer (2018:799), orders derived by unidirectional base generation (DEM-NUM-A-N and N-A-NUM-DEM) are by far the most frequent ones and account for roughly half of Dryer's sample of 576 languages; the remaining orders derivable by base-generation make up another 35%, adding up to ca. ~85% in total. In contrast, the order derived by head movement, N-DEM-NUM-A, is only attested in 8 languages – i.e., roughly 1%; other orders derived by N^+-movement, such as DEM-N-NUM-A, account for another 14% of languages, adding up to ca. ~15% in total.[6] This distribution suggests that N^+-movement is, cross-linguistically, the marked option.

Second, when a language exhibits more than one neutral order within the nominal domain, the word order variation more frequently results from different directions of merge – that is, variable linearization of modifiers – rather than optional N^+-movement (Ad Neeleman, p.c.). In sum, head movement is the inter- and intra-linguistically *marked* option. Therefore, optional unmarked V movement in Udmurt runs counter to the generalization made for the nominal domain.

While we cannot presently explain it, the following seems to be the case: head movement is cross-linguistically more common in the verbal domain than in the nominal domain (we can only state this as a general impression from the literature). V-to-T movement and verb-shell formation appear to us to be common staples of clausal syntax. Nonetheless, there is no global typological study that could help quantify the number of languages with verb movement. As such, this possible difference in head movement will have to be the object of future research.

Next, let us address the lack of a fixed landing site. Different landing sites for head movement are already necessitated for the U20 generalization by Cinque (2005) and Abels & Neeleman (2012). Cinque (2005) accounts for the different head positions in the NP by positing a distinct $Agr_{X/Y/Z}$ head for every modifier. Head movement is stipulated to occur when a strong feature on one of those heads attracts the noun or a constituent containing the noun. Abels & Neeleman (2012:36) do not elaborate on the landing sites and their triggers, arguing that specifying them has no bearing on

[6] It should be noted, though, that Dryer's (2018) statistics have two shortcomings. First, a typological study of this size can rarely double-check the data reported in the literature. As a result, the sample can contain artifacts, i.e., attested examples for word orders that would not hold true under further scrutiny. For example, Dryer (2018) attests the previously unattested NUM-DEM-A-N order, which cannot be derived by either SUBA or Cinque (2005). Upon further fieldwork, though, this finding can turn out as misleading because, for example, the relevant example does not carry the intended meaning, e.g., *thee of those black horses* instead of *those three black horses* (Ad Neeleman, p.c.). Second, Dryer (2018) acknowledges that the sample is not well controlled for language family and areal bias.

the typology of structures and predicted word orders; the landing sites are left unlabelled and triggers for movement unspecified.

We propose that *head reprojection movement* (Ackema, Neeleman & Weerman 1993; Neeleman & Weerman 1999; Georgi & Müller 2010; see Dékány 2018 for a recent overview) provides a straightforward solution to the landing-site problem under SUBA, and does so better than the Cinque-style solution that relies on positing multiple Agr heads. The philosophy behind the head reprojection movement can be summarized as follows: "extra projections are the consequence, not the cause, of verb movement" (Ackema, Neeleman & Weerman, 1993:17). The main assumptions of head movement by reprojection are shown in (14):

(14) a. Head movement is adjunction of a head to the root of the tree.

b. After head movement takes place, the head projects at the landing site.

c. Head movement is triggered by a feature on the head.

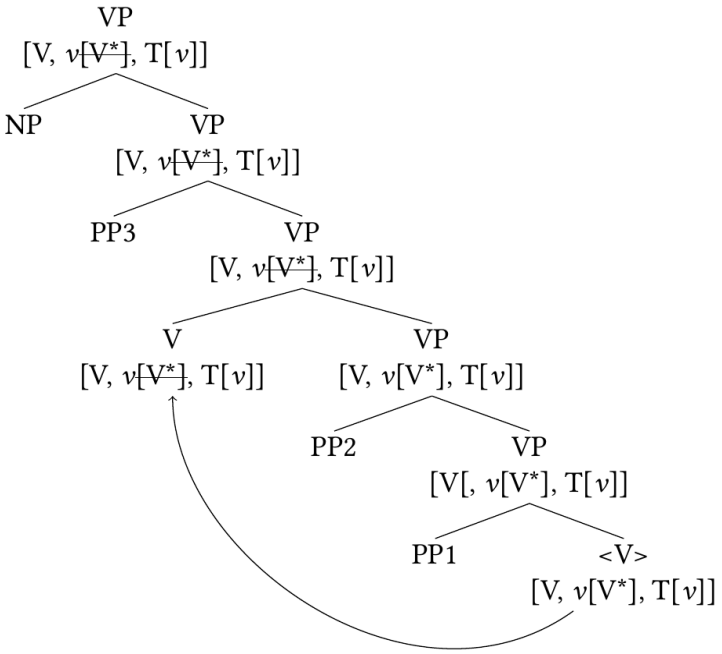
We will now illustrate the benefits of this approach by applying it to Udmurt. First, the verb needs to be equipped with a 'strong feature'. In the case of a verb shell, the verb carries both a V and *v* feature. The *v* feature, in turn, has a strong V feature, i.e., it subcategorizes for V (Fanselow 2004, citing Gereon Müller p.c.). Other features might also be present, such as a T feature with a weak *v* feature that can be satisfied under Agree at a distance. This is represented in (15).

(15) *vetli* 'went' [V, *v*[V*], T[*v*]]

If the lexical item in (15) is chosen from the numeration, it is clear that the verb will have to move at some point: *v* needs to satisfy its strong V* feature, and this can only be achieved if *v* becomes the sister of VP. As a result, the verb attaches to the root of the tree. At this point, the head projects again. The same does not happen with the T[*v*] because *v* is weak and can, therefore, be satisfied via Agree alone. This is illustrated in (17), for a version of (9) provided in (16), for convenience:

(16) Mon [$_{PP}$ Mašaen] vetli [$_{PP}$ arńapumyn] [$_{PP}$ ńulesky].
1SG.NOM Masha.INS go.PST.1SG weekend.IN forest.ILL
'I went with Masha to the forest on the weekend.'

(17)



In sum, an equivalent of a *v* projection is created without a predetermined *v* head attracting V. In contrast with the cartographic solution of positing as many Agr heads as there are constituents, head reprojection movement reduces the number of stipulated functional heads, as originally intended by Ackema, Neeleman & Weerman (1993).

This leaves the problem of the *variability of the movement trigger*. SUBA with head reprojection and the Cinque-style cartographic approach would not differ in this regard. Under both approaches, head movement requires a trigger and the trigger would be a 'strong feature' of some sort, be it on the verb itself (SUBA) or on the respective Agr head (cartographic approach). In either case, it would come down to free choice in the lexical entry and its feature specification, e.g., whether V would carry *v*[V] or *v*[V*], or whether the Agr head would carry [V] or [V*] respectively.

What one is left with, however, is a problem in the determinism and economy of derivation. For example, why would one choose a strong feature variant requiring movement when an option without movement is available? And why can the satisfaction of the strong feature be postponed (outside of Flexible Syntax), resulting in different movement heights? We can only speculate that, should economy be a driver of the derivation, that the structures with different verb positions are equally economic and result from the same starting conditions, since none of them are marked. What makes them equally economic would have to be determined in future research.[7]

[7] The question of optional verb movement and economy has come up before e.g., in the discussion of word order in Georgian, where both OV and VO orders are neutral (Skopeteas & Fanselow, 2010; Borise, 2023). Skopeteas & Fanselow (2010, 1381–1382) conclude the discussion of free verb movement by stating that the "available variable linearizations [...] are not determined through the

3. The Hungarian facts: any order of postverbal PP-adverbials

In another Uralic language, Hungarian, the VP is arguably head-final. Arguments for this view come from typological considerations (Greenberg 1978: 235; Ackema 2004; Schmidt & Surányi 2019) and from word order in participial (Marácz 1989) and truncated (Halm 2021) clauses (but see e.g. É. Kiss 2002 for the view that Hungarian is VO). In neutral finite clauses the underlying order is masked by verb movement to a head-initial functional projection in the inflectional domain, often identified as PredP (É. Kiss 2006). Postverbal constituents (PVCs) that are generated inside PredP result from stranding (18).[8]

(18) [$_{CP}$ A húg-om [$_{PredP}$ meg-talál-ta$_V$ [$_{vP}$ [$_{NP}$ a kiskutyá-d-at] [$_{PP}$ a park-ban] t_V]]].
DEF sister-1SG PV-find-PST.3SG DEF puppy-2SG-ACC DEF park-LOC
'My sister found your puppy in the park.'

The basic preverbal order of PP-adverbials corresponds to the Dutch facts in (5a). Accordingly, while (19) is fully acceptable, other preverbal permutations of the PP-adverbials are degraded.

(19) [$_{CP}$ [$_{TP}$ [$_{PredP}$ [$_{PP}$ Két alkalom-mal]$_3$ [$_{PredP}$ [$_{PP}$ hosszú percek-ig]$_2$
two occasion-with long minutes-for
[$_{PredP}$ [$_{PP}$ nagy füst-tel]$_1$ [$_{PredP}$ égett$_V$ [$_{vP}$ [$_{NP}$ a tűz] t_V]]]]]]]
big smoke-with burned.3SG DEF fire
'The fire burned with great smoke for long minutes on two occasions.'

Postverbal PP-adverbials, in contrast, can come in any order without any interpretational differences. This includes the permutations V231, illustrated immediately below, and V132, two postverbal orders that are not derivable by leftward verb raising and left- and right-adjunction of the stranded PPs – and, as such, are predicted to be impossible in a neutral context by SUBA (see (8)).[9]

(20) Égett [$_{PP}$ hosszú percek-ig]$_2$ [$_{PP}$ két alkalom-mal]$_3$
burned.3SG long minutes-for two occasion-with
[nagy füst-tel]$_1$ [$_{NP}$ a tűz].
big smoke-with the fire

Postverbal PP-adverbials may freely intermingle with other postverbal material of different structural heights, e.g., with any number of high (e.g. evaluative or epistemic) adverbs, as in (21). Whether one takes such postverbal high adverbs to be base-generated by right-adjunction or optionally postposed from a high left-peripheral base position, both derivations situate them in a high rightward

syntactic derivation". Instead, the different linearizations are equally derived, and the specific circumstances let speakers decide which variant to choose.

[8] Structural details that are not immediately relevant are omitted in the partial bracketing representations below.

[9] Other preverbal orders can be derived either by parenthetical insertion or by topicalization of a PP.

position in the clause (located outside TP, at least). The fact that postverbal circumstantial PP-adverbials can follow such postverbal high adverbs shows that these postverbal circumstantial PP-adverbials cannot simply be analyzed as always staying inside PredP.

(21) [$_{CP}$ [$_{TP}$ [$_{TP}$ [$_{PredP}$ Égett [$_{NP}$ a tűz]]] [$_{AdvP}$ sajnos] [$_{PP}$ két
burned.3SG the fire unfortunately two
alkalom-mal][$_{PP}$ hosszú percek-ig]]
occasion-with long minutes-for
'Unfortunately the fire burned for long minutes on two occasions.'

Occurrences of circumstantial PP-adverbials following a high adverb, as in (21), could potentially be accounted for by free postposing to multiple right-adjoined positions (we return to the information structural import of this operation below). If such a postposing operation exists in Hungarian, it may not be expected to be limited to PP-adverbials. Indeed, the broader descriptive generalization regarding the postverbal field, formulated by É. Kiss (2008), is that the relative order of major constituents after the verb is free regardless of their syntactic type.[10] Postposing would then seem to extend not only to the adverbial PPs, but also to other adjuncts and to argumental phrases, irrespective of base position (cf. the placement of the subject in (20)).[11]

This postposing operation has a locality profile that is markedly different from that of syntactic rightward movements, however. Ross (1967) described syntactic rightward movements as clause-bound, and since then they have been found to obey even more stringent locality constraints (see Baltin 2007 for a review). The locality properties of postposing are definitely looser than that in Hungarian: it can extract constituents from an argument clause, lining them up together with constituents of the main clause in any order following the main clause verb. This is illustrated in (22), where the dative argument of the main clause verb and the the main clause sentence adverb are interspersed with the subordinate infinitival verb and its object. In contrast to syntactic postposing operations, postposing in Hungarian appears to be bounded only by a finite clause boundary.

(22) Jól esne valószínűleg enni a lányoknak valamit.
well fall.COND.3SG probably eat.INF the girls.DAT something.ACC
'The girls probably feel like eating something.'

[10] É. Kiss (2008) proposes that the (extended) verbal projections that are vacated by leftward verb raising are flattened at surface structure. This derives the free order of PredP-internal postverbal constituents, but as É. Kiss (Op. cit., footnote 20; 2010) is aware, it does not extend to PredP-external postverbal elements. For this reason É. Kiss (2008, 2010) posits the freedom of postverbal ordering as an additional stipulation.

[11] The subject cannot be stranded in situ in the *v*P in (20), because the adverbial PPs preceding it would then have to be all left adjoined to *v*P. This is precluded by their V231 order, however.

Further, postposing appears to be semantically vacuous. First, it does not affect logical scope. To see this, consider quantified phrases postposed to a position after a postverbal high adverb, as in (23). Just like a non-postposed postverbal QP, such a postposed QP may be interpreted both with narrow and with wide scope over a preverbal scope-bearing element, like clausal negation. If postposing did affect scope (by extending it to the postposed surface position), then such postposed QPs would be expected to only have wide scope. This is because, assuming postposing to be regular (hence upward) syntactic movement, a postposed high adverb should be sitting in a relatively high right-adjoined position. A postposed QP following this adverb would have to be right-adjoined even higher, from where it would take negation in its c-command domain.

(23) [[[Nem rontottam el (sok feladatot)] valószínűleg](sok feladatot)].
not messed.1SG PV many exercise.ACC probably many exercise.ACC
'Probably I didn't mess up many exercises.'
MANY>NOT / NOT>MANY

Postposing can also displace existential indefinite Negative Concord Items, which are only licensed in the scope of the clausal negation operator (cf. 24b), to the same location, as in (24a). In short, postposing seems to have a 'total reconstruction' property.[12]

(24) a. [[[Nem főztem (semmit)] sajnos] (semmit)].
not cooked.1SG nothing.ACC unfortunately nothing.ACC
'Unfortunately, I didn't cook anything.'

b. *[Semmit [sajnos [nem főztem]]].

Crucially, from an information structural perspective, the postposing we are hypothesizing is predicted by SUBA to be nonexistent as a syntactic movement operation. This is because, while rightward movements should, in principle, yield information structurally marked interpretations (as per (2) above), the orders above, derived by the putative postposing, can be neutral. In fact, the postposing we are considering is information structurally inconsequential more generally too: it can apply equally to phrases in a neutral, broad focus sentence, to given phrases, as well as to narrowly focused phrases. The latter is illustrated with a second occurrence focus below:

[12] Also for purposes of variable binding and Condition C, not illustrated here.

(25) a. Who messed up ONLY ONE EXERCISE?
b. CSAK JÁNOS rontott el sajnos CSAK EGY FELADATOT.
only Janos messed.3SG PV unfortunately only one task.ACC
'Unfortunately ONLY JANOS messed up ONLY ONE EXERCISE.'

One possibility compatible with SUBA is that the postposing operation is not ordinary syntactic movement, but movement at PF (a 'stylistic rule' in the sense of Rochemont 1978). That would also directly capture the 'total reconstruction' property illustrated above: the postposed phrase behaves as if it were in its non-postposed position. On the other hand, PF-movement may potentially have an effect on information structural interpretation (cf. Zubizarreta 1998). In particular, if a displacement can remove an element from, or bring an element into, the default position of nuclear stress, then it may in principle affect information structural partitioning related to roles of givenness and focus. Relocating a phrase P to the position of default nuclear stress may mark it as the focus. Choosing to displace a phrase P from a position where it would otherwise receive the default nuclear stress, on the other hand, may be associated with the givenness (de-focusing) of that displaced phrase P, or with the focus status of some other phrase P' that ends up bearing the default nuclear stress instead of P (Neeleman & Reinhart 1998, Šimík & Wierzba 2017).

That postposing cannot have any such information structural effects in Hungarian follows from properties of the syntax-prosody interface in the language. The first relevant property is that the position of the nuclear prominence in Hungarian is left-aligned at the level of the intonational phrase, rather than right-aligned. Specifically, the intonational phrase edge with which the nuclear accent is left-aligned is right before the verb (simplex or complex) (Szendrői 2003).[13] Accordingly, the nuclear accent falls on the affirmative verb in (21) and on the negated verb in (23). As the 'active' prosodic edge at the level of the clause is before the verb, a postposed postverbal phrase cannot end up in a nuclear accent position: there is no postposing for focus. The only phrase that could potentially be postposed from the default position of nuclear stress either in order to de-focus it or to focus something else in its stead is a preverbal focus phrase.

As (26) illustrates, a focused phrase must generally be fronted to the immediately preverbal position:

[13] The left edge of the intonational phrase containing the nuclear accent is aligned with the left edge of the phrase whose head is filled by the verb, excluding any adjuncts (Szendrői 2003).

(26) a. CSAK EGY KÁVÉT főztem. .
only one coffee.ACC cooked.1SG
'I made only ONLY ONE COFFEE.'
b. *Főztem CSAK EGY KÁVÉT.
cooked.1SG only one coffee.ACC

On Szendrői's (2003) seminal account, this movement is triggered precisely in order to bring the focus to a position that is mapped to the left edge of the core intonational phrase, where it will come to bear the default nuclear stress. If so, then this explains why a focus may not undergo postposing from its preverbal position: for the same reason why it also cannot stay in situ; namely, in a postposed position it would not be aligned with the left-aligned default nuclear stress. Since focus is assumed to require the prominence level of the nuclear stress, this is excluded.

In the presence of two foci, a second focus is not fronted in Hungarian, but remains postverbal. This is because the default nuclear stress is unique (Szendrői 2003): the intonational phrase has only one left-edge. The second focus comes to bear the same level of prominence as a preverbal focus through stress strengthening. As the second focus is not tied to the default preverbal position of the nuclear accent, a second focus, as opposed to the preverbal focus, may undergo postposing, as seen in (25) above. One may wonder why stress strengthening cannot save a postposed focus in single-focus sentences: why can't a preverbal focus be postposed, with its stress promoted in a postverbal position by stress strengthening to nuclear stress level prominence? This way the postposing of a narrow focus would allow some other constituent to end up in the default nuclear stress position in its stead, while still bearing nuclear stress level prominence itself. This is because the first step of such a derivation, the fronting of the focus to a preverbal position, would still be untriggered: by assumption, that fronting takes place to bring the focus into the position of the default (left-aligned) nuclear stress.

By licensing any order of postverbal PP-adverbials without any associated semantic or information structural correlates, Hungarian exhibits radical flexibility that is unexpected on the symmetric U-20 based approach. We suggest here that this is part of a broader, not yet well-understood word order flexibility characterizing the postverbal domain in this language, which may be modeled by free PF-postposing.[14] Whether this PF-postposing is part of the post-Spellout syntactic computation (as for instance, in Sauerland & Elbourne 2002) or takes place entirely post-syntactically (as Truckenbrodt 1995 and Göbbel 2013 maintain for

[14] É. Kiss (1987, 1994) proposes Quantifier Postposing as a stylistic rule, which puts fronted quantifier phrases back to (what in current terms corresponds to) a PredP-internal position. While we do not assume that postposing puts phrases back inside PredP, the account we suggest here can be considered a generalization of this operation.

extraposition from NP), and whether its looser locality properties can be derived from its PF nature remain to be explored.[15]

4. The dialectal Basque facts: the height of postverbal PP-adverbials and adverbs

Finally, let us consider postverbal PP-adverbials in Basque, another flexibly verb-final language. Basque consists of numerous dialects and sub-dialectal varieties, in addition to standard Basque, known as *euskera batua*. The key facts concerning adverb and adverbial placement discussed below come from two native speakers of Basque who speak sub-varieties of Bizkaian and Navarrese Basque, respectively. It's important to point out, though, that these judgments differ from the corresponding *euskera batua* facts and also from the judgments of speakers of other varieties, which tend to be more restrictive with respect to postverbal constituents. Nevertheless, we believe that these patterns deserve to be reported and their theoretical significance should be considered.

In a nutshell, this section shows the following: some of the dialectal Basque facts regarding postverbal placement of adverbs and adverbials pose a problem for SUBA if a clause structure with switched head directionality or a head-initial structure is assumed for Basque. To this end, we also provide an alternative approach to Basque clausal syntax. We also show that at least some of the relevant word order facts can result from non-syntactic processes and, therefore, fall outside of the purview of SUBA altogether.

4.1 The relevant Basque word order facts

The default neutral word order in Basque is verb-final; this is strongly preferred both in standard Basque and most dialects. In predicates that consist of a lexical verb and an auxiliary (i.e., the so called analytic/periphrastic verbs), the auxiliary follows the lexical verb in participial form. Arguments (e.g, direct objects) cannot be postverbal in all-new clauses; this is illustrated in (27) for dialectal Bizkaian Basque: (27) cannot be uttered as a neutral sentence (though the word order as that in (27) can be used to express focus on *parkien* 'in the park', the immediately preverbal constituent).

(27) # Nire arrebiek parkien topa dau zure txakurkumi-e.
my sister.ERG park.LOC find AUX your puppy-DEF
'My sister has found your puppy in the park.'

[15] The locality of PF-postposing may potentially be understood if finite clauses, but not non-finite complement clauses, are PF (Spell-out) phases (Marušić 2005). Alternatively, the locality properties may be explained in terms of syntactic processing (Abels & Neeleman 2024).

In contrast to direct objects, optional material – notably, PP-adverbials – can appear postverbally in neutral clauses. This is discussed in detail by A. Elordieta (2001) with respect to e.g. *atzo* 'yesterday' in neutral clauses, which allows for being placed in several positions preverbally – but postverbal placement of *atzo* is preferred and taken to be the default. This is illustrated in (28) for standard Basque.

(28) <Atzo> Jonek <atzo> ipuinak kontatu zituen <atzo>.
yesterday Jon.ERG yesterday stories tell AUX yesterday
'John told (some) stories yesterday.' (A. Elordieta 2001:199)

Similar facts are obtained in the sub-varieties of Bizkaian and Navarrese discussed here, with respect to temporal PP-adverbials like *atzo* but also locative PP-adverbials like *parkien* 'in the park', as shown in (29) for dialectal Bizkaian Basque. While in standard Basque and some other dialects, in the equivalent of (29), *parkien* 'in the park' may be sandwiched between the preverbal subject and direct object in a neutral utterance, in the varieties discussed here it can only be found postverbally (in a neutral context).

(29) Nire arrebiek zure txakurkumi-e topa dau parkien.
my sister.ERG your puppy-DEF find AUX park.LOC
'My sister has found your puppy in the park.'

When several postverbal PP-adverbials co-occur – eg., a temporal and a locative one (30a) or a directional and a temporal one (30b) – their relative order, in these two varieties, is flexible, which resembles the Hungarian facts reported in the previous section; neither adverbial can appear preverbally in an all-new context.[16] This is illustrated for dialectal Bizkaian Basque in (30):

(30) a. Nire arrebiek zure txakurkumi-e topa sauen <parkien atzo>/
my sister.ERG your puppy-DEF find AUX park.LOC yesterday
<atzo parkien>.
yesterday park.LOC
'My sister found your puppy in the park yesterday.'

[16] If preverbal positioning of the PP-adverbials is enforced – e.g., by placing them into a relative clause, given that relative clauses in Basque are strictly verb-final – an ordering restriction emerges: the temporal one precedes the locative one:

(i) Nire arrebiek atzo parkien topa sauen txakurkumie osasuntsu dau.
my sister.ERG yesterday park.LOC find AUX puppy-DEF healthy is
'The puppy that my sister found in the park yesterday is healthy'

b. Xabier Miren-egaz jun san <azoka-ra asteburuen>/ <asteburuen azoka-ra>.
Xabier Miren-with go AUX market-to weekend.on weekend.on market-to
'Xabier went to the market with Miren on the weekend.'

Finally, according to A. Elordieta (2001:198), low manner adverbs cannot appear postverbally in neutral contexts; an adverb of this kind can only surface after the verb if the immediately preverbal constituent is meant to be narrowly focused, as shown in (31). This is true of standard Basque as well as A. Elordieta's native Western/Bizkaian variety, and is in line with the verb-final character of Basque, since verb-final languages overwhelmingly disfavor postverbal placement of low manner adverbs (e.g., 89% of verb-final languages feature MannerAdv–Verb order in Dryer 2013: 277).

(31) # Jonek azken azterketa burutu zuen txarto.
Jon.ERG last exam.DET finish AUX badly
'John finished THE LAST EXAM poorly.' (narrow focus on the object)
NOT: 'John finished the last exam poorly.' (broad focus)

In contrast with this strict ban on postverbal adverbs in neutral contexts, the varieties spoken by the two speakers we consulted are more permissive. The Bizkaian speaker only favored postverbal placement of the low adverb *gogor* 'hard' in neutral contexts – but not *txarto* 'poorly' or *ondo* 'well', as shown in (32); note that in (32b-c) this necessarily caused the object to occur postverbally. The Navarrese speaker preferred for all of these adverbs to appear postverbally in neutral contexts, as shown in (33).

(32) a. Nire nebiek txakurre jo dau gogor. (Bizkaian)
my brother.ERG dog.DET hit AUX hard
'My brother has hit the dog hard.'

b. Nire nebiek txarto aparka dau kotxie.
my brother.ERG badly park AUX car.DET
'My brother has parked the car poorly.'

c. Nire lagunek ondo eindxau (= egin dau) azterketie.
my friend.ERG well do AUX exam.DET
'My friend has done well on the exam.'

(33) a. Nire anaiak txakurra jo zuen gogorki. (Navarrese)
my brother.ERG dog.DET hit AUX hard
'My brother hit the dog hard.'

b. Nire anaiak kotxea aparkatu zuen gaizki.
my brother.ERG car.DET park AUX badly
'My brother parked the car poorly.'

c. Nire lagunak azterketa egin zuen ongi.
my friend.ERG exam.DET do AUX well
'My friend did well on the exam.'

In the next section, we introduce the existing approaches to Basque clause structure, and discuss whether the word order facts discussed here can be accounted for by SUBA under each of the proposals.

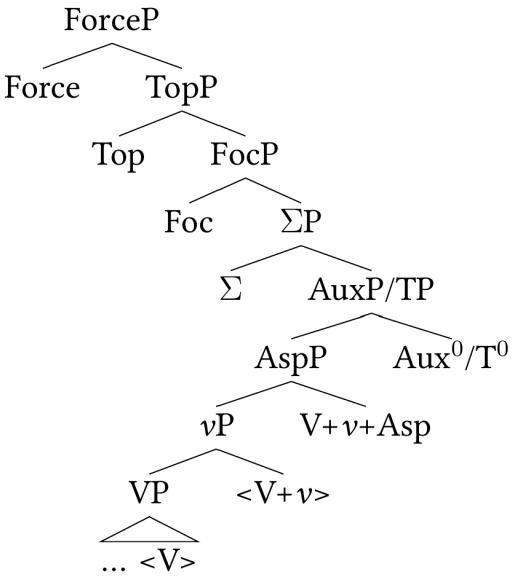
4.2 The main approaches to Basque clause structure

4.2.1 The switched directionality approach

The most widely accepted clause-structure for Basque involves a head-final clausal spine up to the level of TP/IP (Laka 1990), AuxP (Elordieta 2001), or FinP (Duguine 2022), with higher, mainly discourse-related projections (but also the polarity projection, ΣP) being head-initial (e.g., Laka 1990; A. Elordieta 2001; Haddican 2004; Irurtzun 2007, among others; see Duguine 2022 for an overview). This is illustrated in (34), which is intended to serve as an amalgamation of switched directionality approaches, with only the relevant projections shown. On this approach, the lexical verb is found in a lower head on the right, such as V/*v* (Elordieta 2001; Duguine 2022) or Asp (Laka 1990), and the auxiliary resides in a higher projection, such as AuxP (Elordieta 2001) or TP/IP (Laka 1990; Duguine 2022), or the surface Aux is taken to be the spell-out of T (Arregi & Nevins 2012); going forward, we label the projection in question AuxP/TP, in order to capture those variants. The high placement of the auxiliary is motivated by its default final position in the clause and the fact that it is inflected for TAM-features and agreement with the verbal arguments, both of which are often assumed to require movement to a higher projection (unless post-syntactic lowering, or presyntactic morphology (Ackema & Neeleman 2004, 2024) is assumed). An additional argument for the relatively high position of the auxiliary comes from the fact that the lexical verb is specified for viewpoint (perfective/imperfective) aspect, which may be taken to point to its placement higher than the base position – e.g., in AspP; the auxiliary that follows the lexical verb, accordingly, would be found even higher in the structure (Arregi & Nevins 2012:32).[17]

[17] Even though Arregi & Nevins (2012) argue for a fully head-final approach to Basque, without the higher projections being head-initial, their argument for the height of the auxiliary can be adopted on the more mainstream switched directionality approach as presented here as well.

(34)



How can the facts presented in section 4.1 be accounted for under the switched directionality approach? Let us start with (28), repeated here for convenience as (35):

(35) <Atzo> Jonek <atzo> ipuinak kontatu zituen <atzo>.
yesterday Jon.ERG yesterday stories tell AUX yesterday
'John told (some) stories yesterday.' (Elordieta 2001:199)

Regarding the preverbal occurrences of *atzo*, A. Elordieta (2001:200) proposes that, as a TP-level modifier, *atzo* can be merged in a wider range of positions than e.g. low/manner adverbs, which explains why it can occur in different positions preverbally – i.e., adjoined to the projection that hosts the subject, TP, or a lower one. Similarly, with respect to postverbal *atzo* in (31), A. Elordieta (2001:200) suggests that it can also be generated as a right-adjoined TP-/CP-level modifier, since all three options for the placement of *atzo* that are represented in (35) are equally felicitous in a neutral context. This proposal falls in line with SUBA, by illustrating both the symmetric nature of merge and the independence of the merge hierarchy that *atzo* is part of from other merge hierarchies – e.g., that for arguments.

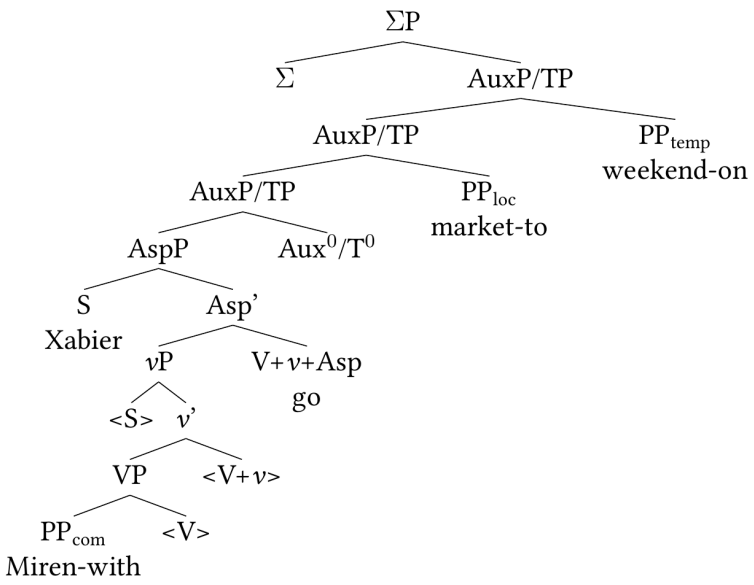
Next, there are cases of multiple postverbal PP-adverbials that can appear in any order – (30b), repeated here as (36):

(36) Xabier Miren-egaz jun san <azoka-ra asteburuen>/ <asteburuen
Xabier Miren-with go AUX market-to weekend.on weekend.on
azoka-ra>.
market-to
'Xabier went to the market with Miren on the weekend.'

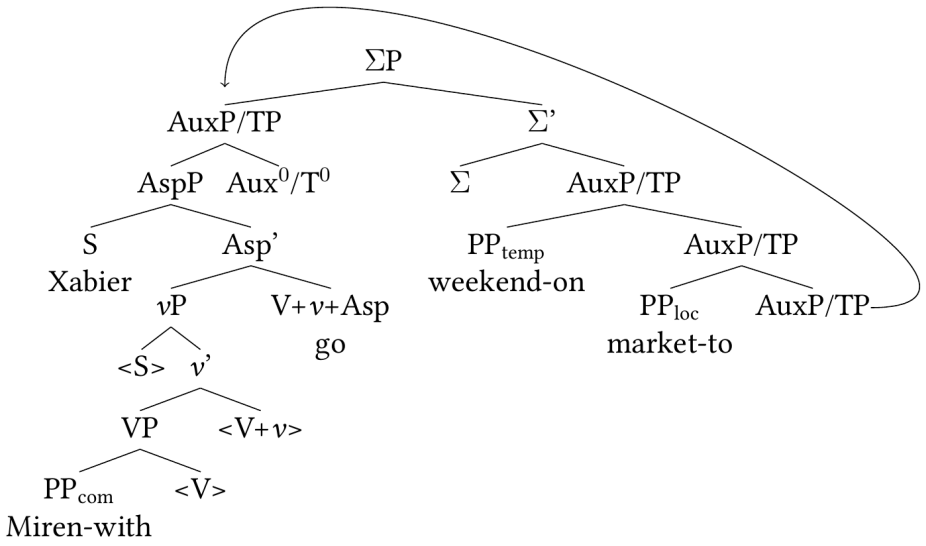
According to the switched directionality approach, the clause-final auxiliary in all-new clauses like (36) is found in Aux^0/T^0, which means that any post-auxiliary constituents would be adjoined to AuxP/TP on the right if they are base-generated there. Following A. Elordieta's (2001) treatment of single postverbal PP-adverbials, *azokara* 'to the market' and *asteburuen* 'on the weekend' would similarly be generated as right-adjoined to AuxP/TP, as shown in (37a).

The freedom of the relative order between two postverbal PP-adverbials is still derivable by SUBA in this scenario. In order to derive X ZP YP (cf. 4b), YP and ZP are merged on the left first, as presented in (37b). Afterwards, V^+-movement occurs: all clausal projections are projections of the verb, and as such, AuxP/TP is a constituent headed by V. Therefore, movement of AuxP/TP is a simple case of pied-piping V^+-movement that can derive neutral word orders. This AuxP/TP constituent contains V alongside Aux and any VP-internal material. Since the locative and temporal PPs are merged on top of AuxP/TP, they can be stranded by AuxP/TP-movement. This results in the LOC–TEMP order in (36).

(37) a.



b.



Finally, postverbal low adverbs, as in (38), repeated from (32a), are unexpected on the switched directionality approach. This is because the post-auxiliary adverbs would need to be placed quite high in the structure, higher than their base position – which is, for manner adverbs, quite low.

(38) Nire nebiek txakurre jo dau gogor.
my brother.ERG dog.DET hit AUX hard
'My brother has hit the dog hard.'

If the manner adverb was VP-internal, however, as the comitative PP in (37a), it could not be stranded by AuxP/TP movement anymore. It would be pied-piped along, preserving its preverbal position. This renders postverbal low adverbs difficult to derive in the switched-directionality approach.

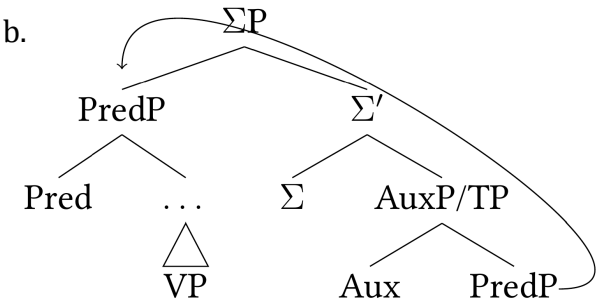
4.2.2 The head-initial approach + roll-up movement

In addition to the switched directionality approach, a head-initial analysis of the Basque clause structure has been proposed, inspired by the antisymmetry/Linear Correspondence Axiom (LCA; Kayne 1994) and argued for, among other, by Ormazabal et al. (1994); G. Elordieta (1997); Haddican (2004); Etxepare & Haddican (2017), and A. Elordieta & Haddican (2017). The main idea is that the clausal spine in Basque is consistently head-initial, and the head-final-like effects – e.g., the fact that the lexical verb and the auxiliary are final in affirmative clauses in neutral contexts – are derived via roll-up predicate fronting-like movement of a projection like PredP to a high left-headed projection, ΣP. This is illustrated in (39), taken from A. Elordieta & Haddican (2017:430). According to the head-initial analysis, the auxiliary *du* is found in the TP projection, whereas the PredP, which contains the lexical verb and the internal argument, is raised to ΣP, yielding the correct word order. Verbal arguments are subject to leftward movement to dedicated

case-assigning projections within PredP, which also derives the SOV word order (Haddican 2004) (not shown in (39)).

(39) a. Anek Jon ikusi du.
Ane.ERG Jon.ABS see-perf AUX
'Ane has seen Jon.'

b.



One of the main arguments in favor of the head-initial approach comes from ellipsis, as shown in (40). Here, the auxiliary in the second sentence is elided, which would be straightforward to model as a case of TP ellipsis on the head-initial approach, but would require a special operation, such as predicate fronting, on the switched directionality/head final approach (A. Elordieta & Haddican 2017:431). For more arguments in favor of the head-initial approach, including those coming from parallelism with negated contexts, see Etxepare & Haddican (2017) and A. Elordieta & Haddican (2017), among others.

(40) Jonek kafea erosi du, eta Anek [$_{\Sigma P}$[$_{PredP}$ liburua leitu] ~~[$_{TP}$ du]~~].
Jon.ERG coffee bought AUX and Ane.ERG book.DET read AUX
'Jon has bought a coffee and Ane read a book.'

How does the head-initial approach fare with respect to the facts discussed in 4.1, if SUBA is assumed? For convenience, the relevant data patterns are repeated below, with a single postverbal PP-adverbial in (41), and multiple ones in (42):

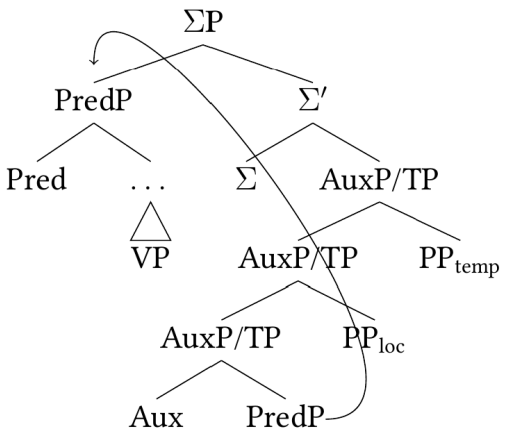
(41) <Atzo> Jonek <atzo> ipuinak kontatu zituen <atzo>.
yesterday Jon.ERG yesterday stories tell AUX yesterday
'John told (some) stories yesterday.' (Elordieta 2001:199)

(42) Xabier Miren-egaz jun san <azoka-ra asteburuen>/ <asteburuen
Xabier Miren-with go AUX market-to weekend.on weekend.on
azoka-ra>.
market-to
'Xabier went to the market with Miren on the weekend.'

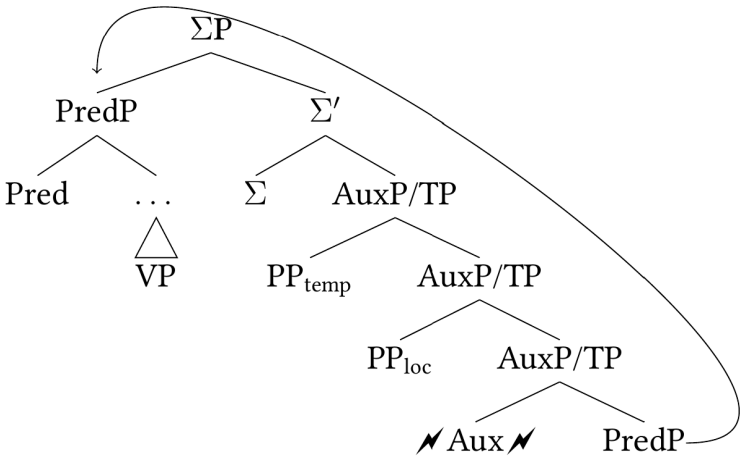
For the single postverbal PP-adverbial like *atzo* 'yesterday', the account proposed by A. Elordieta (2001), with multiple possible adjunction heights as well as the

possibility for both right and left adjunction would still derive the possible placements of *atzo*, as in (41). With respect to the V PP_{loc} PP_{temp} order in (42), there is only a minor difference to the switched-directionality analysis, as shown in (43a): with the adverbs adjoined on the right, instead of the whole AuxP/TP, only a subconstituent, PredP, is pied-piped to the front; the auxiliary and the adverbials stay behind. The major difference between the two approaches, then, is that V^+-movement (of PredP) *regularly* occurs in the head-initial analysis, while V^+-movement (of AuxP/TP) would have to occur *exceptionally* in the switched-directionality approach. The head-initial approach runs into a problem when deriving the V PP_{temp} PP_{loc} order in (42) though: when both adverbs are merged on the left and PredP is raised, the stranded auxiliary ends up following both PPs, which produces a wrong, auxiliary-final word order. This is indicated by ⚡ in (43b).

(43) a.



b.



Furthermore, similarly to the switched directionality approach, the head-initial approach struggles with postverbal low adverbs, as shown again in (44). This is because here, too, the auxiliary is assumed to occupy a high position in the clause, and the rest of the clause (the PredP) is assumed to have undergone movement. Accordingly, a low adverb like *gogor* 'hard' would have undergone movement as part

of PredP; otherwise, its clause-final position would need to result from moving the adverb by itself, which is disallowed by SUBA. (As before, we are assuming that a low adverb cannot be merged in a high projection like AuxP/TP – though this does not directly follow from SUBA.)

(44) Nire nebiek txakurre jo dau gogor.
my brother.ERG dog.DET hit AUX hard
'My brother has hit the dog hard.'

4.2.3 Interim conclusion

To sum up, both the switched-directionality and the head-initial analysis can derive single postverbal PP-adverbials under the assumptions of SUBA. When it comes to two postverbal PP-adverbials though, and the fact that they can appear in either order, the switched-directionality approach fares better than the head-initial analysis, which can only derive one of the two possible orders. Finally, neither analysis can successfully deal with low postverbal adverbs: they would have to adjoin too high in the structure in either approach – but rightward movement of an originally low adverb cannot be maintained in SUBA. This is not to say, though, that SUBA cannot be upheld: in the next section, we propose a solution to the problem of postverbal low adverbs by analyzing the Basque auxiliary as part of a structurally low verb cluster, as proposed for Dutch by Ackema & Neeleman (2024).

4.2.4 An alternative: a verb-cluster analysis of Basque

As shown in 4.2.1-3, postverbal manner adverbs seem problematic for SUBA because they would have to be base-generated too high, above the TP. However, this problem only occurs on the standard analyses of Basque clause structure. This section sketches an analysis of Basque along the lines of Germanic verb clusters, which offers a solution for the distribution of postverbal PP-adverbials and adverbs.

The main analytical problem for the adverbial placement is posed by the analysis of the head-final verb complex. In the standard analyses, Basque is analyzed akin to English and Romance VO languages, with high auxiliaries. However, the analysis of the Germanic verb-final verb clusters (Abels 2016, Keine & Bhatt 2016, Wurmbrand 2017, Salzmann 2019) provides a potentially closer match. In what follows, we apply Ackema & Neeleman's (2024) analysis of the Germanic verb cluster to Basque.

Verb clusters in Germanic OV pose a problem just like the one with adverb(ial)s that are too high: in many cases, direct dependents of a lexical verb V are not linearly adjacent to V. This is illustrated in (45), an example provided to Abels (2016) by Ad Neeleman (p.c.). It is the Germanic counterpart to the Basque (32,33), just as a mirror image. The lexical verb *zingen* 'sing' is semantically modified by the adverb *prachtig* 'beautifully'. Nonetheless, it seems as though the adverb would modify the lexical verb from a distance: the finite copula *heeft* 'has' and the non-finite modal

kunnen 'can.INF' intervene linearly, hierarchically and semantically between *zingen* and *prachtig*.

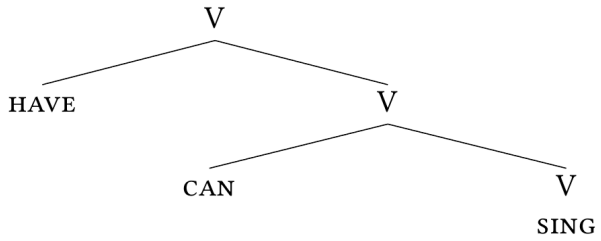
(45) dat hij vroeger **prachtig** heeft kunnen **zingen**. (Standard Dutch)
since he formerly beautifully has can.INF sing.INF
'that he formerly used to be able to sing beautifully.' (Abels 2016, 189)

We suggest that the analyses proposed for the Germanic verb cluster to deal with this problem can also be applied to Basque. This requires the assumptions in (46) to be adopted. We follow Ackema & Neeleman (2024) in how these assumptions are concretely applied.

(46) Assumptions about the Germanic verb cluster applied to Basque:
(a) without V2 movement, verbal elements are structurally low;
(b) verb-cluster semantics result from function composition.

First, what would be structurally high auxiliaries and modals in English is structurally at the level of VP in the verb cluster (Bader & Schmid 2009, Haider 2010, Keine & Bhatt 2016, Wurmbrand 2017, Salzmann 2019, Ackema & Neeleman 2024). Ackema & Neeleman (2024) achieve this by base-generating the verb cluster, as applied in (47) to the cluster in (45), reproducing their (74a).[18]

(47)



Second, the semantics of the Germanic verb cluster are derived by function *composition* instead of functional application: the verbs first form a unit with each other, pooling their arguments and semantic variables, and then take their dependents as a whole (Bader & Schmid 2009; Haider 2010; Keine & Bhatt 2016; Abels 2016; Ackema & Neeleman 2024). Function composition leads to the percolation of semantic features. We propose that function composition percolates the whole verb and event semantics, i.e. not only the theta-grid. This way, an adverb can modify the lexical verb despite being merged to a structurally higher verb of the verb cluster.[19]

[18] Ackema & Neeleman (2024) also represent inflectional morphology employing presyntactic morphology (Ackema & Neeleman, 2004). While inflection is one of the main reasons for Arregi & Nevins (2012) and A. Elordieta & Haddican (2017) to adopt their analyses, we abstract away from this aspect in order to zoom in on our proposal concerning adverbial placement.

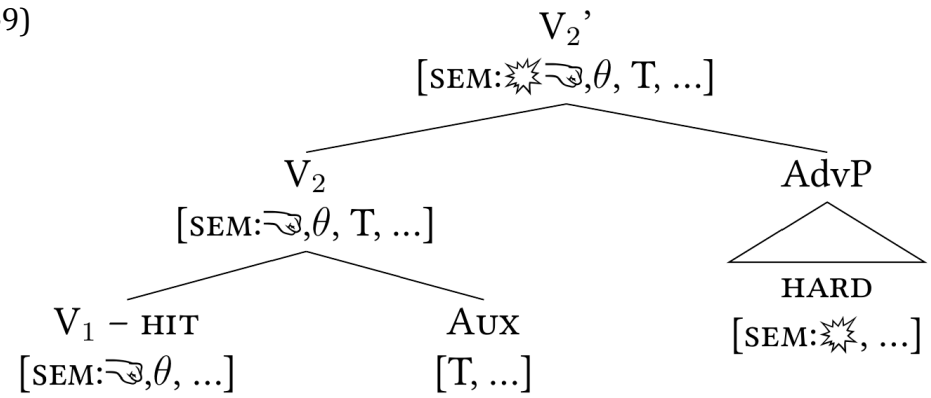
[19] In the alternative account (Abels 2016, Salzmann 2019), adverbials would be base-generated next to the lexical verb but would move out later on. Since that involves phrasal movement, it should not lead to neutral orders according to SUBA.

We can now apply the assumptions in (46) to Basque. We repeat the problematic example (32a) in (48) below. In a nutshell, we propose that (48) is structurally equivalent to the Dutch (45).

(48) Nire nebiek txakurre jo dau gogor.
my brother.ERG dog.DET hit AUX hard
'My brother has hit the dog hard.'

Our verb-cluster analysis for (48) is shown in (49) up to the relevant point, the merger of the adverb. First, the auxiliary *dau* is in a structurally low position, base-generated next to the lexical verb *jo* 'hit'. Because verb cluster semantics are derived by function composition, the semantics of the lexical verb is represented in the projection labeled V_2 hosting both the auxiliary and the lexical verb. This semantic percolation is represented by the feature [SEM: 🤜] still present at V_2. As a result, *gogor* 'hard' can be base-generated on top of V_2 while still leading to the interpretation where *jo* is modified by *gogor*. Finally, *gogor* is merged to the right of V_2, modifying the verb complex. In sum, the mirror image of (45) is derived.

(49)



In sum, an analysis of Basque clause structure modeled after Germanic verb clusters with low instead of high auxiliaries successfully derives post-auxiliary low adverbs. Other postverbal adverbials and multiple postverbal adverbials would have to be modeled as in the switched-directionality approach (4.2.1). The difference would consist in the potentially lower attachment site of the adverbials, and the size of the moved V^+ constituent.

It stands to show whether other generalizations about Basque can also be meaningfully formulated with a verb cluster. The generalization that the V-Aux complex moves as a whole in certain contexts such as focus (Arregi 2002, a.o.) follows straightforwardly from verb-cluster formation. It also does not preclude movement of only the finite auxiliary in other contexts such as negation (Laka 1990, a.o.), since Germanic verb clusters also allow for movement of only the finite verb for V2 purposes. Further phenomena of the Basque verb complex such as restructuring (Haddican 2005) and free word order variation in some parts of the cluster (Etxepare & Haddican 2017) are also present in the Germanic verb cluster

such that they have already received explanations via verb cluster formation. What it comes down to in the end is the empirical question, to be settled by future work: What is the structural, syntactic evidence for or against a high position of the auxiliary in Basque?

Finally, even though a verb-cluster analysis of Basque successfully addresses the problem of low adverbs, we show in the next section that it cannot account for certain seemingly non-syntactic conditions on postverbal elements, such as constraints on the number of preverbal elements in Bizkaian Basque. Since syntax is not known for counting, phonology is likely to play a part in deriving the facts in question.

4.2.5 Potential non-syntactic explanations

For the Bizakaian speaker who allows for postverbal PP-adverbials and adverbs, lexical and other non-syntactic – possibly, prosodic – factors play a role in their placement. First, as was shown in (32), this speaker only prefers the postverbal placement of *gogor* 'hard' but not *txarto* 'poorly' or *ondo* 'well'. Interestingly, though, the preference for the postverbal placement of *gogor* 'hard' weakens if more of the preverbal material is omitted – e.g., the arguments are pro-dropped.[20] As shown in (50a), pro-dropping the subject leads to the preverbal placement of the adverb being preferred; the speaker was hesitant about whether postverbal placement, as in (50b) could also be used in a neutral context ((50b) can be used to express narrow focus on the object).

(50) a. Txakurre gogor jo dau.
dog.DET hard hit AUX
'[S/he] has hit the dog hard.'

b. ?? Txakurre jo dau gogor.
dog.DET hit AUX hard

Pro-dropping both arguments leads to the postverbal placement of the adverbial being ruled out (in a neutral context):

(51) a. Gogor jo dau.
hard hit AUX
'[S/he] hit [it] hard.'

b. *Jo dau gogor.
hit AUX hard

[20] We are grateful to Karlos Arregi for suggesting this test. The placement of the other low adverbs, which do not surface postverbally when the arguments are overt, is not affected by pro-drop.

These facts suggest that there is a restriction on the number of preverbal constituents in this variety of Bizkaian Basque: preferentially, no more than one constituent can surface between the subject and the verb.[21] If competition for the preverbal slot arises between, e.g., a direct object and an adverb, only one of them can surface preverbally, and the other one is 'pushed out' into the postverbal domain. This may be the direct object, as was shown in (32b-c), or the adverb.

The existence of the restriction on the number of preverbal constituents is further supported by the fact that, if a clause contains more than one adverb, only one can surface preverbally, and the rest have to be postverbal, as shown in (52). Either of the two adverbs, *altu* 'loudly' or *sarritzen* 'often', can surface preverbally, with the other one being postverbal. Some relative orders between the postverbal elements are preferred to others, as indicated in (52b); note also that *miau egin* acts as a light verb construction.

(52) a. Katuek altu miau egin sauen <atzo sarritzen>/ <sarritzen atzo>.
cat.ERG loudly miau do AUX yesterday often often yesterday
'A cat often meowed loudly yesterday.'

b. Katuek sarritzen miau egin sauen <altu atzo>/ ??<atzo altu>.
cat.ERG often miau do AUX loudly yesterday yesterday loudly
'A cat often meowed loudly yesterday.'

The facts in (50–52) strongly suggest that non-syntactic factors are at play in the placement of postverbal PP-adverbials and adverbs in this variety of Bizkaian Basque. There is a lexical preference only for some of the adverbs to appear postverbally, and only if they cannot appear preverbally – i.e., if the slot between the subject and the verb is occupied by other material, such as a direct object or another adverb. The nature of this process does not seem to be syntactic, and there is some indication that it may be prosodic. Specifically, the intonational organization of an utterance in most Basque dialects is characterized by a three-way partition: (i) the obligatory immediately preverbal phrase, which receives the main prominence; (ii) the verb and any postverbal constituents, and (iii) an optional phrase that precedes the immediately preverbal one (G. Elordieta 2003:76). This three-way partition is especially apparent in pitch-accent dialects, spoken in coastal Bizkai (cf. the description in G. Elordieta 2003), which is also where our Bizkaian speaker comes from. It is likely, therefore, that some of these dialects might have grammaticalized (i) and (iii) as each only containing at most a single constituent, with any other material surfacing postverbally, in (ii).

[21] In the same variety of Basque, a weaker version of the same generalization is found in ditransitive constructions, where the indirect object can either surface preverbally, between the subject and the direct object (S IO DO V), or postverbally (S DO V IO).

It should be noted, though, that the patterns of postverbal adverb placement provided by the Navarrese speaker cannot be accounted for in the same way. As was shown in (33), for this speaker the lexical identity of a low adverb is not important: *gogorki* 'hard', *gaizki* 'poorly', and *ongi* 'well' are placed postverbally in neutral contexts. In contrast with the Bizkaian speaker, pro-drop of the argument(s) does not affect adverb placement, as shown in (53) for *gogorki* 'hard' – here, too, only postverbal placement of the adverbial is allowed.

(53) a. Txakurra jo zuen gogorki.
dog.DET hit AUX hard
'[S/he] hit the dog hard.'

b. Jo zuen gogorki.
hit AUX hard
'[S/he] hit [it] hard.'

We hope that reporting these facts here will facilitate finding an analysis for them in the future.

5. Discussion and conclusions

We have shown the general gist of U20 to hold true once again: in terms of the order of modifiers, there is more freedom following the syntactic head than preceding it. However, the extent of this generalization can be shown to be wider: just as there is more freedom following the head than preceding it in the nominal domain (Dryer 2018 inter-linguistically, Manzini 2024 intra-linguistically), we have shown this to be the case in the verbal domain. Nevertheless, the three languages surveyed here – Udmurt, Hungarian, and Basque (as represented by two varieties, Bizkaian and Navarrese) – present certain challenges for SUBA.

Udmurt is the most 'well-behaved' among the languages in our sample: it merely allows for optional leftward verb movement to different structural heights. This poses a problem to any theory that requires unique landing sites and triggers for head movement. Head movement by reprojection, as proposed by Ackema, Neeleman & Weerman (1993), eliminates the need for fixed landing sites. The problem for SUBA is that head movement is the inter- and intralinguistically less favored option in the nominal domain. This suggests that head movement is a marked option that requires a trigger. Although we offered some speculations, we leave the question of why it would be seemingly cost-free in the verbal domain for further research. The other noteworthy property of Udmurt is that the adverbials can only be merged on the left; we proposed an account of this fact with the help of *ordering statements* that determine the direction of merger for particular phrase types.

Hungarian exhibits rigid neutral ordering of different classes of adverbial PPs (and adverbs) preverbally, just as expected by U20. However, it permits any permutation postverbally, including orders predicted to be unavailable under SUBA. We showed that this freedom of word order following the verb (É. Kiss 2008, 2010) is not only semantically vacuous but it is also insensitive to information structure in that (i) any order can be neutral and (ii) both focal and given phrases can surface anywhere within the postverbal string. While it is clear that Hungarian postverbal free word order is not derivable by SUBA, it is unclear whether any other purely syntactic theory can account for this pattern. In view of the postverbal elements' non-observance of the strict locality constraints characterizing syntactic rightward movement (such as the Right Roof Constraint) and the fact that any dependent of the verb can occur postverbally regardless of its base position, we suggested a PF-postposing account. If we are right, this makes Hungarian postverbal elements an ideal testing ground for different theories of phrasal PF movement. [22]

The two varieties of Basque investigated here show how postverbal elements can come to bear on the general clause structure analysis of a language. The two main approaches to Basque, one partly head-final (the switched directionality approach), the other head-initial, can successfully derive single postverbal PP-adverbials, but the head-initial one runs into problems with deriving the free ordering of two postverbal PP-adverbials. Both struggle with a typologically curious pattern, the neutral post-auxiliary placement of manner adverbs. Both approaches assume a structurally high auxiliary. This means that any postverbal manner adverbial would have to be either base-generated as right-adjoined to a projection above T, where manner adverbs are not interpreted, or it would have to move there, which should not yield a neutral word order according to SUBA. One could take this as a challenge for SUBA, or one could rework the other premises. In a verb-cluster analysis of Basque we propose as an alternative to the existing approaches, the auxiliary would be low, as in Germanic OV languages. This way, a manner adverbial could adjoin above Aux (on the left or right) while still being VP-internal. Additionally, a PF account of postverbal adverbs in Bizkaian Basque is called for due to the seeming restriction on the number of preverbal elements: when the preverbal field becomes too 'full', elements are placed postverbally. A prosodic restriction – no more than one syntactic constituent per prosodic constituent – is likely at play here.

[22] It should be pointed out that Ad Neeleman recently discovered a verb cluster order in his native Dutch that could not be derived by SUBA, the infamous 213 order (Ackema & Neeleman 2024). His solution to this counterexample consists in a highly specific, postsyntactic reordering rule. Our approach, therefore, follows that of Ad's in this regard, by also treating some of the challenges for SUBA at the PF interface.

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