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## Adjunct islands are configurational

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This paper argues for the Spell Out Theory of the Adjunct Condition, which builds on Johnson (2003). The evidence in its favor comes from Balkar (a dialect of Karachay-Balkar, Turkic). The Spell Out Theory makes two claims: (a) before any two phrases are merged at least one of them must be spelled out and becomes opaque for movement; and (b) a spelled out constituent does not project its category. This predicts all adjuncts to be opaque, as they are by definition maximal projections that merge with a phrase. Unlike modifier accounts, the Spell Out Theory predicts that semantic modifiers can be transparent for movement, but only if they are merged with a head (as complements) or if their sister is spelled out. The argument from Balkar is based on the behavior of so-called converbs (untensed adjunct clauses). Balkar converbs come in three varieties: vPs attached at the vP-level or as structural complements, TPs attached above the vP and below the T' of the main clause, and CPs attached at the CP-level. vP-converbs are only transparent for scrambling if they are complements. TP-converbs are never transparent. CP-converbs are only transparent if the main clause that they modify is opaque. Thus, Balkar converbs are transparent in all and only structural configurations in which they are predicted to be transparent by the Spell Out Theory. In the end of the paper I discuss English data from Truswell (2007) and argue that the analysis proposed for Balkar can be extended to them as well.

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# 1 Formulating the Adjunct Condition

## 1.1 Introduction

In this paper I will argue for the configurational view of the Adjunct Condition, based on new evidence from Balkar (a dialect of Karachay-Balkar, a Turkic language spoken in the Republic of Kabardino-Balkaria, Russia) with some discussion of English. For Balkar, I will use data collected through fieldwork.<sup>1</sup> For English, I will reconsider the original data from Truswell (2007) and some new data collected through elicitation.<sup>2</sup>

The Adjunct Condition was originally proposed by Huang (1982: 497–499, 503–514, see also Paduceva & Zaliznyak 1979), and can be illustrated by the following contrast:

- (1) a. I know **which song**<sub>1</sub> you liked [**listening to** \_\_\_<sub>1</sub>].  
 b. \*I know **which song**<sub>1</sub> you cleaned the room [**listening to** \_\_\_<sub>1</sub>].

In (1a), a noun phrase *which song* is extracted from an *ing*-clause [*listening to* \_\_\_], which serves as the complement of *liked*, and the sentence is fine. In (1b), the same noun phrase is extracted from the same *ing*-clause, but the *ing*-clause is an adjunct, and the sentence is considerably worse.

In both cases the moved constituent is the same (the noun phrase *which song*), and the clause it is extracted from is the same (*[listening to \_\_\_]*). The only difference is the syntactic position of the clause: complement in (1a) vs. adjunct in (1b).

## 1.2 Descriptive definitions

Since the use of the terms *adjunct* and *complement* varies throughout the literature, before discussing the Adjunct Condition in more detail, I will introduce several descriptive definitions that this paper will rely upon.

First, let us call a *maximal projection* a constituent that does not project its category to its mother, in other words, the constituent that immediately dominates it is a projection of its sister. For example, in both (1a) and (1b) the *ing*-clause is a maximal projection (it does not project its category). In the trees below, I will notate phrases (non-heads) that are maximal projections as

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<sup>1</sup> The Balkar data in this paper are based on the judgments of 3 native speakers from the village of Verkhnyaya Balkariya (Republic of Kabardino-Balkaria, Russia). The speakers were either asked to judge whether a single sentence was acceptable in their dialect, or to compare the acceptability of a pair of sentences. Sentences judged as unacceptable are marked with \*, and ? is used for marginally acceptable sentences.

<sup>2</sup> The English data in this paper are elicited from 8 native speakers. The speakers were presented with one or two sentences. They were asked to judge each sentence on the scale from 1 (ungrammatical) to 5 (grammatical). Evaluations from 1 to 2 are considered “ungrammatical” (\*), 4 to 5 as “grammatical”. The examples for which the speakers’ evaluations averaged around 3 are marked ? (marginally acceptable). For sentence pairs the speakers were also asked whether they perceived a contrast in grammaticality.

XP, phrases (non-heads) that are not maximal projections as  $X'$  and heads as  $X$ . I will also assume that whenever  $\alpha$  and  $\beta$  are merged, at least one of them projects.

Second, let us call a *modifier* or a *semantic modifier* a special type of maximal projection, as opposed to an argument or a derived specifier. There is a variety of syntactic and semantic heuristics that distinguish modifiers from other types of maximal projections (see Melčuk 1974; Kibrik 1977; Jackendoff 1977; Pollard & Sag 1987; Grimshaw 1990; Ackema 2015: and others).<sup>3</sup> Modifiers are optional and usually iterative (that is, they can be stacked if their meaning allows it). They do not satisfy an EPP-feature of their sister, nor do they fill any argument slots, and they are not selected. Their interpretation is independent from that of the main clause. The semantic contribution of a modifier is solely determined by its own meaning, not by the main predicate (modifiers are not assigned a theta-role). Thus, the *ing*-clause in (1b) is a modifier (it is optional, can be iterated, is not assigned a theta-role and doesn't occupy an argument slot), while the *ing*-clause in (1a) is not (it is not optional, cannot be iterated, is assigned a theta-role and occupies an argument slot of the verb *like*).

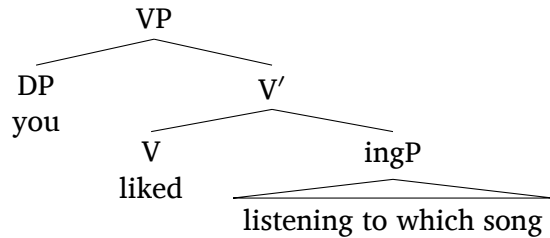
Broadly speaking, there are two views on the status of modifiers. According to the semantic view (see e.g. Kibrik 1977; Chomsky 1995; Johnson 2003; Truswell 2007; Bošković 2020), the special properties of modifiers follow solely from their semantics, namely, from the way the meaning of a modifier is composed with that of the main clause. According to the syntactic view (see e.g. Jackendoff 1977; Chomsky 1981; 2004; Stepanov 2007; Hunter 2010; 2015; McFadden & Sundaresan 2019), the special properties of modifiers follow from the fact that they are integrated into the main clause by a special syntactic rule. Stepanov (2007), building on Lebeaux (1991), suggests that all semantic modifiers are always merged late, after all the other operations have been performed (including movement). Chomsky (2004) and Hunter (2010; 2015) propose special structure building operations: Pair Merge and Insert respectively. McFadden & Sundaresan (2019) argue that semantic modifiers select their sister. The choice between the semantic and the syntactic view of modifiers is not crucial for the purposes of this paper, as the proposed theory is compatible with either of them (see section 1.3 below).

Finally, in what follows I will reserve the terms 'complement' and 'adjunct' to refer exclusively to the structural position of a maximal projection within the main clause (see Johnson 2003). A *complement* will be understood as any maximal projection (*semantic modifier or not*) whose sister is a head. Meanwhile an *adjunct* will be understood as a maximal projection which is a semantic modifier and whose sister is a phrase. Thus, in (1a) the *ing*-clause is complement, while in (1b) the *ing*-clause is an adjunct, as is illustrated by the structures in (2).

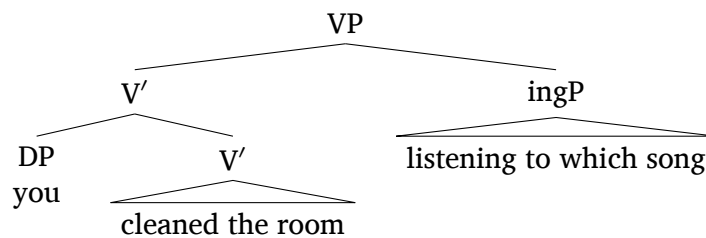
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<sup>3</sup> Throughout the paper I make a meaningful distinction between the terms 'modifier' and 'adjunct'. In most of the literature the term 'adjunct' is variably used to refer to one or the other.

(2) a. Complement:



b. Adjunct:



(3) Definitions:

	XP's sister	a head (Y)	a phrase (Y')
XP's status			
Modifier		<i>Complement</i>	<i>Adjunct</i>
Non-Modifier		<i>Complement</i>	<i>Specifier</i>

It should be noted that in the X-bar theory (Jackendoff 1977; Chomsky 1981) it is stipulated that all modifiers are adjuncts. In other words, in X-bar theory *by an additional assumption* all semantic modifiers merge with a phrase (there is no top left cell in (3)). Meanwhile, in Bare Phrase Structure (Chomsky 1995) there is no such assumption: semantic modifiers can merge either with a head or with a phrase. In what follows, I will crucially assume the latter view: all cells in (3) can be instantiated.

### 1.3 Adjunct condition

Let us come back to the Adjunct Condition and the contrast in (1). It is obvious that the contrast is due to the status of the *ing*-clause (that is the only thing that's different between (1a) and (1b)). There are two respects in which the *ing*-clause in (1a) is different from the *ing*-clause in (1b). First, the *ing*-clause in (1b) is a modifier, while the *ing*-clause in (1a) is not. Second, the *ing*-clause in (1b) is merged with a phrase, while the *ing*-clause in (1a) is merged with a head.

As a result, all the existing accounts of the Adjunct Condition can be classified into two camps: modifier accounts vs. configurational accounts. *Modifier accounts* (Chomsky 2004; Truswell

2007; Stepanov 2007; Hunter 2010; 2015; Bošković 2020: among a few others) capitalize on the modifier vs. non-modifier distinction. *Configurational accounts* (Huang 1982; Uriagereka 1999; Nunes & Uriagereka 2000; Johnson 2003; Sheehan 2010) capitalize on the structural distinction: merged with a phrase vs. merged with a head.

Modifier accounts formulate the Adjunct Condition as ‘all semantic modifiers are opaque’ (the top row in (3)) and argue that this is due to modifiers being integrated into the clause via a special syntactic or semantic rule (depending on the theory of modification).

*Semantic modifier accounts* (Truswell 2007 and Bošković 2020) claim that the relevant special property of modifiers is in how they are incorporated into the main clause at the semantic level. Modifiers are interpreted conjunctively and combine with the matrix clause via Predicate Modification, which is assumed to make them opaque for movement.

*Syntactic modifier accounts* claim that the relevant special property of modifiers is in how they are incorporated into the main clause at the syntactic level. As mentioned above, according to Stepanov (2007), all modifiers are merged after movement and are hence opaque. Chomsky (2004) and Hunter (2010; 2015)’s special syntactic operations for modifiers (Pair-Merge and Insert) are formulated in such a way as to prevent modifiers from being transparent. McFadden & Sundaresan (2019) argue for a theory of opacity for movement based on selection and Agree. According to them, since modifiers select their sister, they must be opaque.

Configurational accounts, on the other hand, formulate the Adjunct Condition as ‘all maximal projections merged with a phrase are opaque’ (the right column in (3)). This paper argues that this is, in fact, the correct generalization. More precisely, the paper argues for a particular configurational account called *the Spell Out Theory* or *Single Root Derivation*, developed in Privoznov (2021) (see also Johnson 2003). The two main empirical claims of the Spell Out Theory are given in (4).

- (4)   a. Before any two phrases are merged at least one of them must be spelled out.  
       b. A spelled out phrase does not project its category.

From (4) it follows that all adjuncts, as defined section 1.2, must be spelled out.<sup>4</sup> They are maximal projections (do not project their category) and are merged with a phrase. To spell out a constituent means to assign to it its semantic and phonological representation. As a result, a constituent becomes a term, like a lexical item, and, consequently, opaque for extraction. Thus, from (4) it follows that all adjuncts are opaque.

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<sup>4</sup> It is easy to see that (4) also predicts all specifiers to be opaque (the Subject Condition), see Privoznov (2021) for more details.

Crucially, it does not follow from (4) that all modifiers are opaque, as modifier accounts predict. The Spell Out Theory predicts that modifiers can be transparent in two cases:

- (5) a. A modifier is transparent if it is merged with a head (is a complement).  
 b. A modifier is transparent if its sister is spelled out.

The first case (5a) arises when a modifier is merged low. If it is merged with a head, it is no longer a structural adjunct, it is an un-selected complement and is expected to be transparent. It is still interpreted as a modifier (e.g. via Predicate Modification), in the sense that it does not fill any argument slot of the main predicate and is optional. But structurally it is a complement, because it is a sister to a head (3), and is expected to be transparent.

The second case (5b) arises when a modifier is merged with a phrase, but it is this phrase that is spelled out. In this case the modifier projects its category. That is only possible if the sister of the modifier is a phrase that can be spelled out. Here and below I will assume that for a phrase to be able to be spelled out all of its merge-inducing features (selectional and EPP-features) must be satisfied. In this circumstance either the modifier or its sister can be spelled out, while the other projects its category. An important prediction of this analysis is that the sister of a transparent modifier has to be opaque. No simultaneous extraction out of the modifier and out the main clause should be possible.

In what follows I will show that apparent counterexamples to the Adjunct Condition found in Balkar and English fall precisely under the two categories in (5), which supports the Spell Out Theory.

In sections 2, 3 and 4, I will present a case study of Balkar converbs (un-tensed adjunct clauses). Crucially, Balkar converbs are semantic modifiers. They are optional, can be stacked and do not fill any argument slots of the main predicate. Modifier accounts predict them to always be opaque. However, as I will show below, these clauses can be transparent for scrambling. Furthermore, they are transparent in precisely the two situations described by (5), as the Spell Out Theory predicts. Balkar converbs are a good case study for two reasons. First, the attachment site and the category of the converb can be established independently from extraction. Second, scrambling in Balkar permits moving more than one constituent at once. This makes it possible to test the prediction in (5b).

In section 5, I will briefly consider some known exceptions to the Adjunct Condition in English, originally pointed out by Truswell (2007), in the light of what we find in Balkar. We will see that the analysis proposed for Balkar can be extended to English as well.

## 1.4 The Spell Out Theory

Before discussing the Balkar data, I will briefly introduce the Spell Out Theory (Single Root Derivation) and show how it derives the claims in (4). For more details see Privoznov (2021).

According to the Spell Out Theory, syntactic derivation operates with three finite sets: the Lexicon, the Numeration and the Root. The Lexicon and the Numeration contain syntactically primitive elements (heads or spelled out phrases), the Numeration is a subset of the Lexicon. The Root is a singleton set (Single Root Derivation).<sup>5</sup> Merge is understood as an operation that takes an element from the Numeration and merges it to the Root.<sup>6</sup> Spell Out is understood as an operation that takes the element in the Root, assigns it fixed interpretation and phonological information and stores it back into the Numeration. This derives (4a). Namely, Merge (at least, External Merge) always puts together (i) a spelled out phrase or a head from the Numeration and (ii) the Root.

In addition, the Spell Out Theory assumes the following projection hierarchy: a head > the Root > a spelled out phrase. When Merge creates a set of two elements it is the higher one on the hierarchy that projects. Thus, when a head from the Numeration is merged to the Root, the head projects; meanwhile, when a spelled out phrase from the Numeration is merged to the Root, the Root projects (4b).

## 2 Introducing Balkar converbs

### 2.1 Preliminaries

In this section, I will introduce converbs (un-tensed clausal adjuncts) in Balkar. We will discuss their size and their syntactic position. But before we proceed, let me make some preliminary observations about the clausal structure in Balkar.

Balkar is a head final (SOV) language with rich verbal morphology:

(6) Root + Causative + Negation + Aspect/Tense + Agreement

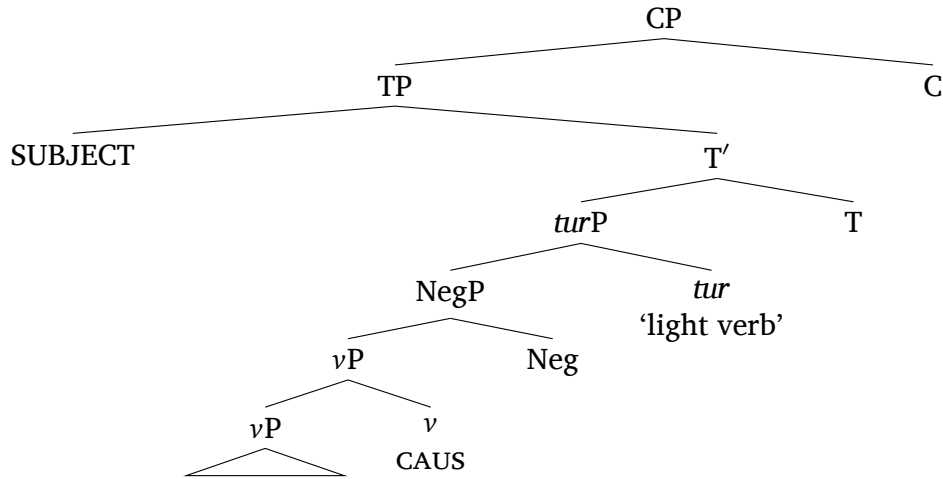
Given the morphological structure of the verb (6) and following the Mirror Principle (Baker 1985), I will assume the following syntactic structure for a simple clause (here and below I will assume that, like in English, Balkar subjects are base-generated inside the  $vP$  and later move to Spec,TP):

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<sup>5</sup> These assumptions are tied to a certain theory of memory structure, where the Lexicon is identified with long-term memory, the Numeration with working memory, and the Root with the focus of attention. The assumption that the Root is a singleton set is supported by an independent observation that the focus of attention can only ever hold one element at a time (see, Privoznov 2021: 31–39, for a more details).

<sup>6</sup> This is the definition of External Merge. Internal Merge merges an element from the Root to the Root. The only difference between the two is where the merged element is taken from: the Numeration or the Root itself (see Privoznov 2021: 31–39).

(7) Balkar clause:



There are two assumptions illustrated by the tree in (7) that will be important later. First, the causative morphology (CAUS) is hosted by a  $v$  head, which takes another  $vP$  (or  $VP$ ) as its complement. For Balkar causatives this analysis was proposed and developed by Lyutikova et al. (2006). Second, Negation is located low: above the  $vP$ , but below light verbs. Here I am following the Mirror Principle, cf. (6) and (7).

## 2.2 Converbs

Balkar has a variety of clausal modifiers. For the purposes of this case study I will focus on non-finite clauses headed by a verb with the suffix  $-a^7$  or  $-p$ . These clauses will be referred to as ‘converbs’ or ‘converb clauses’. The term comes from the typological literature (see e.g. Haspelmath & König 1995). In the literature on Turkic languages it is sometimes applied to all non-finite clausal adjuncts (see Kornfilt 1997, Grashchenkov 2015 and Ermolaeva 2016). Here and below I will use the term ‘converb’ specifically for un-tensed clauses formed by the two aforementioned suffixes.

The choice between  $-a$  and  $-p$  depends on the temporal relation between the converb clause and the main clause. As in many other Turkic languages, in Balkar  $-p$  is primarily used for precedence (8a), and  $-a$  – for simultaneity (8b).<sup>8</sup>

<sup>7</sup> The suffix  $-a$  has two allomorphs:  $-j$  after vowels and  $-a$  after consonants (Podobryaev 2004). As most suffixes in Turkic languages, the allomorph  $-a$  is subject to vowel harmony. It is realized as  $-a$  in back environments and as  $-e$  in front environments. When naming morphemes, I will conventionally use the back variant.

<sup>8</sup> Sometimes  $-p$  may be used with the simultaneous reading as well, depending on the lexical semantics of the verb. For more details see Pazelskaya & Rybintseva (2009) on Tuba Altai.



- (8) a. *ustaz<sub>1</sub> [PRO<sub>1</sub> ešik-ni ac-ip] stol-nu otou-ka kij-ir<sup>9</sup>-di*  
 teacher door-ACC open-CONV table-ACC room-DAT come.in-CAUS-PST1.3SG  
 ‘The teacher<sub>1</sub> carried the table into the room, **PRO<sub>1</sub> having opened the door.**’
- b. *Aslan<sub>1</sub> [PRO<sub>1</sub> zir-la zirla-j] šorpa ete-j e-di*  
 Aslan song-PL sing-CONV soup make-CONV AUX-PST1.3SG  
 ‘Aslan<sub>1</sub> was making soup, **PRO<sub>1</sub> singing songs.**’

As in many other Turkic languages, the converb clause in Balkar usually does not have its own overt subject (Kornfilt 1997: 68). It has a gap in the subject position, presumably, a PRO argument that is interpreted as co-referent with the subject of the main clause (possible controllers for PRO are discussed in Appendix 2, see the Supplementary file).

There are, however, certain semantic conditions (Grashchenkov 2015 and Ermolaeva 2016) under which a converb may have its own subject, similar to absolute adjuncts in English (Stump 1985). The subject of a converb has zero case marking, which means that either it has no case or that it bears nominative, since nominative is consistently null:

- (9) a. *[zašciq ešik-ni ac-ip] ustaz stol-nu otou-ka*  
 boy door-ACC open-CONV teacher table-ACC room-DAT  
*kir-giz-t-di*  
 come.in-CAUS-CAUS-PST1.3SG  
 Lit.: ‘**The boy having opened the door**, the teacher carried the table into the room.’
- b. *[zašciq tabaq-la kel-tir-e] Fatima stol-ka aziq sal-a*  
 boy plate-PL come-CAUS-CONV Fatima table-DAT food put-CONV  
*e-di*  
 AUX-PST1.3SG  
 Lit.: ‘**The boy bringing plates**, Fatima was setting the table.’

Both *-a* and *-p* converbs with PRO and *-a* and *-p* converbs with an overt subject are semantic modifiers. They are optional, they can be iterated (10), they do not fill any argument slots nor do they satisfy any EPP-features of the main clause, their semantic interpretation is independent from that of the main clause in the sense that they are not assigned a theta-role. In other words, converbs (with or without an overt subject, with *-a* or *-p*) are modifiers in all the relevant respects. Thus, modifier accounts predict them to always be opaque for movement, which, as we will see below, is not the case.

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<sup>9</sup> The causative suffix in Balkar has the following allomorphs (distributed lexically): *-t*, *-r*, *-z*, *-tir*, *-qiz*, *-qit*, *-qar*, *-qir* (Lyutikova et al. 2006: 104).

- (10) a. *fatima*<sub>1</sub> [**PRO**<sub>1</sub> *zir-la zir-la-j*] [**PRO**<sub>1</sub> *gül-le zij-a*] *ajlan-a*  
 Fatima song-PL sing-CONV flower-PL collect-CONV walk-CONV  
 e-di  
 AUX-PST1.3SG  
 ‘Fatima<sub>1</sub> was walking, **PRO**<sub>1</sub> singing songs, **PRO**<sub>1</sub> collecting flowers.’
- b. [**Madina aš qaṅa-ni tišina cıkar-ip**] [**Fatima eşik-ni bezgi-ler-in-den**  
 Madina table-ACC outside carry-CONV Fatima door-ACC hinge-PL-3-ABL  
**teš-ip**] Alim *tešek-ni* *üj-ge* *alaj kij-ir-di*  
 take.off-CONV Alim bed-ACC house-DAT thus come.in-CAUS-PST1.3SG  
 Lit.: ‘**Madina having taken the table out, Fatima having taken the door off its hinges**, Alim carried the bed into the house.’

Here and below I will assume that *-a* converbs and *-p* converbs have the same internal syntactic structure, occupy the same positions in the main clause and behave in the same way with respect to extraction. No data that I have collected contradicts this tentative assumption.

### 2.3 Scrambling

In Balkar most constituents can be moved (i.e., scrambled) away from their base position. In most cases this happens to constituents that are interpreted as given or topical, while focused material remains in-situ, preferably, adjacent to the verb. For example, in (11) the object of the embedded clause *Fatimani kitabın* ‘Fatima’s book’ is scrambled to the left periphery of the main clause.

- (11) [**Fatima-ni kitab-i-n**]<sub>1</sub> *men* [**bu zašciq** <sub>1</sub> **oqu-sa**] *sij-e-me*  
 Fatima-GEN book-3-ACC I this boy read-COND love-PRS-1SG  
 ‘I want that boy to read Fatima’s book.’

In what follows I will use long-distance scrambling as a diagnostic for converb transparency for movement. For this reason all the examples that involve extraction below have a clause modified by a converb embedded under an attitude predicate like *sun* ‘think’.

Scrambling is possible out of both converbs with an overt subject and converbs with PRO, as is shown by (12a) and (12b) respectively.

- (12) a. *eşik-ni*<sub>1</sub> *men* [[**Fatima** <sub>1</sub> **bezgi-ler-in-den teš-ip**] *Kerim tešek-ni*  
 door-ACC I Fatima hinge-PL-3-ABL take.off-CONV Kerim bed-ACC  
*üj-ge alaj kij-ir-gen*] *sun-a-ma*  
 house-DAT thus come.in-CAUS-NZR think-PRS-1SG  
 ‘I think that (with) Fatima having taken the door<sub>1</sub> off its hinges, Kerim carried the bed into the house.’

- b. **[meni zir-im-mi]<sub>1</sub>** men [Aslan<sub>2</sub> zol-da [PRO<sub>2-1</sub> **zirla-p**] bar-kan]  
 my song-1SG-ACC I Aslan road-LOC sing-CONV go-NZR  
 sun-a-ma  
 think-PRS-1SG  
 ‘I think that Aslan<sub>2</sub> was walking down the road, PRO<sub>2</sub> singing my song<sub>1</sub>.’

However, there are two crucial differences between the configuration in (12a) and the one in (12b). First, whether a PRO-converb can be scrambled out of or not depends on the main verb (13). The main verb cannot be transitive (13a) or unergative (13b). It has to be an unaccusative verb of position (13c) or motion (13d). In what follows I will argue that this is due to different structural positions of converb clauses in the context of different main verbs (see below).

- (13) a. \*XP<sub>1</sub> ... [main clause ... [PRO-converb ... <sub>-1</sub> ... ] V<sub>transitive</sub> ] ... (14a)  
 b. \*XP<sub>1</sub> ... [main clause ... [PRO-converb ... <sub>-1</sub> ... ] V<sub>unergative</sub> ] ... (14b)  
 c. ?XP<sub>1</sub> ... [main clause ... [PRO-converb ... <sub>-1</sub> ... ] V<sub>position</sub> ] ... (14c)  
 d. XP<sub>1</sub> ... [main clause ... [PRO-converb ... <sub>-1</sub> ... ] V<sub>motion</sub> ] ... (14d)

- (14) a. \***[zariq zir-ni]<sub>1</sub>** men [Kerim<sub>2</sub> uşuxuuur [PRO<sub>2-1</sub> **zirla-p**] **xazirla-kan**]  
 happy song-ACC I Kerim food sing-CONV cook-NZR  
 sun-a-ma  
 think-PRS-1SG  
 ‘I think that Kerim<sub>2</sub> was making dinner, PRO<sub>2</sub> singing a happy song.’
- b. \***[zariq zir-ni]<sub>1</sub>** men [Kerim<sub>2</sub> baxca-da [PRO<sub>2-1</sub> **zirla-p**] **işle-gen**]  
 happy song-ACC I Kerim garden-LOC sing-CONV work-NZR  
 sun-a-ma  
 think-PRS-1SG  
 ‘I think that Kerim<sub>2</sub> was working in the garden, PRO<sub>2</sub> singing a happy song.’
- c. ?**[meni kitab-im-mi]<sub>1</sub>** men [Kerim<sub>2</sub> divan-da [PRO<sub>2-1</sub> **oqu-p**] **zat-xan**]  
 my book-1SG-ACC I Kerim couch-LOC read-CONV lie-NZR  
 sun-a-ma<sup>10</sup>  
 think-PRS-1SG  
 ‘I think that Kerim<sub>2</sub> was lying on the couch, PRO<sub>2</sub> reading my book.’
- d. **[meni zir-im-mi]<sub>1</sub>** men [Aslan<sub>2</sub> zol-da [PRO<sub>2-1</sub> **zirla-p**] **bar-kan**]  
 my song-1SG-ACC I Aslan road-LOC sing-CONV go-NZR  
 sun-a-ma  
 think-PRS-1SG  
 ‘I think that Aslan<sub>2</sub> was walking down the road, PRO<sub>2</sub> singing my song.’

<sup>10</sup> Extraction out of a converb clause modifying a verb of position is slightly degraded, but on the whole is judged better than extraction out of a converb clause modifying a transitive or an unergative verb. The degraded status of such sentences will have to be left for the future research. For the purposes of this paper I will assume that in this configuration extraction is possible.

Meanwhile, for the transparency of a converb with an overt subject the identity of the main verb is irrelevant:

- (15) a.  $XP_1 \dots [_{\text{main clause}} [_{\text{subj-converb}} \dots \_1 \dots ] \dots V_{\text{transitive}} ] \dots$  (16a)  
 b.  $XP_1 \dots [_{\text{main clause}} [_{\text{subj-converb}} \dots \_1 \dots ] \dots V_{\text{unergative}} ] \dots$  (16b)  
 c.  $XP_1 \dots [_{\text{main clause}} [_{\text{subj-converb}} \dots \_1 \dots ] \dots V_{\text{position}} ] \dots$  (16c)  
 d.  $XP_1 \dots [_{\text{main clause}} [_{\text{subj-converb}} \dots \_1 \dots ] \dots V_{\text{motion}} ] \dots$  (16d)

- (16) a. **eşik-ni<sub>1</sub>** men [[**Fatima** <sub>1</sub> **bezgi-ler-in-den** **teş-ip**] Kerim teşek-ni  
 door-ACC I Fatima hinge-PL-3-ABL take.off-CONV Kerim bed-ACC  
 üj-ge alaj **kij-ir-gen**] sun-a-ma  
 house-DAT thus come.in-CAUS-NZR think-PRS-1SG  
 ‘I think that (with) Fatima having taken the door off its hinges, Kerim carried the bed into the house.’
- b. **Fatima-*ka***<sub>1</sub> men [[**Kerim** <sub>1</sub> **boluş-up**] baxca-da ol<sub>1</sub> alaj **işle-gen**]  
 Fatima-DAT I Kerim help-CONV garden-LOC 3SG thus work-NZR  
 sun-a-ma  
 think-PRS-1SG  
 ‘I think that (with) Kerim having helped Fatima<sub>1</sub>, she<sub>1</sub> worked in the garden.’
- c. **tüken-ge**<sub>1</sub> men [[**Fatima** <sub>1</sub> **ket-ip**] üj-de quru Kerim **tur-*yan***]  
 store-DAT I Fatima leave-CONV house-LOC only Kerim stay-NZR  
 sun-a-ma  
 think-PRS-1SG  
 ‘I think that (with) Fatima having left to the store, Kerim stayed home alone.’
- d. [**qart ana-si-na**]<sub>1</sub> men [[**Kerim** <sub>1</sub> **boluş-up**] ol<sub>1</sub> zol-dan **et-gen**]  
 old mother-3SG-DAT I Kerim help-CONV 3SG road-ABL make-NZR  
 sun-a-ma  
 think-PRS-1SG  
 ‘I think that (with) Kerim having helped the old lady<sub>1</sub>, she<sub>1</sub> walked across the road.’

Second, scrambling a constituent out of a PRO-converb has no effect on the transparency of the main clause. As is schematized in (17), it is possible to scramble a constituent out of the main clause (17a), out of the converb clause (17b), and out of both clauses simultaneously (17c)–(17d).

- (17) a.  $XP_1 \dots \dots [_{\text{main clause}} \dots \_1 \dots [_{\text{PRO-converb}} \dots YP_3 \dots ] \dots ] \dots$  (18a)  
 b.  $YP_3 \dots \dots [_{\text{main clause}} \dots XP_1 \dots [_{\text{PRO-converb}} \dots \_3 \dots ] \dots ] \dots$  (18b)  
 c.  $XP_1 YP_3 \dots \dots [_{\text{main clause}} \dots \_1 \dots [_{\text{PRO-converb}} \dots \_3 \dots ] \dots ] \dots$  (18c)  
 d.  $YP_3 XP_1 \dots \dots [_{\text{main clause}} \dots \_1 \dots [_{\text{PRO-converb}} \dots \_3 \dots ] \dots ] \dots$  (18d)

- (18) a. [ol zol bla]<sub>1</sub> Fatima [Kerim<sub>2-1</sub> [PRO<sub>2</sub> [zariq zir-ni]<sub>3</sub> zirla-p] bar-a  
that road with Fatima Kerim happy song-ACC sing-CONV go-CONV  
e-di] de-gen-di  
AUX-3SG say-PST2-3SG
- b. [zariq zir-ni]<sub>3</sub> Fatima [Kerim<sub>2</sub> [ol zol bla]<sub>1</sub> [PRO<sub>2-3</sub> zirla-p]  
happy song-ACC Fatima Kerim that road with sing-CONV  
bar-a e-di] de-gen-di  
go-CONV AUX-3SG say-PST2-3SG
- c. [ol zol bla]<sub>1</sub> [zariq zir-ni]<sub>3</sub> Fatima [Kerim<sub>2-1</sub> [PRO<sub>2-3</sub> zirla-p]  
that road with happy song-ACC Fatima Kerim sing-CONV  
bar-a e-di] de-gen-di  
go-CONV AUX-3SG say-PST2-3SG
- d. [zariq zir-ni]<sub>3</sub> [ol zol bla]<sub>1</sub> Fatima [Kerim<sub>2-1</sub> [PRO<sub>2-3</sub> zirla-p]  
happy song-ACC that road with Fatima Kerim sing-CONV  
bar-a e-di] de-gen-di  
go-CONV AUX-3SG say-PST2-3SG  
'Fatima said that Kerim<sub>2</sub> was walking down the road, PRO<sub>2</sub> singing that song.'

At the same time, if scrambling applies from a converb with an overt subject, the main clause becomes opaque. It is possible to scramble a constituent out of the main clause (19a), out of the converb clause (19b), but crucially **not out of both** clauses simultaneously, regardless of the surface order of the scrambled constituents (19c)–(20d).

- (19) a. YP<sub>2</sub> ... .. [main clause [subj-converb ... XP<sub>1</sub> ... ] ... <sub>2</sub> ... ] ... (20a)
- b. XP<sub>1</sub> ... .. [main clause [subj-converb ... <sub>1</sub> ... ] ... YP<sub>2</sub> ... ] ... (20b)
- c. \*XP<sub>1</sub> YP<sub>2</sub> ... .. [main clause [subj-converb ... <sub>1</sub> ... ] ... <sub>2</sub> ... ] ... (20c)
- d. \*YP<sub>2</sub> XP<sub>1</sub> ... .. [main clause [subj-converb ... <sub>1</sub> ... ] ... <sub>2</sub> ... ] ... (20d)
- (20) a. **üj-ge<sub>2</sub>** men  
house-DAT I  
[[Fatima **eşik-ni bezgi-ler-in-den teş-ip]** Kerim teşek-ni <sub>2</sub>  
Fatima door-ACC hinge-PL-3-ABL take.off-CONV Kerim bed-ACC  
kijir-di] de-di-m  
carry-PST1.3SG say-PST1-1SG
- b. **eşik-ni<sub>1</sub>** men  
door-ACC I  
[[Fatima <sub>1</sub> **bezgi-ler-in-den teş-ip]** Kerim teşek-ni **üj-ge<sub>2</sub>**  
Fatima hinge-PL-3-ABL take.off-CONV Kerim bed-ACC house-DAT  
kijir-di] de-di-m  
carry-PST1.3SG say-PST1-1SG

- c. \***eşik-ni<sub>1</sub> üj-ge<sub>2</sub>** men  
 door-ACC house-DAT I  
 [[**Fatima** <sub>1</sub> **bezgi-ler-in-den** **teş-ip**] Kerim teşek-ni <sub>2</sub> kijir-di]  
 Fatima hinge-PL-3-ABL take.off-CONV Kerim bed-ACC carry-PST1.3SG  
 de-di-m  
 say-PST1-1SG
- d. \***üj-ge<sub>2</sub> eşik-ni<sub>1</sub>** men  
 house-DAT door-ACC I  
 [[**Fatima** <sub>1</sub> **bezgi-ler-in-den** **teş-ip**] Kerim teşek-ni <sub>2</sub> kijir-di]  
 Fatima hinge-PL-3-ABL take.off-CONV Kerim bed-ACC carry-PST1.3SG  
 de-di-m  
 say-PST1-1SG  
 ‘I said that (with) Fatima having taken the door off its hinges, Kerim carried the bed into the house.’

Crucially, (20) cannot be explained by a construction-specific ban on long-distance scrambling of two constituents at once. In fact, it is possible to scramble two constituents at once from the main clause (21a) or from the converb with an overt subject (21b), but not out of both in parallel (20c)–(20d).

- (21) a. **teşek-ni<sub>4</sub> üj-ge<sub>2</sub>** men  
 bed-ACC house-DAT I  
 [[**Fatima** **eşik-ni<sub>1</sub>** **bezgi-ler-in-den<sub>3</sub>** **teş-ip**] Kerim <sub>4</sub> <sub>2</sub> kijir-di]  
 Fatima door-ACC hinge-PL-3-ABL take.off-CONV Kerim carry-PST1.3SG  
 de-di-m  
 say-PST1-1SG
- b. **eşik-ni<sub>1</sub> bezgi-ler-in-den<sub>3</sub>** men  
 door-ACC hinge-PL-3-ABL I  
 [[**Fatima** <sub>1</sub> <sub>3</sub> **teş-ip**] Kerim teşek-ni<sub>4</sub> üj-ge<sub>2</sub> kijir-di]  
 Fatima take.off-CONV Kerim bed-ACC house-DAT carry-PST1.3SG  
 de-di-m  
 say-PST1-1SG  
 ‘I said that (with) Fatima having taken the door off its hinges, Kerim carried the bed into the house.’

In the remainder of this paper I will argue that converbs with PRO confirm the prediction in (5a), and converbs with an overt subject confirm the prediction in (5b).

## 2.4 Outline

In what follows I will argue that Balkar converbs come in three varieties.

*CP-converbs* contain a full CP structure. They can contain a causative morpheme, negation, the light verb *tur*, a TP-level adverb, an overt subject and an epistemic adverb. They bear a special semantic relation to the main clause, encoded by their silent C.

*TP-converbs* contain a full TP structure. They can contain a causative morpheme, negation, the light verb *tur*, a TP-level adverb, but not an overt subject or an epistemic adverb. They lack C and hence do not bear any special semantic relation to the main clause, apart from the temporal one.

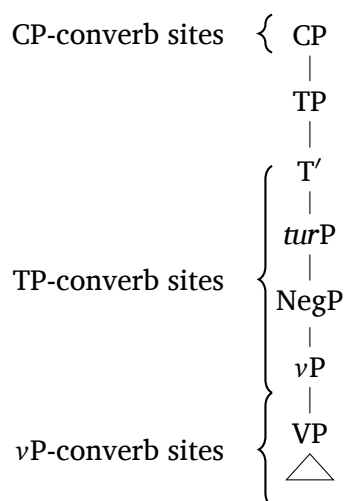
*vP-converbs* are *vPs*. They can contain a causative morpheme, but not negation, the light verb *tur*, a TP-level adverb, an overt subject or an epistemic adverb:

(22) Converb types in Balkar

Can contain:		causative	negation	light verb	TP-level adverb	overt subject	epis adverb
with subject	CP-converbs	yes	yes	yes	yes	yes	yes
with PRO	TP-converbs	yes	yes	yes	yes	no	no
	vP-converbs	yes	no	no	no	no	no

CP-converbs are attached at the left periphery of the main clause, they cannot be interpreted in the scope of negation or the subject of the main clause. TP-converbs can be interpreted in the scope of negation and the subject of the main clause. They attach at the T', the *turP* or the *vP* level. *vP*-converbs have to be attached inside the *vP* of the main clause. If the main verb does not have its own object and is a verb of motion or position, a *vP* converb can merge directly with the verb, as its complement:

(23) Attachment sites



TP-converbs are always opaque for scrambling. This is as predicted by the Spell Out Theory. They are not complements, and their sister cannot be spelled out,<sup>11</sup> so neither of the cases in (5) arises.

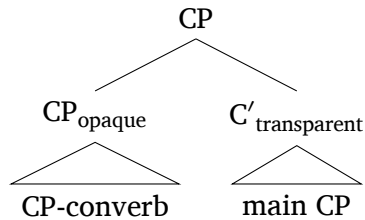
Only CP- and *v*P-converbs can be transparent for scrambling. *v*P-converbs are only transparent in the context of a verb of motion or position. This means that *v*P-converbs are only transparent if they are merged as complements. They are still optional, do not fill any argument slots of the main predicate and do not receive a theta-role, so the modifier accounts predict them to be opaque. But they are merged with a head and are transparent, as predicted by (5a). As expected, their transparency does not affect the transparency of the main clause.

Prediction (5b) is confirmed by CP-converbs. It is possible to scramble a constituent out of the main CP (24a), a constituent out of the CP-converb (24b), but not out of both (24c)–(24d). Crucially, it is not the case that scrambling two constituents at the same time is impossible in Balkar in principle. For example, it is possible in the case of a *v*P-converb (18c). But it is not possible with a constituent inside a CP-converb and a constituent inside its sister:

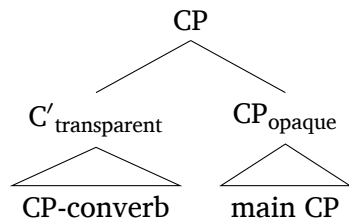
- (24) a.  $YP_2 \dots \dots [_{CP} [_{CP-converb} \dots XP_1 \dots ] [_{main\ clause} \dots \_2 \dots ] ]$  (20a)
- b.  $XP_1 \dots \dots [_{CP} [_{CP-converb} \dots \_1 \dots ] [_{main\ clause} \dots YP_2 \dots ] ]$  (20b)
- c.  $*XP_1 YP_2 \dots \dots [_{CP} [_{CP-converb} \dots \_1 \dots ] [_{main\ clause} \dots \_2 \dots ] ]$  (20c)
- d.  $*YP_2 XP_1 \dots \dots [_{CP} [_{CP-converb} \dots \_1 \dots ] [_{main\ clause} \dots \_2 \dots ] ]$  (20d)

CP-converbs are modifiers, but because their sister is also a CP, either the converb or its sister can be spelled out. The spelled out constituent does not project:

- (25) a. Spelling out the converb:<sup>12</sup>



- b. Spelling out the main clause:



<sup>11</sup> See section 4.3 for more discussion.

<sup>12</sup> The label *C'* (as opposed to *CP*) indicates that this is not a maximal projection, see section 1.2.



The case of CP-converbs will be discussed in section 3. The cases of TP- and  $\nu$ P-converbs will be discussed in section 4.

### 3 Extracting from converbs with an overt subject

#### 3.1 CP-converbs

As was established by Grashchenkov (2015) and Ermolaeva (2016), whether the converb clause may have an overt subject depends on its semantic relation to the main clause.<sup>13</sup> With PRO the simple temporal relation (precedence or simultaneity) is enough, while with an overt subject there is some additional semantic relation to the main clause, similar to absolute adjuncts in English (Stump 1985). See Appendix 3, the Supplementary file, for more details. I will assume that this semantic relation is encoded by the silent C that embeds the converb clause inside the main one and licenses the overt subject.

In what follows I will assume that Balkar converbs with overt subjects are CPs with a silent complementizer. This complementizer has a double effect: (a) it licenses an overt subject;<sup>14</sup> and (b) it is interpreted as ‘with’ (see English translations). Of course, this analysis raises a question of why the silent complementizer has this specific interpretation, but this question will have to be left for the future research.

##### 3.1.1 Size

In this section I will argue that converbs with overt subjects contain a full verbal structure below the silent C. First, they can contain recursively embedded  $\nu$ Ps, that is, a causative construction. For example, in (26) the converb clause contains the causative marker *-t̄ir* and the corresponding Causer argument (*doktor* ‘doctor’).

- (26) [**doctor** Kerim-ge tereze-ni ac-t̄ir-ip] sau-suz igi-rek  
 doctor Kerim-DAT window-ACC open-CAUS-CONV healthy-CAR good-COMP  
 bol-ɣan-di  
 become-PST2-3SG  
 ‘(With) the doctor **making** Kerim open the window, the patient felt better.’

Second, converbs with overt subjects contain enough verbal projections to host negation. This can be easily shown for the *-a* converb:

<sup>13</sup> These authors look at a variety of closely related Turkic languages, like Mishar Tatar and Kyrgyz. However, their generalizations apply to Balkar as well.

<sup>14</sup> Here and below I follow a tentative assumption that in an un-tensed clause in Balkar an overt subject can only be licensed by a covert or overt C.

- (27) [Kerim Fatima-ni ujat-ma-j] Fatima kece ozuu-nu zuqla-ʁan-di  
 Kerim Fatima-ACC wake.up-NEG-CONV Fatima night throughout-ACC sleep-PST2-3SG  
 ‘(With) Kerim **not** waking Fatima up, Fatima slept through the night.’

The *-p* converb is incompatible with the negative suffix regardless of whether it has a subject or not, and regardless of whether the converb clause functions as a modifier or as an argument. This is true across Turkic languages (see Grashchenkov 2015, and for Balkar specifically – Lyutikova et al. 2006). The combination of morphemes *ma + p* ‘NEG-CONV’ is simply ill-formed:

- (28) \*ujat-ma-p  
 wake.up-NEG-CONV

For the present purposes I will assume that this is a morphological gap and that the verbal structure inside the converb clause does contain the Neg head, as is evident from (27).

Third, converb clauses with overt subjects can contain the light restructuring verb *tur* ‘stand’ with an aspectual meaning (for more details see Lyutikova et al. 2006):

- (29) [Fatima ustaz-ni quru cakir-ip tur-ip] sabij-le ojna-jal-ma-j  
 Fatima teacher-ACC constantly call-CONV stand-CONV kid-PL play-POT-NEG-CONV  
 e-di-le  
 AUX-PST1-PL  
 ‘(With) Fatima **constantly** calling the teacher, the kids weren’t able to play.’

Fourth, converb clauses with overt subjects can contain a temporal adverbial specifying the Topic Time:

- (30) [Aslan tünene mašina-ni sat-ip al-ip] biz bugün šaxar-ʁa bar-ʁan-biz  
 Aslan yesterday car-ACC buy-CONV take-CONV we today city-DAT go-PST2-1PL  
 ‘(With) Aslan buying a car yesterday, we drove to the city today.’

However, there cannot be a tense mismatch between the converb clause and the main clause. That is, both the converb clause event and the main clause event must be temporally located on the same side with respect to the utterance time, see (30) vs. (31):

- (31) \* [Aslan tünene mašina-ni sat-ip al-ip] biz tambla šaxar-ʁa bar-liq-biz  
 Aslan yesterday car-ACC buy-CONV take-CONV we tomorrow city-DAT go-FUT-1PL  
 Intended: ‘(With) Aslan buying a car yesterday, we will drive to the city tomorrow.’

Even though converbs with overt subjects have their own TP, this TP is in some way defective. The tense of the converb clause has to match the tense of the main clause. Here and below I will tentatively assume that this is due to the T in the converb clause receiving its tense feature (past/present/future) from the matrix clause, perhaps, via covert agreement.

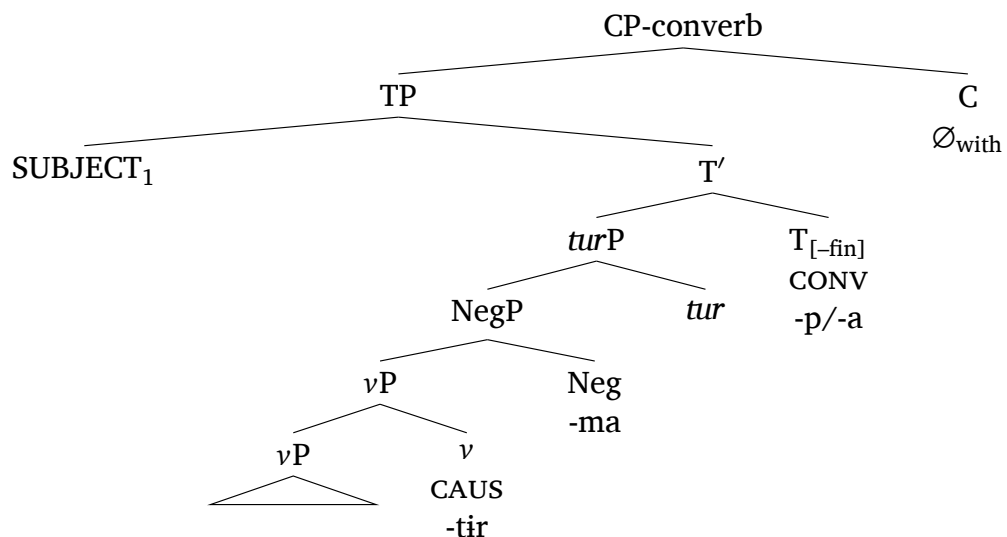
Finally, converb clauses with overt subject can contain an epistemic adverb (see Appendix 1, the Supplementary file).

To sum up, converbs with overt subjects contain a full set of verbal projections: CP > TP > *tur*P > NegP > *v*P. Henceforth I will refer to them as CP-converbs.

(32) Converb types in Balkar

Can contain:		causative	negation	light verb	TP-level adverb	overt subject	epis s adverb
with subject	CP-converbs	yes	yes	yes	yes	yes	yes
with PRO	TP-converbs	yes	yes	yes	yes	no	no
	<i>v</i> P-converbs	yes	no	no	no	no	no

(33) A CP-converb:



### 3.1.2 Position

In this section I will argue that CP-converbs attach at the CP level of the main clause.

First, the default surface position for a CP-converb is on the left periphery of the main clause. Other word orders are acceptable, but dispreferred (this is not the case for TP- and *v*P-converbs, see section 4.1.2):

- (34) a. [zašciq ešik-ni ac-ip] ustaz stol-nu otou-*ba*  
 boy door-ACC open-CONV teacher table-ACC room-DAT  
 kir-giz-t-di  
 come.in-CAUS-CAUS-PST1.3SG

- b. ?ustaz [zašciq ešik-ni ac-ip] stol-nu otou-ɣa  
 teacher boy door-ACC open-CONV table-ACC room-DAT  
 kir-giz-t-di  
 come.in-CAUS-CAUS-PST1.3SG
- c. ?ustaz stol-nu [zašciq ešik-ni ac-ip] otou-ɣa  
 teacher table-ACC boy door-ACC open-CONV room-DAT  
 kir-giz-t-di  
 come.in-CAUS-CAUS-PST1.3SG
- d. ?ustaz stol-nu otou-ɣa [zašciq ešik-ni ac-ip]  
 teacher table-ACC room-DAT boy door-ACC open-CONV  
 kir-giz-t-di  
 come.in-CAUS-CAUS-PST1.3SG  
 ‘(With) the boy having opened the door, the teacher carried the table into the room.’

The word orders in (34b)–(34d) are probably generated by applying local scrambling to one or more constituents to the left periphery of the main CP, above the attachment site of the CP-converb. It seems that this type of scrambling is dispreferred in Balkar. In any case, it seems to be limited to root clauses with rich left periphery (see some discussion in Appendix 2, the Supplementary file).

Second, a CP-converb cannot be interpreted in the scope of a causative marker in the main clause, regardless of the surface word order. Given the assumption that causative marking is hosted at  $v$ , it means that CP-converbs are attached at least above the main  $vP$ .

- (35) [zašciq ešik-ni ac-ip] Fatima ustaz-ɣa stol-nu otou-ɣa  
 boy door-ACC open-CONV Fatima teacher-DAT table-ACC room-DAT  
 kir-giz-t-dir-gen-di  
 come.in-CAUS-CAUS-CAUS-PST2-3SG
1. ‘(With) the boy having opened the door, Fatima made the teacher carry the table into the room.’
  2. \*‘Fatima made it so that the boy having opened the door, the teacher carried the table into the room.’

Third, a CP-converb escapes the scope of negation in the main clause. This means that a CP-converb is attached at least above the main NegP.

Balkar has a Negative Polarity Item (NPI) of the form *bir NP-da* ‘one NP-ADD’. Outside the scope of negation it means ‘one more NP’. In the scope of negation it is interpreted as an existential quantifier, like English *any*. For more details on the additive particle *-da* and its relation to the negative polarity see Bylinina et al. (2020).

Negation may license this NPI across a clausal boundary:

- (36) **bir ustaz=da** [sabij-le **bir kitap-ni=da** oqu- $\kappa$ an] sun-**ma-j-di**  
 one teacher=ADD kid-PL one book-ACC=ADD read-NZR think-NEG-PRS-3SG  
 ‘It is not the case that any teacher thinks that the kids read any book.’

Notice that in (36) the negation on the main verb *sun* ‘think’ licenses both the NPI in the main subject position and the NPI in the embedded clause. This means that negation is in fact interpreted in the main clause (this is not a case of Neg-raising), which means that it ‘genuinely’ licenses the NPI in the embedded clause across a clause boundary.<sup>15</sup>

However, negation in the main clause may not license an NPI inside a CP-converb, regardless of the linear order:

- (37) ?[**oquucu-la bir üj iş-ni=da<sub>1</sub>** **et-ip**] ustaz a $\eta$ <sub>1</sub>  
 student-PL one home work-ACC=ADD make-CONV teacher 3SG.DAT  
 qara-**ma- $\kappa$ an-di**  
 look-NEG-PST2-3SG  
 1. ‘(With) the students doing one more homework, the teacher didn’t grade it.’  
 2. \*‘It is not the case that (with) the students doing any homework, the teacher graded it.’

Finally, a quantified subject of the main clause may not bind a pronoun inside the CP-converb, regardless of the linear order:

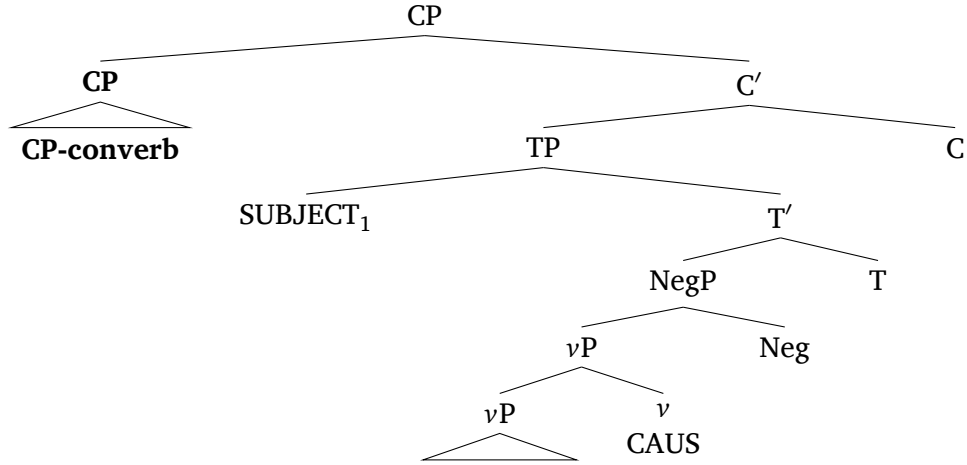
- (38) a. [**Madina a $\eta$ <sub>\*1/2</sub>** **bilet al-ip**] **xar zašciq<sub>1</sub>** erišiu-ge  
 Madina 3SG.DAT ticket take-CONV every boy competition-DAT  
 qatiš-xan-di  
 take.part-PST2-3SG  
 b. **xar zašciq<sub>1</sub>** [**Madina a $\eta$ <sub>\*1/2</sub>** **bilet al-ip**] erišiu-ge  
 every boy Madina 3SG.DAT ticket take-CONV competition-DAT  
 qatiš-xan-di  
 take.part-PST2-3SG  
 ‘(With) Madina buying him<sub>\*1/2</sub> a ticket, every boy<sub>1</sub> took part in the competition.’

To sum up, CP-converbs are attached above the main  $\nu$ P, the main NegP and the subject of the main clause (which presumably occupies Spec,TP). In what follows I am going to assume that CP-converbs merge at the CP-level:

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<sup>15</sup> The fact that negation can license an NPI in the subject position means that either negation is interpreted high (above TP) or that the subject may reconstruct below the Neg head. Here and below I will assume the latter.

(39) The position of a CP-converb in the main clause:



### 3.2 Back to extraction

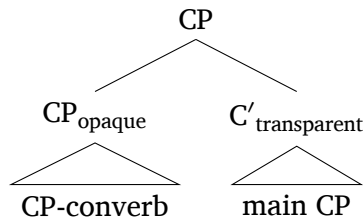
As was shown in section 2, it is possible to scramble a constituent out of a CP-converb. However, in this respect CP-converbs show two important properties that distinguish them from PRO-converbs: (a) main clause opacity; and (b) lack of correlation between the possibility of extraction and the lexical meaning of the main verb.

A CP-converb is only transparent if its sister is opaque. Even though it is possible to scramble a constituent out of the main clause (40a) or out of the CP-converb (40b), it is **not possible** to scramble out of the main clause and the converb **simultaneously** (40c)–(40d).

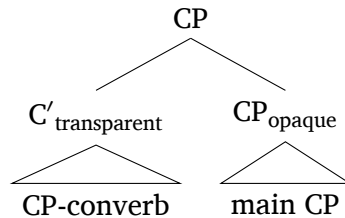
- (40) a.  $YP_2 \dots \dots [_{CP} [_{CP-converb} \dots XP_1 \dots ] [_{main\ clause} \dots \_2 \dots ] ]$  (20a)
- b.  $XP_1 \dots \dots [_{CP} [_{CP-converb} \dots \_1 \dots ] [_{main\ clause} \dots YP_2 \dots ] ]$  (20b)
- c.  $*XP_1 YP_2 \dots \dots [_{CP} [_{CP-converb} \dots \_1 \dots ] [_{main\ clause} \dots \_2 \dots ] ]$  (20c)
- d.  $*YP_2 XP_1 \dots \dots [_{CP} [_{CP-converb} \dots \_1 \dots ] [_{main\ clause} \dots \_2 \dots ] ]$  (20d)

This is what the Spell Out Theory predicts. If one CP modifies another CP, the system may choose to spell out either one of them, but at least one must be spelled out. The non spelled out CP will project its category:

(41) a. Spelling out the converb clause:



b. Spelling out the main clause:



It is also expected that there will be no correlation between the possibility of subextraction and the meaning of the main verb.

It is unclear how modifier approaches to the Adjunct Condition can explain these data. The converb clause is a modifier in all the considered examples. It is optional and does not fill any argument slots. Hence modifier accounts expect it to be invariably opaque, contrary to fact.

## 4 Extracting from converbs with a covert subject

### 4.1 vP/TP-converbs

#### 4.1.1 Size

In what follows I will argue that converbs with PRO come in two varieties: vPs and TPs.

At the first glance, however, converb clauses without an overt subject contain a full clausal structure inside them, except the subject. First, they can contain recursively embedded vPs, that is, a causative construction:

- (42) *sau-suz<sub>1</sub> [PRO<sub>1</sub> Kerim-ge tereze-ni ac-tir-ip] igi-rek*  
 healthy-CAR Kerim-DAT window-ACC open-CAUS-CONV good-COMP  
*bol-du*  
 become-PST1.3SG  
 ‘The patient<sub>1</sub> felt better, after PRO<sub>1</sub> making Kerim open the window.’

Second, a converb with PRO can contain negation:

- (43) *[PRO<sub>1</sub> Kerim-ni üj-de kör-me-j] Fatima<sub>1</sub> tüken-ge bar-kan-di*  
 Kerim-ACC house-LOC see-NEG-CONV Fatima store-DAT go-PST2-3SG  
 ‘With PRO<sub>1</sub> not seeing Kerim at home, Fatima<sub>1</sub> went to the store.’

Third, converbs with PRO can contain the light verb *tur* ‘stand’:

- (44) *Fatima<sub>1</sub> Kerim-ni [PRO<sub>1</sub> quru şaxar-va bar-ip tur-up] terk-terk*  
 Fatima Kerim-ACC constantly city-DAT go-CONV stand-CONV often  
*kör-e e-di*  
 see-CONV AUX-PST1.3SG  
 ‘Fatima<sub>1</sub> saw Kerim often, PRO<sub>1</sub> constantly going to the city.’

Fourth, a converb with PRO can be modified by a temporal adverbial, which is independent from the main clause:

- (45) [PRO<sub>1</sub> **tünene** **mašina-ni** **sat-ip** **al-ip**] biz<sub>1</sub> bugün šaxar-*ɣa* bar-*ɣan*-biz  
 yesterday car-ACC buy-CONV take-CONV we today city-DAT go-PST2-1PL  
 ‘After PRO<sub>1</sub> buying a car yesterday, we<sub>1</sub> went to the city today.’

As with CP-converbs, the tense of the converb clause has to match the tense of the main clause, that is, both events must be temporally located on the same side of the utterance time (see section 3.1.1 for discussion):

- (46) \* [PRO<sub>1</sub> **tünene** **mašina-ni** **sat-ip** **al-ip**] biz<sub>1</sub> tambla šaxar-*ɣa*  
 yesterday car-ACC buy-CONV take-CONV we tomorrow city-DAT  
 bar-liq-biz  
 go-FUT-1PL  
 ‘After PRO<sub>1</sub> buying a car yesterday, we<sub>1</sub> will go to the city tomorrow.’

Finally, unlike CP-converbs, converbs with PRO cannot contain an epistemic adverb (see Appendix 1, the Supplementary file).

To sum up, a converb with PRO seems to have the same amount of verbal structure as a CP-converb, but with three crucial differences. First, it does not contain a position for an epistemic adverb. Second, it does not contain an overt subject. Third, a converb with PRO does not have to stand in a special semantic relation to the main clause. A simple temporal overlap is enough.

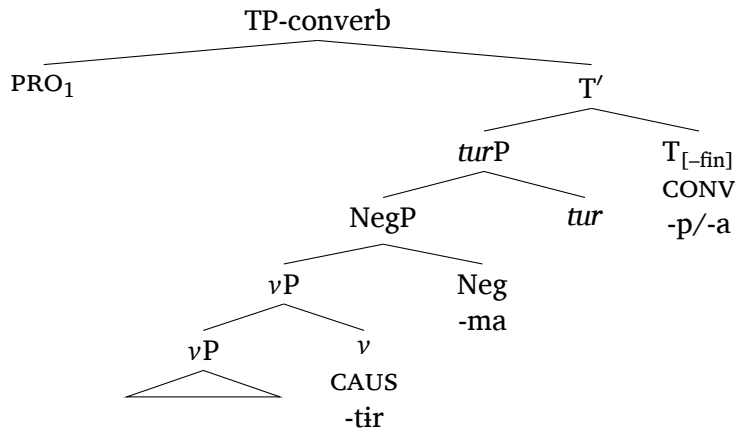
- (47) Converb types in Balkar

Can contain:		causative	negation	light verb	TP-level adverb	overt subject	epis adverb
with subject	CP-converbs	yes	yes	yes	yes	yes	yes
with PRO	TP-converbs	yes	yes	yes	yes	no	no
	vP-converbs	yes	no	no	no	no	no

In what follows I will assume that converbs with PRO are full TPs (with a defective T that has to match with the tense of the main clause). They do not contain the null C<sub>with</sub>, as a consequence, they can only have a covert subject, do not stand in any specific semantic relation to the main clause, apart from temporal overlap, and do not have enough projections to host epistemic adverbs (see Cinque 1999: 77).



(48) A TP-converb:



#### 4.1.2 Position

TP-converbs are attached lower than CP-converbs, but above the  $vP$ . The surface position of a TP-converb is not restricted in any way:

- (49) a. [PRO<sub>1</sub> ešik-ni ac-ip] ustaz<sub>1</sub> stol-nu otou-~~ba~~ kij-ir-di  
 door-ACC open-CONV teacher table-ACC room-DAT come.in-CAUS-PST1.3SG
- b. ustaz<sub>1</sub> [PRO<sub>1</sub> ešik-ni ac-ip] stol-nu otou-~~ba~~ kij-ir-di  
 teacher door-ACC open-CONV table-ACC room-DAT come.in-CAUS-PST1.3SG
- c. ustaz<sub>1</sub> stol-nu [PRO<sub>1</sub> ešik-ni ac-ip] otou-~~ba~~ kij-ir-di  
 teacher table-ACC door-ACC open-CONV room-DAT come.in-CAUS-PST1.3SG
- d. ustaz<sub>1</sub> stol-nu otou-~~ba~~ [PRO<sub>1</sub> ešik-ni ac-ip] kij-ir-di  
 teacher table-ACC room-DAT door-ACC open-CONV come.in-CAUS-PST1.3SG  
 ‘The teacher carried the table into the room, having opened the door.’

A TP-converb can be interpreted in the scope of negation. Unlike for CP-converbs, an NPI inside a TP-converb can be licensed by the matrix negation (50).

- (50) Fatima<sub>1</sub> [PRO<sub>1</sub> bir kitap-ni =da oqu-p] sejrinsin-me-gen-di  
 Fatima one book-ACC =ADD read-CONV be.surprised-NEG-PST2-3SG  
 ‘Fatima<sub>1</sub> wasn’t surprised, while PRO<sub>1</sub> reading any book.’

At the first glance, a converb with PRO can be interpreted in the scope of the causative suffix as well:

- (51) Fatima<sub>1</sub> Kerim-ge<sub>2</sub> [PRO<sub>1/2</sub> zir-~~ba~~ tiñila-p] tüş aziq et-~~dir~~-di  
 Fatima Kerim-DAT song-DAT listen-CONV sleep food make-CAUS-PST1.3SG  
 ‘Fatima made Kerim<sub>2</sub> make dinner, PRO<sub>2</sub> listening to the song.’

Under one of the readings of (51) it is Kerim (the Causee), not Fatima (the Causer and the subject), that controls the PRO subject of the converb.

However, if a converb clause is interpreted in the scope of the causative marker, it no longer may contain a light verb, nor (for some speakers) negation. Thus, in (52) the converb clause contains the light verb *tur*, and the antecedent for PRO cannot be the Causee, it has to be the Causer.<sup>16</sup>

- (52) Fatima<sub>1</sub> Kerim-ge<sub>2</sub> [**PRO**<sub>1/2</sub> **zır-ka** **tiñila-p** **tur-up**] tüş aziq  
 Fatima Kerim-DAT song-DAT listen-CONV stand-CONV sleep food  
 et-**dir**-di  
 make-CAUS-PST1.3SG  
 ‘Fatima<sub>1</sub> made Kerim<sub>2</sub> make dinner, PRO<sub>1/2</sub> constantly listening to a song.’

In (53) the converb clause contains negation, and the antecedent for PRO cannot be the Causee, it must be the Causer. The converb has to be interpreted above the higher causative *vP*.

- (53) Fatima<sub>1</sub> Kerim-ge<sub>2</sub> kitap-ni [**PRO**<sub>1/2</sub> **zır-ka** **tiñila-ma-j**] oqu-t-xan-di  
 Fatima Kerim-DAT book-ACC song-DAT listen-NEG-CONV read-CAUS-PST2-3SG  
 ‘Fatima<sub>1</sub> made Kerim<sub>2</sub> read the book, without PRO<sub>1/2</sub> listening to a song.’

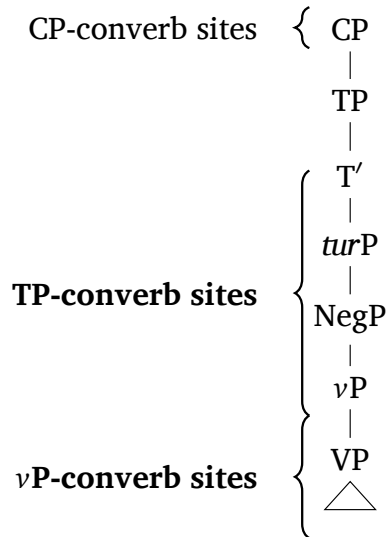
In the light of these data I will assume that converbs with PRO come in two varieties. There are TP-converbs with PRO that contain full TP structure (enough to host negation and light verbs) and attach above the main *vP*. There are also *vP*-converbs with PRO that contain just a *vP* (not enough to host negation or light verbs) and attach within the main *vP*. It should be pointed out that, like TP-converbs, *vP*-converbs also cannot contain epistemic adverbs (see Appendix 1, the Supplementary file).

(54) Converb types in Balkar

Can contain:		causative	negation	light verb	TP-level adverb	overt subject	epis adverb
with subject	CP-converbs	yes	yes	yes	yes	yes	yes
with PRO	TP-converbs	yes	yes	yes	yes	no	no
	<b>vP-converbs</b>	<b>yes</b>	<b>no</b>	<b>no</b>	<b>no</b>	<b>no</b>	<b>no</b>

<sup>16</sup> For some speakers the sentence may also have a split control interpretation, where both Fatima and Kerim are listening to the song.

(55) Attachment sites



In what follows I will assume that the Minimal Distance Principle (see Rosenbaum 1967; Larson 1991, among many others) holds for Balkar. That is, PRO must be controlled by the closest c-commanding noun phrase (see Appendix 2, the Supplementary file, for a more detailed argumentation).

If we assume the Minimal Distance Principle for Balkar, we inevitably come to an important consequence about the attachment site of PRO-converbs. Namely, they are either attached immediately below the base-generated position of their controller or immediately below a derived position of their controller. This means that the sister of a converb with PRO always has one of its merge-inducing features unsatisfied: either a selectional feature that triggers the external merge of the controller to a position above the converb clause or an EPP-feature that triggers movement of the controller to a position above the converb clause.

## 4.2 Bleached verbs, grammaticalization and converb complements

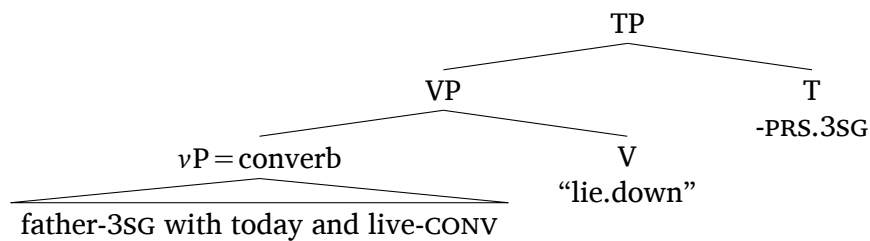
Before returning to the discussion of extraction, I will consider certain cases when a vP-converb is attached so low that it becomes the structural complement of the main verb.

It is very common across Turkic languages that in the context of a converb clause certain main verbs lose their lexical semantics and assume the meaning of an aspectual or modal operator, or the meaning that is usually associated with so-called restructuring predicates, like ‘begin’, ‘end’ or ‘allow’. In the literature on Turkic languages this structure is usually called ‘serialization’ or ‘a complex verb construction’ (see Tybykova 1966, Lyutikova et al. 2006, Grashchenkov 2015, among numerous others).

An example of a complex verb construction from Mishar Tatar (a Turkic language spoken predominantly in the Republic of Tatarstan, Russia) is given in (56). Here the verb *jat* ‘lie.down’ no longer means ‘to lie down’, but functions as an aspectual operator. One could view this in the same light as the use of the *-ing* form with *be* or *keep* to form progressives in English.

(56) *Mishar Tatar* (Grashchenkov 2015: 32)

ä tege ügi kız [ätä-se belän begen dä jäš-ä-p] jat-a  
 and this stranger girl father-3SG with today and live-ST-CONV lie.down-PRS  
 ‘And this orphan is still living to this day with her father.’



In these cases the converb clause is usually analyzed as the complement of the bleached verb, as is illustrated by the tree under (56). The complex verb construction has several properties of Restructuring (see Wurmbrand 2001, and much subsequent work).

For example, if the complex verb construction is to be causativized or passivized, the causative / passive marking sometimes appears **both** on the bleached verb and on the lexical verb (57). This sentence contains two causative suffixes, but semantically there is only one causation. In fact, adding an extra Causer makes it ungrammatical (see Grashchenkov 2015: 159).

(57) *Mishar Tatar* (Grashchenkov 2015: 158)

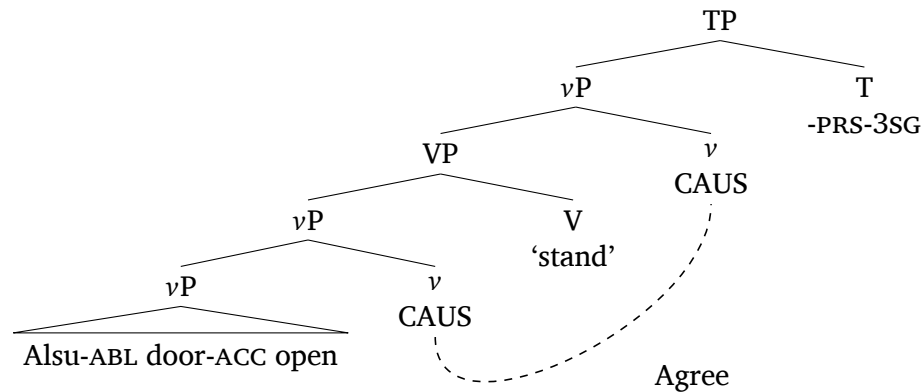
marat alsu-dan işek-ne aç-tvr-γ-p kuj-dvr-dγ  
 Marat Alsu-ABL door-ACC open-CAUS-ST-CONV stand-CAUS-PST  
 ‘Marat made Alsu open the door.’

According to Grashchenkov (2015: 154), whether causative or passive morphology appears on the lexical verb, on the bleached verb or on both depends on the language and on the identity of the bleached verb. Double marking seems always to be an option, but there are cases when the causative morphology on the lexical verb is optional, and there are cases when the causative morphology on the bleached verb is optional.

In what follows I am going to assume that one of the suffixes is semantically vacuous and appears only as the result of agreement. For concreteness, let us assume that it is agreement between the *v* head projected by the lexical verb and the *v* head projected by the bleached verb,

as is schematized in (58). This is similar to Bondarenko’s (2018) account of passive in Buryat Restructuring, building on Wurmbrand & Shimamura (2017).<sup>17</sup>

(58) Agreement in *v*:



According to Grashchenkov (2015: 92–93), main verbs that form complex verb constructions across Turkic languages include verbs of motion (‘go’, ‘come’), verbs of position (‘stand’, ‘put’), transfer of possession (‘give’, ‘take’), perception verbs (‘see’, ‘look’) and copulas (‘be’, ‘stay’).

In Balkar, verbs of motion or position constitute an interesting “intermediate” case. If a motion verb or a verb of position is modified by a *vP*-converb, this verb still retains its original lexical meaning, as in (59) and (60). This is evident from the fact that the main verb has its own adverbial modifier, i.e. *zajau* ‘by.foot’ in (59) and *šindik-de* ‘chair-LOC’ in (60).

(59) Fatima<sub>1</sub> zajau [PRO<sub>1</sub> **quancli zir-ni zir-la-j**] bar-a e-di  
 Fatima by.foot happy song-ACC sing-CONV go-CONV AUX-PST1.3SG  
 ‘Fatima<sub>1</sub> was walking by foot, PRO<sub>1</sub> singing a happy song.’

(60) Aslan<sub>1</sub> šindik-de [PRO<sub>1</sub> **meni zir-im-ma tiñila-j**] oltur-a e-di  
 Aslan chair-LOC my song-1SG-DAT listen-CONV sit-CONV AUX-3SG  
 ‘Aslan<sub>1</sub> was sitting on the chair, PRO<sub>1</sub> listening to my song.’

However, this configuration does show a Restructuring effect, when it comes to derivational morphology. If (59) is to be causativized, the speakers strongly prefer to put causative marking **both** on the converb and the main verb:<sup>18</sup>

<sup>17</sup> Grashchenkov (2015: 110) discusses some cases where both the bleached verb and the lexical verb have overt negation suffixes, both being interpreted. This suggests that converb clauses in complex verb constructions may, after all, involve more structure than barely *vP*. Nevertheless, when it comes to extraction, the prediction of the Spell Out Theory will be the same: even a larger converb clause should be transparent for extraction if it is merged as a complement.

<sup>18</sup> The string in (61a) is grammatical, but it does not have the required meaning. It is acceptable only if the PRO subject of the converb is controlled by the Causer, not by the Causee. The sentence means “Fatima<sub>1</sub>, PRO<sub>1</sub> having left the store, made Kerim go by this road”. The string in (61b) is also grammatical, but also only if PRO is controlled by the

- (61) Fatima Kerim-ni<sub>1</sub> bu zol bla  
 Fatima Kerim-ACC this road with
- a. \* [PRO<sub>1</sub> **tüken-den cık-ıp**] bar-**dir**-ın-di  
 store-ABL come.out-CONV go-CAUS-PST2-3SG
- b. \* [PRO<sub>1</sub> **tüken-den cık-ar-ıp**] bar-ın-di  
 store-ABL come.out-CAUS-CONV go-PST2-3SG
- c. [PRO<sub>1</sub> **tüken-den cık-ar-ıp**] bar-**dir**-ın-di  
 store-ABL come.out-CAUS-CONV go-CAUS-PST2-3SG  
 ‘Fatima made Kerim<sub>1</sub> go by this road, after PRO<sub>1</sub> leaving the store.’

The same is true for converb clauses modifying a verb of position.

This suggests that the converb clause is, in fact, a structural complement of the main verb. The Restructuring configuration is there, but the higher verb still bears its original lexical meaning (it does not select the converb and does not assign it a theta-role).

Notice that this is not the case with all main verbs, only with verbs of motion or position. In particular, while (61a) is not acceptable with PRO controlled by the Causee, (62) is perfectly fine, no causative morphology inside the converb clause is required:<sup>19</sup>

- (62) Fatima Aslan-ıa<sub>2</sub> [PRO<sub>2</sub> **zir-ıa tıñıla-p**] tüş-ge azıq et-dir-gen-di  
 Fatima Aslan-DAT song-DAT listen-CONV sleep-DAT food make-CAUS-PST2-3SG  
 ‘Fatima made Aslan<sub>2</sub> make dinner, after PRO<sub>2</sub> listening to the song.’

Why can converbs only merge as complements in the context of a verb of motion or position in Balkar? This relates to a broader question of why only specific classes of verbs across Turkic languages can form complex verb constructions, and to an even broader question of why only certain verbs get grammaticalized into modal/aspectual auxiliaries cross-linguistically. In the paragraphs to follow I will only offer some preliminary speculations on the matter.

---

Causer, not by the Causee and the noun phrase *Kerim* and the PP *bu zol bla* ‘this road with’ are interpreted as part of the converb clause. In other words, the sentence means “Fatima<sub>1</sub>, PRO<sub>1</sub> having made Kerim leave the store, went by this road”. In sum, if the PRO subject is to be controlled by the Causee (Kerim), only (61c) is acceptable. If the vP-converb is attached below the Causee, causative morphology **must be** doubled.

<sup>19</sup> As pointed out by an anonymous reviewer, there is an alternative explanation for the facts in (61). It has been argued in the literature (Harley 2008; Lyutikova & Tatevosov 2014) that causatives of unaccusatives and causatives of unergatives and transitives have different binding properties. In causatives of unaccusatives, the Causee behaves as a direct object and may not be able to bind reflexives or other subject-oriented pronominal elements, for example, PRO. This explains the ungrammaticality of (61a). The sentence in (61c) is grammatical under the parse where PRO is, in fact, controlled by the subject (Fatima), who acts as a Causer in both the main clause and the converb clause events. I have no principled objection to this alternative analysis. However, importantly, this analysis is compatible with the converbs in question merging as structural complements of the unaccusative verbs of motion and position, which is crucial for the main argument in this paper, see section 4.3.

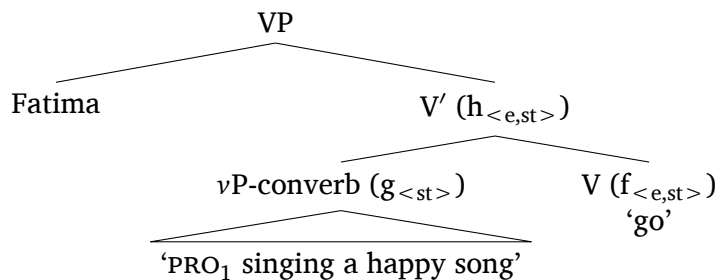
It seems that all the verb meanings that participate in complex verb constructions are very basic in some intuitive sense. Verbs of motion and position can describe a very big class of eventualities. An event of Fatima going down the road can mereologically overlap (see Link 1998), that is, have shared subevents and participants, with a very broad class of events, like an event of Fatima singing a song, walking a dog, or talking to me.<sup>20</sup>

It may be that a  $\nu$ P-converb can only directly merge with a verb head if the event argument of the converb and the event argument of the verb mereologically overlap (cf. Truswell 2007 for English and section 5 for discussion). Take, for example the sentence in (59). Suppose the  $\nu$ P-converb is interpreted as the  $\langle s,t \rangle$ -type predicate in (63a), and that the main verb *bar* ‘go’ is the  $\langle e,st \rangle$ -type predicate in (63b).

- (63) a.  $\llbracket \nu$ P-converb in (59)  $\rrbracket = \lambda e. \exists e': e \sqcap e'$  and  $e'$  is an event of  $\text{PRO}_1$  singing a happy song.<sup>21</sup>  
 b.  $\llbracket \text{bar 'go'} \rrbracket = \lambda x. \lambda e. e$  is an event of  $x$  moving.  
 Where  $e \sqcap e'$  means that  $e$  mereologically overlaps with  $e'$ .

These two predicates can combine via Kratzer’s (1996) Event Identification rule:

- (64) Structure:



- (65) a. Event Identification (Kratzer 1996: 122)
- |   |                       |               |                        |
|---|-----------------------|---------------|------------------------|
| $f$   | $g$                   | $\rightarrow$ | $h$                    |
| $\langle e,st \rangle$                              | $\langle s,t \rangle$ |               | $\langle e,st \rangle$ |
| $\lambda x. \lambda e. [f(x)(e) \text{ and } g(e)]$ |                       |               |                        |
- b. (i)  $f = \lambda x. \lambda e. e$  is an event of  $x$  moving.  
 (ii)  $g = \lambda e. \exists e': e \sqcap e'$  and  $e'$  is an event of  $\text{PRO}_1$  singing a happy song.  
 (iii)  $h = \lambda x. \lambda e. e$  is an event of  $x$  moving and  $\exists e': e \sqcap e'$  and  $e'$  is an event  $\text{PRO}_1$  singing a happy song.

<sup>20</sup> This is similar to the observation made by Truswell (2007), who claims that English *ing*-adjuncts are only transparent for movement in the context of a semantically weak predicate. I will discuss those cases in more detail in section 5.

<sup>21</sup> The  $\text{PRO}_1$  argument is probably bound via  $\lambda$ -abstraction (as soon as its controller is introduced), like other pronouns (Heim & Kratzer 1998).

This will result in a predicate that describes two overlapping events: an event of Fatima moving and an event of Fatima singing a happy song.

If  $\nu$ P-converbs always have the semantics as in (63a), this would predict that  $\nu$ P-converbs can only describe mereologically overlapping events, which is clearly not the case, as is evident from (62). There the converb is attached within the main  $\nu$ P, below the Causee, so it is a  $\nu$ P-converb. But the main verb is not a verb of motion or position, which can mereologically overlap with a broad class of events. In order to account for these cases, one will have to assume that  $\nu$ P-converbs may also have another meaning, where their event argument only temporally overlaps with the main clause event (not mereologically). It could be something along the following lines:

(66)  $[[\nu\text{P-converb in (62)}]] = \lambda e. \exists e': \tau(e') \sqcap \tau(e)$  and  $e'$  is an event of  $\text{PRO}_2$  listening to a song.

Where  $\tau(e')$  and  $\tau(e)$  refer to the run times of  $e'$  and  $e$  respectively.

There are two independent assumptions at play here. First,  $\nu$ P-converbs are ambiguous between an interpretation like (63a) and an interpretation like (66). Second, only those  $\nu$ P-converbs that have an interpretation like (63a) can be base generated as structural complements, only they can combine with the main verb via Event Identification, provided that the main verb describes a class of events that could freely mereologically overlap with other events (namely, if the main verb is a verb of motion or position).

Together, these assumptions predict that  $\nu$ P-converbs can only serve as complements for verbs of motion or verbs of position. This analysis clearly relies on certain assumptions about the lexical semantics, specifically, the lexical semantics of verbs of motion and position. This requires clarification and a more extensive study, which will have to left for the future research. What is important for our present purposes is the fact that only certain verbs (verbs of motion and position in Balkar) can combine with converb clauses as complements.

### 4.3 Back to extraction

As was shown in section 2, it is possible to scramble constituents out of converbs with PRO. But in this respect, they have two important properties that make them distinct from CP-converbs: (a) the main clause is not opaque; and (b) whether extraction is possible depends on the lexical meaning of the main verb.

A PRO-converb is opaque if it modifies a transitive (67a) or an unergative (67b) verb. Extraction out of a PRO-converb is marginally acceptable, if it modifies an unaccusative position verb (67c), and is definitely grammatical in the context of a unaccusative motion verb (67d).

(67) a.  $*\text{XP}_1 \dots [_{\text{main clause}} \dots [_{\text{PRO-converb}} \dots \_1 \dots ] \text{V}_{\text{transitive}} ] \dots$  (14a)

b.  $*\text{XP}_1 \dots [_{\text{main clause}} \dots [_{\text{PRO-converb}} \dots \_1 \dots ] \text{V}_{\text{unergative}} ] \dots$  (14b)



c.  ${}^?XP_1 \dots [_{\text{main clause}} \dots [_{\text{PRO-converb}} \dots \_1 \dots ] V_{\text{position}} ] \dots$  (14c)

d.  $XP_1 \dots [_{\text{main clause}} \dots [_{\text{PRO-converb}} \dots \_1 \dots ] V_{\text{motion}} ] \dots$  (14d)

In other words, a PRO-converb can only be transparent in the context of those intransitive verbs that can attach a  $\nu P$ -converb as a complement. In Balkar these are the verbs that, though not semantically bleached, may show certain restructuring characteristics, as has been shown in the previous section.

One additional argument in favor of the view that PRO-converbs are only transparent for scrambling when they are merged as complements comes from iterated converb clauses. As has been shown in section 2.2 above, PRO-converbs can be stacked. However, in this case only the converb clause *closest to the verb* is transparent for scrambling:

- (68) a. \*zir-la-ni<sub>2</sub> men Fatima<sub>1</sub> bu zol bla [**PRO<sub>1</sub> zirla-j**] [**PRO<sub>1</sub>**  
 song-PL-ACC I Fatima this road with sing-CONV  
**gül-le-ni zij-a**] ajla-ŋan sun-a-ma  
 flower-PL-ACC collect-CONV walk-PST2 think-PRS-1SG
- b. **gül-le-ni<sub>2</sub>** men Fatima<sub>1</sub> bu zol bla [**PRO<sub>1</sub> zir-la-ni zirla-j**]  
 flower-PL-ACC I Fatima this road with song-PL-ACC sing-CONV  
 [**PRO<sub>1</sub> zirla-j**] ajla-ŋan sun-a-ma  
 collect-CONV walk-PST2 think-PRS-1SG  
 ‘I think that Fatima<sub>1</sub> is walking down this road, **PRO<sub>1</sub> collecting flowers, PRO<sub>1</sub> singing songs.**’

These data are easily explained if we assume two things. First, TP-converbs are always opaque. Second,  $\nu P$ -converbs are only transparent when they are structural complements.

This follows from the Spell Out Theory. When  $\nu P$ -converbs are structural complements (in the context of a verb of motion or position), they are expected to be transparent because they are merged with a head. It is also expected that extraction out of a complement converb does not make the main clause opaque and that if converb clauses are iterated, only the lowest one is transparent for extraction.

Meanwhile, TP-converbs are not expected to be transparent. As has been argued in section 4.1.2, TP-converbs are attached above the  $\nu P$ , which means that their sister is always a phrase (includes at least the verb and one or more of its arguments). This means that they cannot be transparent due to being merged with a head. According to the Spell Out Theory, the only other option is for their sister to be spelled out, in which case the converb would project its category. If a TP-converb is merged below the TP-level, its sister is not a TP, in which case the converb projecting its T-category would not fit the selectional restrictions of the next higher head on the clausal spine. If a TP-converb is merged at the TP-level it has to be merged immediately below

the subject position, so that its PRO can be controlled by the subject, in accordance with the Minimal Distance Principle, as was discussed in section 4.1.2 and Appendix 2, the Supplementary file. But that means that the sister of this TP-converb is a T' with an unsatisfied EPP-feature and hence cannot be spelled out (see section 1.3).

As an anonymous reviewer points out, another possible attachment site for a TP-converb is at the TP-level, but above the subject position. In this case, the sister of the converb bears the same category as the converb, has all of its merge-inducing features satisfied and, thus, can be spelled out. This predicts TP-converbs to be transparent, contrary to the facts. Note, however, that the subject of the TP-converb in this case does not have an available controller (the TP-converb is attached too high, above all the other DPs in the sentence), which opens two possible analyses. Either TP-converbs cannot be attached at this position (because their PRO-subject has to be bound), which rules out the possibility of their sister being spelled out and TP-converbs being transparent. Or this is, in fact, the case of a converb with an overt subject. If the latter analysis is correct, converbs with overt subjects are, in fact, TPs (their special semantic relation to the main clause and their ability to be modified by epistemic adverbs has to be explained in some other way). With respect to extraction, the analysis remains basically the same: between two TP-sisters either can project, while the other is spelled out and becomes opaque for movement.

Thus, the Spell Out Theory correctly predicts that PRO-converbs can only be transparent when they are merged as complements. Importantly, PRO-converbs in all of the cases described above are semantic modifiers. They are optional, can be iterated, do not fill any argument slots of the main predicate and do not receive a theta-role. Hence, modifier accounts predict them to be invariably opaque for movement, contrary to fact.

## 5 Extracting from English *ing*-clauses

### 5.1 Preliminaries

In this section I will briefly consider extraction from *ing*-clauses in English. The discussion will be limited to *ing*-clauses for two reasons: (a) they are close in meaning and structure to Balkar converbs; and (b) the possibilities of extraction out of them have already been addressed in the literature, most notably by Truswell (2007).

In what follows I will focus on *ing*-clauses that serve as modifiers and have a null subject, like *whistling Ode to Joy* in (69).

(69) Ludo<sub>1</sub> was walking down the street, [**PRO**<sub>1</sub> **whistling Ode to Joy**].

Truswell (2007) argues that whether an *ing*-clause<sup>22</sup> can be extracted from depends on its semantic relation to the main verb:

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<sup>22</sup> Truswell (2007) uses a broader term 'secondary predicate'.

(70) Truswell's Generalization (Truswell 2007: 1374)

Extraction of a complement from a secondary predicate (including *ing*-clauses – DP) is permitted only if the event denoted by the secondary predicate is identified with an event position in the matrix predicate.

An *ing*-clause is transparent if and only if its event argument is identified with one of the event arguments in the main clause. This is only possible if the event argument in the main clause is underspecified, which in turn is determined by the lexical semantics of the main verb.

It is not clear how Event Identification should influence possibilities of extraction. However, if availability of Event Identification correlates with the attachment site of the *ing*-clause, the Spell Out Theory provides a ready explanation for (70). Event Identification is only possible if the *ing*-clause is a structural complement. In the rest of this section I will go over the cases brought up by Truswell (2007), viewing them from the perspective of the Spell Out Theory and assuming that Event Identification correlates with the attachment site.

According to Truswell (2007), *ing*-clauses are transparent in the context of three classes of main verbs: (a) unaccusative atelic verbs of motion and position, like *walk*, (b) some telic unaccusatives, like *arrive*, and (c) telic transitive verbs with underspecified causing subevent (so-called result verbs), like *anger*. In what follows I will consider the intransitive cases (a-b) and the transitive ones (c) separately.

## 5.2 Intransitives

According to Truswell (2007), there are two classes of intransitive verbs in whose context an *ing*-clause can be transparent: atelic verbs of motion and position and some telic unaccusatives.

In both sentences in (71) the *ing*-clause modifies a verb of position and is transparent for relativization. These examples are judged as grammatical by all the speakers I have consulted.

- (71) a. **The dish**<sub>2</sub> that Liz<sub>1</sub> was sitting there [**PRO**<sub>1</sub> **eating**   <sub>2</sub>] was delicious.  
 b. **The book**<sub>2</sub> that Rosa<sub>1</sub> was lying in bed [**PRO**<sub>1</sub> **reading**   <sub>2</sub>] was boring.

The same is true for verbs of motion:

- (72) a. **The song**<sub>2</sub> that Alex<sub>1</sub> was jumping around [**PRO**<sub>1</sub> **singing**   <sub>2</sub>] was dumb.  
 b. **The podcast**<sub>2</sub> that Ludo<sub>1</sub> was walking to the store [**PRO**<sub>1</sub> **listening to**   <sub>2</sub>] was very interesting.

These examples fall within Truswell's generalization. Atelic verbs of motion or position can be construed as mono-eventive predicates. Their event argument is underspecified, so it can be identified with the event argument of the *ing*-clause.

According to the speakers I consulted, with unergative verbs extraction is slightly worse, although still not completely unacceptable:

(73) ?This is **the house**<sub>2</sub> that Alex<sub>1</sub> worked hard [**PRO**<sub>1</sub> **building** \_\_].

As Truswell (2007) argues, the decisive factor here is whether the event argument of the main verb and the event argument of the *ing*-clause can be identified. That, of course, depends on the lexical semantics of the verbs involved. This situation is very similar to *vP*-converbs in Balkar, discussed in section 4 above.

Let us assume that some English *ing*-clauses have the same semantics as some Balkar *vP*-converbs, that is, they introduce a mereologically overlapping event into the event structure:

(74) [[**PRO**<sub>1</sub> whistling a song]] =  $\lambda e. \exists e': e \sqcap e'$  and  $e'$  is an event of **PRO**<sub>1</sub> whistling a song.

This meaning can combine with the matrix verb via Event Identification (65). This is only possible, if the main predicate is vague, like a verb of motion or position. That is, the main verb describes an event that can freely mereologically overlap with a broad class of other events.

Apart from atelic verbs of motion or position, some telic unaccusatives also allow extraction from the *ing*-clauses that modify them (75). Truswell (2007: 1370) reports extraction with *appear* as ungrammatical, but the speakers I consulted find it acceptable, though, perhaps, a bit degraded.

- (75) a. I liked **the tune**<sub>2</sub> that Karl<sub>1</sub> arrived [**PRO**<sub>1</sub> **humming** \_\_].  
 b. I know **the tune**<sub>2</sub> that Liz<sub>1</sub> died [**PRO**<sub>1</sub> **thinking about** \_\_].  
 c. ?I liked **the melody**<sub>2</sub> that Rosa<sub>1</sub> appeared [**PRO**<sub>1</sub> **whistling** \_\_].

Telic predicates can be analyzed as bi-eventive. For example, *arrive* can be construed as describing two events  $e_1$  and  $e_2$ ,  $e_1$  being an event of Alex moving, and  $e_2$  being the state of Alex being here,<sup>23</sup> where  $e_1$  causes  $e_2$  (see Dowty 1979, Levin & Rappaport-Hovav 1995, Paducheva 2004; 2009, Ramchand 2008, Tatevosov 2015, among numerous others).

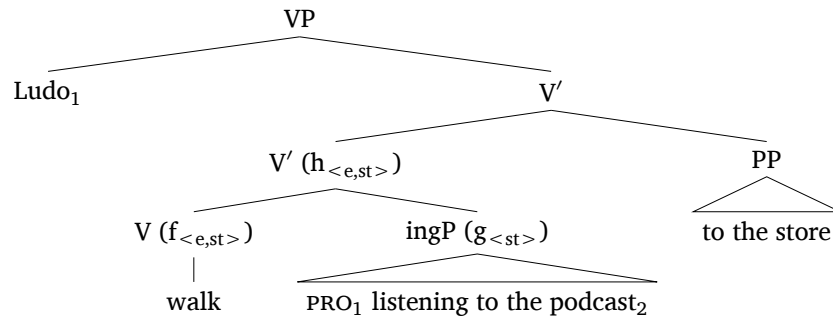
Following Truswell (2007), I will assume that in the case of telic predicates (75) the event argument of the *ing*-clause overlaps with the second event argument of the main clause (the result state). This can also be achieved via Event Identification, if the *ing*-clause is merged directly with the main verb.

These data are compatible with the Spell Out Theory. Adopting the analysis proposed for Balkar above, we can assume that combining an *ing*-clause with the main verb via Event Identification is only possible, if the *ing*-clause is base generated below the lowest argument of the verb and is merged directly to the lowest head inside the VP (either of a mono-eventive atelic verb like *walk* or a bi-eventive telic verb like *arrive*):

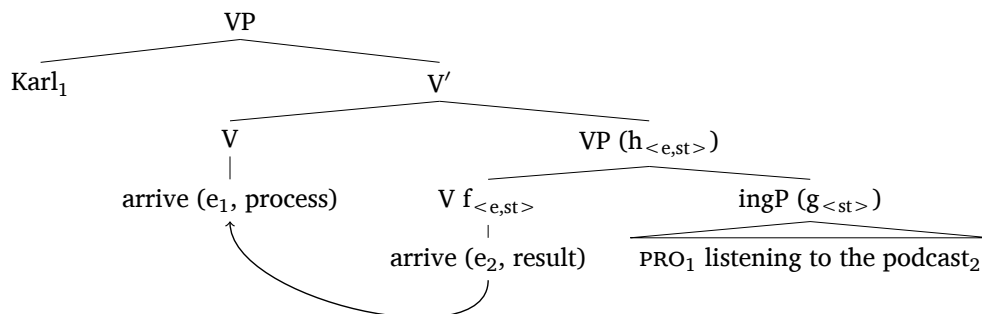
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<sup>23</sup> For simplicity I am assuming here that both processes and states have the same semantic type *s*, to which I refer as the 'event'-type (see Ramchand 2008 and Tatevosov 2015, among many others, for the same ontology). The process vs. state distinction is not relevant for our present purposes.

- (76) a. Mono-eventive cases (*ingP* is identified with the event argument of *walk*)



- b. Bi-eventive cases (*ingP* is identified with the result state of *arrive*)<sup>24</sup>



The tree in (76a) does not match the surface word order. However, it can be remedied by extraposing the *ing*-clause to a position after the PP. The most crucial assumption here is that for the event argument of the *ing*-clause and to overlap with one of the event arguments of the main clause the *ing*-clause must be merged as a complement. This is an assumption I made for Balkar in section 4, but it seems reasonable to extend it to English

For Balkar this analysis is independently supported by restructuring effects. Unfortunately, English does not provide similar evidence. However, there are two independent arguments that can be brought up to support this theory.

First, if the verb is elided, a transparent *ing*-clause has to be elided together with it.<sup>25</sup> Consider the pair of sentences in (77). In (77a) the *ing*-clause is elided together with the main verb *walk*. In (77b) only the main verb is elided.

- (77) a. SITUATION: Rosa walked to the store listening to a podcast, and Karl walked to the store listening to a podcast.

Rosa walked to the store listening to a podcast, and Karl<sub>1</sub> did Δ too.

<sup>24</sup> The structure with two recursively embedded VPs for bi-eventive predicates can be found, among many others, in Ramchand (2008). Although in Ramchand's (2008) terminology the lower V, associated with the result state, is labeled as R.

<sup>25</sup> This argument was pointed out to me by David Pesetsky (p.c.).

- b. SITUATION: Rosa walked to the store listening to a podcast, while Karl walked to the store thinking about his problems.  
Rosa walked to the store listening to a podcast, and Karl<sub>1</sub> did Δ [PRO<sub>1</sub> thinking about his problems].

What (77) shows is that *ing*-clause does not have to be elided together with the main verb. Assuming that eliding a head without its complement is not possible, this means that the *ing*-clause does not have to be the complement of *walk*.

However, if the *ing*-clause is extracted from and the main verb is elided, the *ing*-clause **must** be elided with it:

- (78) a. SITUATION: same as in (77a)  
      <sup>?</sup>This is [**the podcast**]<sub>2</sub> that Rosa walked to the store listening to, and this is [**the podcast**]<sub>2</sub> that Karl<sub>1</sub> did Δ.
- b. SITUATION: same as in (77b)  
      \*This is [**the podcast**]<sub>2</sub> that Rosa walked to the store listening to, and these are [**the problems**]<sub>2</sub> that Karl<sub>1</sub> did Δ [PRO<sub>1</sub> thinking about \_2].

In both (78a) and (78b) the *ing*-clause is extracted from. In (78a) it is elided together with the main verb, while in (78b) it survives ellipsis, which is only possible if the *ing*-clause is a structural adjunct. All the speakers I consulted perceive a contrast between (78a) and (78b). If the first sentence is acceptable, but degraded, the second sentence is definitely ungrammatical. This suggests that if an *ing*-clause is extracted from, it must be a complement.

Second, with stacked *ing*-clauses only the lowest one is transparent for extraction.<sup>26</sup> All the speakers I consulted perceive a strong contrast between (79b) and (79c), with the former being consistently judged better. While *ing*-clauses can be stacked (79a), only one of them, namely, linearly the first one, can be transparent for extraction. This is expected, if we assume that only the first *ing*-clause can merge as a complement.

- (79) a. Rosa<sub>1</sub> walked to the store [PRO<sub>1</sub> listening to a podcast], [PRO<sub>1</sub> thinking about her problems].
- b. This is [**the podcast**]<sub>2</sub> that Rosa<sub>1</sub> walked to the store [PRO<sub>1</sub> listening to \_2], [PRO<sub>1</sub> thinking about her problems].
- c. \*These are [**the problems**]<sub>2</sub> that Rosa<sub>1</sub> walked to the store [PRO<sub>1</sub> listening to a podcast], [PRO<sub>1</sub> thinking about \_2].

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<sup>26</sup> This argument was pointed out to me by Norvin Richards (p.c.).

### 5.3 Transitives

Extraction out of *ing*-clauses that modify transitive verbs seems to be much more marked. According to Truswell (2007), there are two conditions that have to be satisfied for an *ing*-clause to be transparent in the context of a transitive verb.

First, the main verb has to be an accomplishment specifying result. This is based on the idea that some accomplishments, like *draw*, specify the manner of a complex eventuality, while others, like *drive crazy*, specify the result (see Levin & Rappaport-Hovav 1995 and much subsequent work).

Both classes of verbs can be construed as bi-eventive predicates, describing two events  $e_1$  and  $e_2$ , where  $e_1$  causes  $e_2$ . Manner verbs specify the causing subevent. Result verbs specify the caused subevent. For example, *draw* describes a pair of events  $e_1$  and  $e_2$  where  $e_1$  is the process of a picture being drawn and  $e_2$  is the state of the picture being complete, and  $e_1$  causes  $e_2$ . The verb *draw* specifies  $e_1$ . On the other hand, *drive crazy* describes a pair of events  $e_1$  and  $e_2$  where  $e_1$  is the event of making someone crazy, and  $e_2$  is the state of someone being crazy, and  $e_1$  causes  $e_2$ . The verb *drive crazy* specifies  $e_2$  and leaves  $e_1$  underspecified.

Extraction from an *ing*-clause is degraded in the context of a stative verb (80a), a semelfactive verb (80b), or an accomplishment specifying manner (80c). But it is better in the context of an accomplishment specifying result (80d).

- (80) a. CONTEXT: The listener is a wizard with magic hats. They put on hat A, and they speak English. They put on hat B, and they speak Arabic.  
       \*Which of your magic hats<sub>1</sub> do you<sub>1</sub> know Georgian [PRO<sub>1</sub> wearing \_\_<sub>2</sub>] ?  
 b. \*This is the window<sub>2</sub> that Karl<sub>1</sub> noticed the rain [PRO<sub>1</sub> looking through \_\_<sub>2</sub>].  
 c. \*Who<sub>2</sub> did Alex<sub>1</sub> draw a circle [PRO<sub>1</sub> talking to \_\_<sub>2</sub>] ?  
 d. ?This is the car<sub>2</sub> that Rosa<sub>1</sub> drove Liz crazy [PRO<sub>1</sub> trying to fix \_\_<sub>2</sub>].

Second, the *ing*-clause itself has to describe the causing subevent. The semantic relation between the *ing*-clause and the main clause is one of immediate causation. In particular, indirect causation is out:

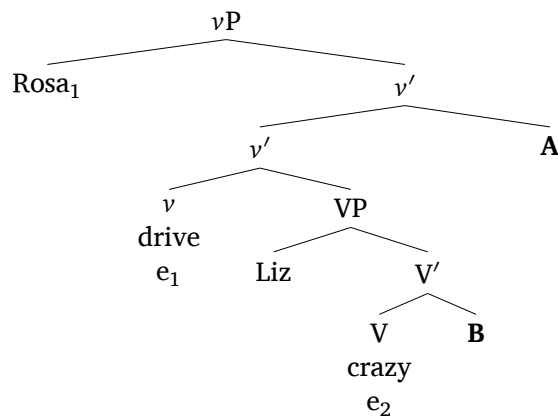
- (81) A: What<sub>2</sub> did John make himself angry [PRO<sub>1</sub> trying to fix \_\_<sub>2</sub>] ?  
 B: The radiator. It just really got to him.  
 B': #The radiator. But it wasn't because he was trying to fix the radiator that he made himself angry, it was that he happened to be trying to fix it while his favorite program was on. (Truswell 2007: 1371)

This is explained if the event argument of the *ing*-clause is identified with  $e_1$ , the causing subevent. What caused John to be angry in (81) has to be him trying to fix the radiator, not any other event associated with it.

This is in accordance with Truswell's generalization (70): the event argument of the *ing*-clause is identified with an event argument of the main clause, which is only possible if the event argument of the main clause is underspecified. Because result verbs do not specify the causing subevent, it can be specified by the *ing*-clause. Consequently, the *ing*-clause can be transparent in the context of a result verb.

Following Harley (1996), Folli & Harley (2007), Pylkkänen (2008), and Ramchand (2008), among numerous others, I will assume that the causing subevent  $e_1$  is introduced by a high functional head, like  $v$  or Voice, that is also responsible for the introduction of the Agent argument (the external argument). Meanwhile the caused subevent  $e_2$  is introduced by some lower head, like V, that is also responsible for the introduction of the Theme argument (the internal argument):

(82) Attachment sites for *ing*-clauses modifying transitives



If the event argument of the *ing*-clause is to be identified with the causing subevent  $e_1$ , and if the *ing*-clause is combined with the main clause via Event Identification, then it has to attach at position A, as represented by (82). This means that the *ing*-clause is not a structural complement. The Spell Out Theory predicts it to be opaque, contrary to fact.

However, there is some evidence against attachment site A and in favor of attachment site B. The first piece of evidence comes from Condition C. For all the speakers I consulted co-reference between a pronominal internal argument and a full noun phrase inside the *ing*-clause leads to a condition C violation. All the speakers I consulted perceive a strong contrast between (83a) and (83b), with the latter being consistently judged worse.

- (83) a. ?Rosa<sub>1</sub> killed *the guy*<sub>3</sub> [PRO<sub>1</sub> hitting *him*<sub>3</sub> with a poker].  
 b. \*Rosa killed *him*<sub>3</sub> [PRO<sub>1</sub> hitting *the guy*<sub>3</sub> with a poker].

The same contrast repeats with extraction:

- (84) a. ?\*What<sub>2</sub> did Rosa<sub>1</sub> kill *the guy*<sub>3</sub> [PRO<sub>1</sub> hitting *him*<sub>3</sub> with   ]  
 b. \*What<sub>2</sub> did Rosa killed *him*<sub>3</sub> [PRO<sub>1</sub> hitting *the guy*<sub>3</sub> with   ]



This suggests that the *ing*-clause is base generated below the internal argument, that is, at position B, as the structural complement of the main verb.<sup>27</sup>

Furthermore, like in the case of intransitive verbs, among stacked *ing*-clauses only the first one can be transparent for extraction:

- (85) a. Rosa<sub>1</sub> drove me crazy [PRO<sub>1</sub> writing down formulas], [PRO<sub>1</sub> scratching the blackboard].  
 b. ?These are [**the formulas**]<sub>2</sub> that Rosa<sub>1</sub> drove me crazy [PRO<sub>1</sub> writing down \_2], [PRO<sub>1</sub> scratching the blackboard].  
 c. \*These is [**the blackboard**]<sub>2</sub> that Rosa<sub>1</sub> drove me crazy [PRO<sub>1</sub> writing down formulas], [PRO<sub>1</sub> scratching \_2].

If the transparent *ing*-clause is merged as a complement, how does it end up describing the causing subevent? This can be derived if we assume that English *ing*-clauses may have another reading, where they themselves introduce a causation relation into the event structure (perhaps, by a silent preposition ‘by’):

- (86) [[PRO<sub>1</sub> hitting Karl with a poker]] =  
 $\lambda e. \exists e'$ :  $e'$  is the immediate cause of  $e$ , and  $e'$  is an event of PRO<sub>2</sub> hitting Karl with a poker.

If a predicate like (86) is base generated as the sister to V, the  $\exists$ -bound event argument of the *ing*-clause ends up describing the causing subevent  $e_1$  due to the semantics of the *ing*-clause. In other words, the *ing*-clause itself introduces the causing subevent, which is later identified with the causing subevent introduced by  $v$ , simply because there can only be one immediate cause of  $e_2$ .

This derives both the semantic relation between the *ing*-clause and the main verb, and Condition C effects in (83)–(84). Crucially, the *ing*-clause is attached low, as a sister to the main verb. Hence it becomes transparent, as predicted by the Spell Out Theory.

## 6 Concluding remarks

In this paper I have considered the effects of the Adjunct Condition in two case studies: converb clauses in Balkar and *ing*-clauses in English. Both *ing*-clauses and converbs are clausal non-finite modifiers, they are optional and do not fill any argument slots of the main predicate. Nevertheless, both Balkar converbs and English *ing*-clauses can be extracted from, but the possibilities of extraction are limited by the structural position of the clause in question.

This confirms the predictions of the Spell Out Theory:

- (87) a. Before any two phrases are merged at least one of them must be spelled out.  
 b. A spelled out phrase does not project its category.

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<sup>27</sup> It should be noted that there is an alternative explanation for the Condition C facts in (83)–(84), involving Bruening’s (2014) precede and command.

From (87) it follows that all structural adjuncts are opaque, because they are maximal projections and are merged with a phrase. But it does not follow that all modifiers are opaque. The Spell Out Theory predicts that modifiers can be transparent in two cases:

- (88) a. A modifier is transparent if it is merged with a head (is a complement).  
 b. A modifier is transparent if its sister is spelled out.

These predictions are confirmed by Balkar and English. Balkar converbs are transparent for scrambling in two cases. First, a CP-sized converb that is attached at the CP-level is transparent for extraction, but at the same time the matrix CP becomes opaque (88b).

Second, a *vP*-sized converb that is attached within the main *vP* is transparent if the main verb is a verb of motion or position. With the same set of verbs the *vP*-converbs show restructuring effects, which suggests that they are merged as complements (88a).

English *ing*-clauses are also transparent for movement in two cases. First, they are transparent if they modify a limited set of unaccusative verbs. This set primarily consists of verbs of motion and position, that is, precisely the same lexical class of verbs that show restructuring effects in Balkar. This suggests that transparent *ing*-clauses in English are also attached as complements of the main verb (88a). This assumption is further confirmed by evidence from ellipsis and stacked *ing*-clauses.

Second, *ing*-clauses are transparent if they modify a telic transitive verb that specifies result. In this case the *ing*-clause must be attached below the object, as supported by evidence from Condition C and stacked *ing*-clauses. This, again, makes the transparent *ing*-clause in question a structural complement (88a).

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## Abbreviations

1 = first person, 2 = second person, 3 = third person, ABL = ablative case, ACC = accusative case, ADD = additive particle, AUX = past imperfective auxiliary, CAR = caritive, CAUS = causative, COND = conditionalis, CONV = converb, DAT = dative case, FUT = future tense marker, F = feminine gender, GEN = genitive case, LOC = locative case, M = masculine gender, NCI = negative concord particle, NEG = negation, NOM = nominative case, NZR = nominalization, N = neuter gender, PL = plural, POT = circumstantial possibility marker, PRS = present tense marker, PRT = topic particle, PST, PST1, PST2 = past tense marker, SBJ = subjunctive, SE = reflexive marker, SG = singular

## Supplementary file

The Supplementary file for this article can be found here: <https://doi.org/10.16995/glossa.5863.s1>

It contains the following Appendices:

- **Appendix 1.** Converb clause size and epistemic adverbials.
- **Appendix 2.** Possible controllers for PRO in Balkar.
- **Appendix 3.** CP-converbs: Semantic relation to the main clause.

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## Competing interests

The author has no competing interests to declare.

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