

Icelandic V3 orders with temporal adjuncts Investigation into prosodic breaks and syntactic parsing¹

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Abstract

Although Icelandic is a verb second language (V2), it sometimes allows for V3 orders. In this paper, I focus on a type of Icelandic V3 that consists of an adverbial adjunct occurring in front of a *wh*-question, with a prosodic break being present between the two. Importantly, the same type of adverbial adjunct is disallowed in front of subject-initial declaratives. Along with providing an overview of the context where this pattern is allowed in Icelandic, I present the results of a pilot investigating the effects of the length of prosodic break and clause type for getting this type of V3. The results indicate that both the length of the prosodic break preceding the adverbial adjunct and the type of the following clause matter for the possibility of getting V3.

1. Introduction

This paper focuses on a type of V3 order found in Icelandic, which is a symmetric V2 language (for an overview, see Thráinsson 2007:17-31). The V3 clauses under discussion contain a clause-initial temporal adjunct in front of a *wh*-question. This is shown in (1), where the temporal adjunct is underlined and the finite verb of the main clause boldfaced.

- (1) Þegar þú ferð til Belgíu í sumar
when you go to Belgium in summer
hvað ætlarðu að gera?
what go to do
'When you go to Belgium this summer, what are you going to do?'

The type of V3 in (1) typically occurs in spoken language and requires a prosodic break between the adverbial adjunct and the main clause. Interestingly, a comparable construction containing an adjunct in front of a subject-initial clause is ungrammatical, no matter how long or short the prosodic break is (2).

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- (2) **Þegar þú ferð til Belgiu í sumar*

when you go to Belgium in summer

þú munt fá gott súkkulaði.

you will get good chocolate

Intended: ‘When you go to Belgium this summer, you are going to get good chocolate.’

The presence of a prosodic break between a temporal adjunct and a *wh*-question as in (1) and the ungrammaticality of the same pattern when the adjunct occurs in front of a subject-initial declarative (2) raise questions regarding the interplay between syntax and prosody. Could prosodic breaks, for instance, affect the possibility of getting V3 patterns in Icelandic? If so, what about syntax? If a prosodic break favors a V3 interpretation, can syntactic ungrammaticality be overwritten or does a V3 pattern also need to be permitted by the syntax for the pattern to emerge? To answer these questions, I provide evidence from a perception study on the interplay of prosodic breaks and syntactic clause type.

The paper is structured as follows. Section 2 presents the background on which the experimental study reported on in Section 3–4 was based. Section 2.1 discusses the position of the finite verb in Icelandic and provides an overview of when V3 patterns with an initial adverbial adjunct are allowed. Section 2.2 looks at two types of adverbial clauses and why there may be a need to distinguish between them. Section 2.3 sketches a syntactic analysis in the spirit of Haegeman and Greco (2018), who have looked at the same type of V3 patterns in Standard Dutch and West Flemish. Following them, it is suggested the adverbial clause is externally merged to the left of the main clause and that the licensing involves the finite verb of the main clause moving up to the edge of the CP layer.

Turning to the perception study, Section 3 introduces the design, materials, and procedure. The experiment involved participants listening to audio files containing an adverbial clause sandwiched between two sentences (A and B). The breaks between the adverbial clause and the two sentences varied in length. Participants were asked to judge which sentence (A or B), was longer with the response taken to reflect how they were parsing the string. The results (Section 4) indicate that both the clause type of sentence B and the length of the prosodic break between sentence B and the adverbial clause had a significant effect on how the string was parsed. Section 5 summarizes the paper and provides a discussion of the results.

2. Background

2.1 Icelandic V2 and V3

Icelandic is a symmetric V2 language, with the finite verb occurring in second position both in main and subordinate clauses (for an overview see Thráinsson 2007). An example of a main clause is given in (3).

- (3) *Þessa bók hefur drengur-inn ekki lesið.*
 this book.ACC has.3SG boy-the.NOM not read
 ‘This book, the boy has not read.’

As can be seen in (4), V2 is maintained after topicalization within the embedded clause. Note that embedded V2 in Icelandic is not limited to embedding under verbs of assertion, as in (3), but also occurs when the main clause has non-assertive verbs. In this way, Icelandic differs from Mainland Scandinavian, where embedded V2 only occurs under certain types of matrix verbs (for a general overview see Vikner 1995:67–72, Thráinsson 2007; for recent discussion on V2/V3 variation in embedded clauses in Icelandic and

Mainland Scandinavian see e.g. Wiklund et al. 2007, Wiklund et al. 2009, Thráinsson, Angantýsson and Viðarsson 2015, Thráinsson and Angantýsson 2015:300 and Angantýsson 2017).

- (4) *Kona-n veit að þessa bók hefur*
 woman-the.NOM knows.3SG that this.ACC book.ACC has
drengur-inn ekki lesið.
 boy-the.NOM not read
 ‘The woman knows that THIS BOOK the boy has not read.’

In addition to V2, Icelandic also has V1 orders that are restricted to certain types of clauses, e.g. yes/no questions, commands, and narrative inversion (for a general overview and references see Thráinsson 2007:28–31, for declarative V1 see Sigurðsson 2018). An example of a yes/no question is given in (5).

- (5) *Ferð-u til Þýskalands í sumar?*
 go-you.2SG PREP Germany PREP summer
 ‘Are you going to Germany this summer?’

Unlike yes/no questions, questions with *wh*-elements have the expected V2 pattern. This is shown in (6) with the *wh*-word *hvert* ‘where to’.

- (6) *Hvert ætlar þú að fara í fri?*
 where-to go.2SG you to go PREP vacation
 ‘Where are you going to go for a vacation?’

Despite Icelandic being V2 (with V1 occurring in certain clause types), there are instances where the finite verb appears to be in the third position within the clause. This was noted by Maling (1980), but others have also investigated deviations from V2 (e.g. Thráinsson 1986, Sigurðsson 1986, Angantýsson 2001, Angantýsson and Jonas 2016, Jónsson 2019). The type of V3 that is relevant to the present study includes an adverbial clause that appears in front of a regular *wh*-question as in (7). Importantly, if the *wh*-question is changed into a declarative the utterance becomes ungrammatical (8)–(9).²

- (7) WH-QUESTIONS³
- Þegar þú ferð til Belgíu í sumar,*
 when you go to Belgium in summer
hvað ætlar-ðu að gera?
 what intend-you to do
 ‘When you go to Belgium this summer, what are you going to do?’

² Rögnvaldsson (1982:65–69), Thráinsson (2005: 577–578) and Jónsson (2019) discuss a similar type of V3-construction in Icelandic. Jónsson (2019) terms these XP-*þá*-constructions, as they include the adverbial *þá* ‘then’ (sometimes preceded by complementizer *að*) occurring after a left-peripheral adjunct. The following is an example of the XP-*þá*-construction.

(i) *Vegna óveðurs, (að) þá var leiknum frestað.*
 due to bad weather that ÞÁ was the.game postponed
 ‘Because of bad weather, the game was postponed.’ (Jónsson 2019:342)

A systematic comparison of the XP-*þá*-construction and the V3 pattern presented in this paper will not be made here. However, it may be pointed out that the crucial part of the XP-*þá*-construction, i.e. the adverb *þá* ‘then’, is lacking in the V3 pattern I discuss. This may affect grammatical judgments as the V3 containing an initial adjunct and lacking the adverb *þá* is disallowed in declaratives (8)–(9) while the XP-*þá*-construction is perfectly grammatical in that clause type.

³ Although the examples I provide here contain adverbial clauses, it may be noted that phrasal adverbials such as *á næsta ári* ‘next year’ or *í sumar* ‘this summer’ are also allowed.

(i) *Á næsta ári, hvað ætlar-ðu að gera?*
 PREP next year what going-you to do
 ‘Next summer, what are you going to do?’

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(8) DECLARATIVES

- a. **Þegar ég fer til Belgiu í sumar,*
 when I go to Belgium in summer
ég ætla að fara til Oostende.
 I intend to go to Ostend
Intended: ‘When I go to Belgium this summer, I’m going to visit Ostend.’
- b. **Þegar ég fer til Belgiu í sumar,*
 when I go to Belgium in summer
til Oostende ætla ég að fara.
 to Ostend going I to go
Intended: ‘When I go to Belgium this summer, I’m going to visit Ostend.’

(9) DECLARATIVES WITH DITRANSITIVE VERBS

- b. **Þegar {hann/Jón}; _____ kom frá _____ Belgiu,*
Haraldi gaf
 when he Jón came from Belgium Harald.DAT gave
{Jón/ hann}; súkkulaði.
 John.NOM he.NOM chocolate
Intended: ‘When he came from Belgium, to Harald John gave chocolate.’
- c. **Þegar {hann/Jón}; _____ kom frá _____ Belgiu, súkkulaði gaf*
 when he Jón came from Belgium chocolate gave
{Jón/ hann}; Haraldi
 John.NOM he.NOM Harald.DAT
Intended: ‘When he came from Belgium, chocolate gave John to Harald.’

Although the examples in (7)–(9) are central to the investigation in this paper, it should be mentioned that adverbial adjuncts can also combine with other types of clauses, resulting in deviation from expected word order. For instance, questions that have the syntactic structure of a declarative usually have V2 (10a) but allow for V3 when occurring with a clause-initial adjunct (10b).⁴

(10) QUESTIONS WITH THE SYNTACTIC STRUCTURE OF A DECLARATIVE

- a. *Ég má alveg kaupa fullt fullt af rauðvíni?*
 I can ADV buy lots lots PREP red wine?
 ‘I can buy lots and lots of red wine?’
- b. *Fyrir party-ið á morgun, ég má alveg*
 for party-the PREP tomorrow I can ADV
kaupa fullt fullt af rauðvíni?
 buy lots lots PREP red wine
 ‘For the party tomorrow, I can buy lots and lots of red wine?’

⁴ Admittedly, speakers are slightly more hesitant in accepting V3 containing questions with the syntactic structure of declaratives rather than regular *wh*-questions. They do, however, agree that these are (at least marginally) possible in colloquial speech and contrast starkly with regular declaratives that are outright ungrammatical.

Questions with *wh*-in-situ (typically used as echo questions) may sometimes show V1 order with the subject occurring to the right of the finite verb. An example is given in (11a) where the subject pronoun is cliticized to the verb. In cases where a temporal adjunct is added clause-initially, the result is V2 (11b).

(11) QUESTIONS WITH *WH*-IN-SITU

- a. *Ætlar-ðu að gera hvað?*
intend-you.2SG to do what
'You're going to do what?'
- b. *Þegar þú ferð til Belgíu í sumar,*
When you go to Belgium in summer
ætlar-ðu að gera hvað?
intend-you.2SG to do what
'When you go to Belgium this summer, what are you going to do?'

As noted above, yes/no-questions have V1 order. In cases where they contain negation, the negative element *ekki* 'not' can occur either to the left (12a) or the right (12b) of the finite verb. When a clause-initial temporal adjunct is added, the result is either V2 (13a) or V3 (13b), depending on where the negative element is positioned.

- (12) a. *Heimsótti hún ekki Oostende?*
visited she not Ostend?
'Didn't she visit Ostend?'
- b. *Ekki heimsótti hún Oostende?*
not visited she Ostend
'She didn't visit Ostend, did she?'

(13) YES/NO-QUESTIONS

- a. *Þegar hún fór til Belgíu í sumar,*
When she went to Belgium in summer
heimsótti hún ekki Oostende?
visited she not Ostend
'When she went to Belgium this summer, didn't she visit Ostend?'
- b. *Þegar hún fór til Belgíu í sumar,*
When she went to Belgium in summer
ekki heimsótti hún Oostende?
not visited she Ostend
'When she went to Belgium this summer, didn't she visit Ostend?'

Finally, the expected word order for imperatives is V1. However, if a temporal adjunct is added clause-initially, the result is V2 as shown in (14b).

(14) IMPERATIVES

- a. *Gleym-du ekki að heimsækja Ghent!*
forget-you not to visit Ghent
'Don't forget to visit Ghent!'

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- b. *Þegar þú ferð til Belgíu í sumar.*
 When you go to Belgium in summer
gleymsdu ekki að heimsækja Ghent!
 forget-you not to visit Ghent
 ‘When you go to Belgium this summer, don’t forget to visit Ghent!’

Three observations may be made about the examples in (7)–(14). First, adding an adjunct to the left of various clause types may result in deviation from otherwise expected word order. If expected word order for a clause type is V1, adding an initial adjunct may result in V2; if expected word order is V2, adding an initial adjunct may result in V3. Second, not all clause types allow for combination with an initial adjunct that results in deviation from expected word order. Although imperatives and various types of questions (questions with declarative syntax, *wh*-questions, questions with *wh*-in-situ and yes/no-questions) allow for an additional constituent to the left of the regular clause, adding a similar adjunct in front of subject-initial declaratives or declaratives with topicalization results in ungrammatical utterances. Third, when a clause-initial adjunct is allowed, a prosodic break appears to be required between the adjunct and the matrix clause.

An overview of clause types and their regular word order in addition to word order when they combine with an initial adjunct is shown in Table 1. For yes/no-questions, the difference between V1/V2 and V2/V3 lies in whether the negative adverb *ekki* ‘not’ is present to the left of the finite verb. A star indicates ungrammaticality.

Type of clause	Regular word order	Word order w/an initial adjunct
Subject-initial declarative	V2	*
Declarative w/topicalization	V2	*
Question w/declarative syntax	V2	V3
<i>Wh</i> -question	V2	V3
<i>Wh</i> -in-situ question	V1	V2
Yes/no-question	V1/V2	V2/V3
Imperative	V1	V2

Table 1. Word order in various clause types and the results of adding an extra clause-initial adjunct

For the remainder of the paper, the contrast between (un)grammaticality of V3 patterns containing a subject-initial declarative and a *wh*-question is crucial since this is what the perception study presented in Sections 3 and 4 is based on. The other patterns are not discussed further, although they are relevant to a syntactic analysis presented in Section 2.3. For further examples of this type of V3 with initial adjuncts in Icelandic, see Sigurðardóttir (2018, 2019).

2.2 Two types of adverbial clauses in V3 patterns

Haegeman (e.g. 2002, 2006, 2012) distinguishes between two types of adverbial clauses: peripheral adverbial clauses (PAC) and central adverbial clauses (CAC). The two types behave in a different way with respect to the fronting of elements within the clause and their integration into the main clause they are associated with. In fact, the terms CAC and PAC derive from this observation (see Haegeman 2006).

Peripheral adverbial clauses allow for so-called main clause phenomena (MCP) (see e.g. Haegeman 2002, 2012 for English and Angantýsson and Jonas 2016 for Icelandic). They behave more like main clauses, for instance, by allowing topicalization of various elements. Additionally, PACs stand in a different temporal relationship with the main clause they are associated with than CACs; they typically modify “the speech act as whole” and not the main clause itself (Haegeman and Greco 2018:17). An Icelandic example containing a peripheral adverbial clause, with topicalization, is given in (15). The

adverbial connector *á meðan* ‘while’ is taken here to introduce contrastiveness and does not carry temporal meaning.

- (15) *Í ensku eru sterkbeygðar sagnir taldar óreglulegar,*
 PREP English are strong verbs assumed irregular
á meðan í fornensku eru þær taldar reglulegar.
 while PREP Old-English are they assumed regular
 ‘In English, strongly conjugated verbs are considered irregular, while in Old English they are considered regular.’ (Example (15d) from Angantýsson and Jonas 2016)

Central adverbial clauses are thought to be more integrated into the main clause than PACs since they modify events in the clause they are associated with. Additionally, unlike in PACs, fronting of arguments and adjuncts is dispreferred in CACs (Haegeman 2012). This holds for Icelandic CACs, although there is some variation among speakers (Angantýsson and Jonas 2016). An example of an Icelandic CAC is given in (16).

- (16) *Hvað ætlar-ðu að gera,*
 what going-you to do
þegar þú ferð til Belgiu í sumar?
 when you go to Belgium PREP summer?
 ‘What are you going to do when you go to Belgium this summer?’

Fronting of adjuncts and arguments within the CAC in (16) is ungrammatical (17).

- (17) a. **Þegar í sumar ferð þú til Belgiu...*
 when PREP summer go you to Belgium
Intended: ‘When, THIS SUMMER, you go to Belgium...’
 b. **Þegar til Belgiu ferð þú í sumar...*
 when to Belgium go you PREP summer
Intended: ‘When TO BELGIUM you go this summer...’

As shown by Haegeman and Greco (2018), it matters whether an adverbial clause is central or peripheral when it comes to the possibility of being the first constituent in a V3 order. In both West Flemish and Standard Dutch, which are V2 languages, PACs can combine with V2 clauses that are (i) subject-initial declaratives, (ii) declaratives with topicalization and (iii) *wh*-questions, resulting in V3 patterns (Haegeman and Greco 2018:17, 25). Only examples of PACs in front of subject-initial declaratives are shown here (18)–(19).

- (18) WEST FLEMISH

Oad-et regent of niet, me goan gon wandelen.
 if.3SG-it rains or not we go go walk
 ‘Whether it rains or not, we are going for a walk.’

(Example (22b) from Haegeman and Greco 2018)

- (19) STANDARD DUTCH

Of het nu regent of niet, we gaan morgen wandelen.
 whether it now rains or not we go tomorrow walk
 ‘Whether it rains or not, we’re going walking tomorrow.’

(Example (23b) from Haegeman and Greco 2018)

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When it comes to CACs in V3 patterns, West Flemish and Standard Dutch differ slightly. While West Flemish speakers accept them with V3 word order in front of subject-initial declaratives, declaratives with topicalization and *wh*-questions, Standard Dutch speakers generally do not accept them in front of subject-initial declaratives (20). The only exception is when the subject is focused (21).

(20) WEST FLEMISH / *STANDARD DUTCH

Als mijn tekst klaar is, ik zal je hem opsturen.
 when my text ready is I will you him send
 ‘When my text is ready, I’ll send it to you.’

(Example (21a) from Haegeman and Greco 2018)

(21) STANDARD DUTCH

Als er morgen een probleem is,
 if there tomorrow a problem is
PIET zal ons niet helpen.
 PIET will us not help
 ‘If there is a problem tomorrow, PIET won’t help us.’

(Example (30b) from Haegeman and Greco 2018)

Since CACs are more restricted in appearing as the first constituent in a V3 pattern, they form the basis of the experiment discussed in Sections 3–4.

2.3 The adverbial clause may be “external” to the main clause

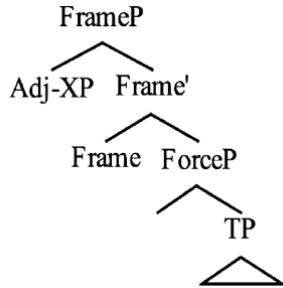
On Haegeman and Greco’s (2018) analysis, the temporal adjuncts in V3 orders in West Flemish and Standard Dutch are clause-external elements. Clause-external is defined in terms of Broekhuis and Corver (2016) who claim it involves constituents that occur to the left of the CP layer. As argued by both Broekhuis (2016) and Haegeman and Greco (2018), a marked break in intonation, separating the first constituent of the clause from the rest, indicates that the element is clause-external. Clause-external material may furthermore have a special function in the discourse. This ties in with the assumption that these elements are not moved from a base position inside the clause, but rather externally merged to the left of the CP layer (Holmberg 2015, Haegeman and Greco 2018). Assuming that the clauses are externally merged also has the benefit of being compatible with a bottleneck approach to V2. Here, the lowest projection within the CP is assumed to function like a bottleneck through which only one constituent may pass. Once a constituent has moved to Spec,FinP, no other constituent may enter the CP layer (Haegeman 1996, 2012 Roberts 2004).

With the temporal adjuncts in the V3 pattern being external to the clause, the structure of the examples in (7)–(14) might be as follows (21).

(21) [Adjunct [CP ... [TP ...]]] (Haegeman and Greco 2018:35)

Haegeman and Greco (2018:34–36) term the projection that is associated with the externally merged adjunct FrameP and claim that it “creates a discourse unit in which Adj-XP serves as a framing device for the assertion in ForceP.” The proposed structure is shown in (22). Note that ForceP, the highest projection within a split CP layer (Rizzi 1997), may be taken to correspond to the CP in (21).

(22)



(23) [FrameP [ForceP [TopP [FocP [TopP [FinP [TP ...]]]]]]]

Although the adjuncts that give rise to V3 are generated outside of the normal clause, they do have a connection with the main clause they are associated with. This is captured by proposing that the main clause has a temporal modal connector (or index) that ties the adjunct temporally to the main clause and licenses the external merger of it in FrameP (Haegeman and Greco 2018). Since locality conditions must be satisfied for elements to be merged in FrameP, the temporal index is moved up to the edge of the CP-layer (to ForceP) of the main clause. This can be assumed to happen through the movement of the finite verb up to Force (Haegeman and Greco 2018:38). For clauses where an external temporal adjunct cannot be merged, there is no verb movement to ForceP. This is the case with regular V2 declaratives in Standard Dutch where the subject occupies the first position: the finite verb presumably stays in Fin and, as a result, a CAC adjunct cannot be merged externally. In West Flemish, however, the finite verb always moves to the ForceP and licenses the external merger.

The licensing mechanism for external adjuncts in Icelandic might be assumed to work in a similar way to that in Standard Dutch and West Flemish. The merger of an external adjunct in FrameP is then only licensed provided that a temporal index is moved to the left edge of the CP layer of the relevant clause. If the movement of the temporal index is linked to a movement of the finite verb, it is necessary to assume that the finite verb in various types of questions (*wh*-questions, questions with declarative syntax, *wh*-in-situ questions and yes/no-questions) and imperatives moves to Force, i.e. the highest projection within the CP-layer. In *wh*-questions, for instance, the *wh*-element would be moved to Spec,ForceP and the finite verb to Force (24); consequently an external merger of an adjunct in FrameP is licensed.

(24) [ForceP **Wh-element** [Force **verb**] [TopP/FocP [Top/Foc] [FinP ... [TP ...]]]]]

Since adjuncts are not allowed to merge to the left of subject-initial declaratives and declarative with topicalization in Icelandic, the finite verb must not move up to the ForceP in these clause types. Instead, their landing site could be within TopP, FocP or FinP, or as low as in TP.

For Standard Dutch, the ungrammaticality of CACs to the left of subject-initial declaratives was accounted for by assuming that the finite verb in these clauses only moved to Fin, i.e. the lowest projection within the CP layer. A similar analysis might be adopted for Icelandic subject-initial declaratives, i.e. that the finite verb only moves up to Fin and therefore external merger of an adjunct in FrameP is not licensed (25).

(25) [ForceP [Force] [TopP/FocP [Top/Foc] [FinP **subject** [Fin **verb**] [TP ...]]]]]

The tricky part is to account for the ungrammaticality of external adjuncts in declaratives with topicalization. In Standard Dutch, these were grammatical, and Haegeman and Greco (2018) argue that the finite verb moved up to Force with the topicalized element landing in Spec,ForceP. This, however, cannot be the case for Icelandic as one would then expect adverbial clauses to be able to merge externally with such clauses. Ruling out Force as the landing site in declaratives with topicalization leads to the belief that

the finite verb must end up within TopP or FocP, i.e. assuming that the landing site of the finite verb must be higher than in subject-initial declaratives. This is shown in (26).

(26) [ForceP [Force] [TopP/FocP **topicalized element** [Top/Foc **verb**] [FinP ... [TP ...]]]]

The analysis proposed here mirrors that of Haegeman and Greco (2018) for West Flemish and standard Dutch. It also suggests that the finite verb in Icelandic main clauses can end up in (at least) three different positions within an articulated CP layer, i.e. in Fin (subject-initial declaratives), Top or Foc (declaratives with topicalization) and Force (imperatives and various types of questions). While no independent evidence is provided here for Icelandic having these types of projections, recent literature (e.g. Hrafnbjargarson 2004, Wiklund et al. 2007, Jónsson 2019) suggests that Icelandic does indeed have an articulated CP. It may, however, be noted that this goes against the traditional assumption that projections such as TopP and FocP are not found in Icelandic (Thráinsson 2007:391).

In this section, it was suggested that adjunct clauses that appear to the left of imperatives and various types of question-clause in Icelandic are generated outside of the clause they are associated with (as opposed to being moved there). A prosodic break that is present between the adjunct and the main clause it is interpreted with was thought to support this analysis.

The presence of the prosodic break raises the question of whether it may affect syntactic parsing and the overall possibilities of getting patterns with the finite verb in an unexpected position. Experiments on the interplay between prosody and syntax (for instance Bear and Price 1990, Beach 1991 and Frazier, Carlson and Clifton 2006) have shown that listeners rely on prosodic cues to identify and interpret syntactic structures. In some instances, it is even the case that “syntactic ambiguity can be resolved with prosodic information” (Bear and Price 1990:20). However, prosodic cues that are important for syntactic parsing are not interpreted in isolation. Instead, they are interpreted relative to other prosodic cues available to the listener (Carlson and Clifton 2006).

To investigate the relationship between the length of prosodic break, clause type and the possibility of verb-third orders in Icelandic, a type of perception study was conducted. The study had participants disambiguate between two ways of parsing an adverbial clause and a potential main clause. One of these ways resulted in V3 of the type discussed above.

3. The study design and procedure

3.1 Materials

In an online survey, participants were presented acoustically with sequences containing two sentences (A and B) with an adverbial clause between them. Importantly, the adverbial clause could be parsed with either of the two sentences. This is presented visually in Figure 1, where the dotted lines represent how the sequence can be parsed.

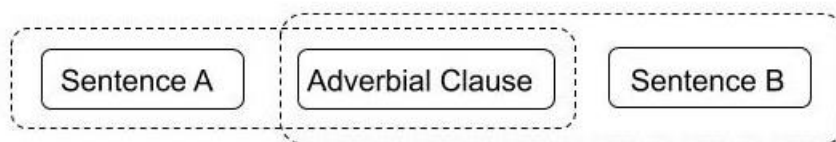


Figure 1. Two possible ways of parsing a sequence of two sentences (A and B) with an adverbial clause between them.

Each A and B sentence was kept to a similar length to avoid biases related to sentence length. Both sentences were constructed in such a way that they could combine semantically with the same adverbial

clause. The A and B sentences could also be interpreted as free-standing utterances. The adverbial clause, however, could not stand on its own and always needed to be interpreted in relation to either the A or the B sentence.

To prevent anaphora and cataphora influencing how the sequence of sentences could be parsed, none of the sentences contained a personal pronoun. Instead, only proper names were used. Care was taken in having equal numbers of masculine and feminine names. Each sequence had either a series of three feminine names, three masculine names or a combination of these where the adverbial clause differed from the others: masc. – fem. – masc. or fem. – masc. – fem.

The structure of the A and B sentences was such that sentence A was always a subject-initial declarative, while sentence B varied between a *wh*-question and a subject-initial declarative. The adverbial clause was always a central adverbial clause (CAC) that started with the adverb *þegar* ‘when’. There were two reasons for the type of adverbial clause remaining constant. First, it has been noted that the type of adverbial clause may affect the extent to which it can occur clause-initially in V3 patterns. While peripheral adverbial clauses have been noted to combine relatively freely with different types of clauses, giving rise to V3, the occurrence of CACs in V3 patterns is more restricted (see e.g. Haegeman and Greco’s 2018 observations for StD and WF). As discussed above (see Section 2.2), CACs in Icelandic can occur as a first constituent in V3 orders containing *wh*-questions, but not in V3 containing subject-initial declaratives. Second, to minimize the likelihood of differently constructed CACs influencing the possibility of getting V3, it was deemed best to have all adverbials starting with *þegar* ‘when’ in the test material. Two examples of test sentence sequences are given below. In (27), the B sentence is a *wh*-question; in (28) it is a regular subject-initial declarative.

- (27) A *Bárður horfir oft á fréttir*
 Bárður watches often PREP news
 ‘Bárður often watches news’
- ADV *þegar Björgvin er ekki heima*
 when Björgvin is not home
 ‘When Björgvin is not at home’
- B *Hvað horfir Kjartan oft á?*
 what watches Kjartan often PREP
 ‘What does Kjartan often watch?’
- (28) A *Önnu langar í ís*
 Anna wants ice cream
 ‘Anna would like to have ice cream’
- ADV *þegar Brynhildur kemur heim*
 when Brynhildur comes home
 ‘when Brynhildur comes home’
- B *Rögnu langar í köku.*
 Ragna wants cake
 ‘Ragna would like to have cake.’

All the sentences and adverbials were recorded by a native speaker of Icelandic (the author of this paper). When the material was recorded, the adverbial clauses were read in combination with the *wh*-B sentences in a way that felt natural for a V3 order. The production of the central adverbial clause may thus have favored an interpretation in which it was the first constituent in a V3 utterance, although this was not directly observed in the intonation of the adverbial clause in the recorded material.

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Two boundary tones have been observed in Icelandic: a high tone (H%) and a low tone (L%). While a low boundary tone is thought to represent finality of an utterance, a high boundary tone may be taken to represent non-finality or continuation (Árnason 1998, Dehé 2009). Given that a high boundary tone can signal continuation, the adverbial clauses in the test material might have been expected to show a high boundary tone since they were read as the first constituent in a V3 pattern. This was, however, not the case and all the adverbial clauses exhibited a low boundary tone. This is exemplified in Figure 2 with the adverbial clause from (27).

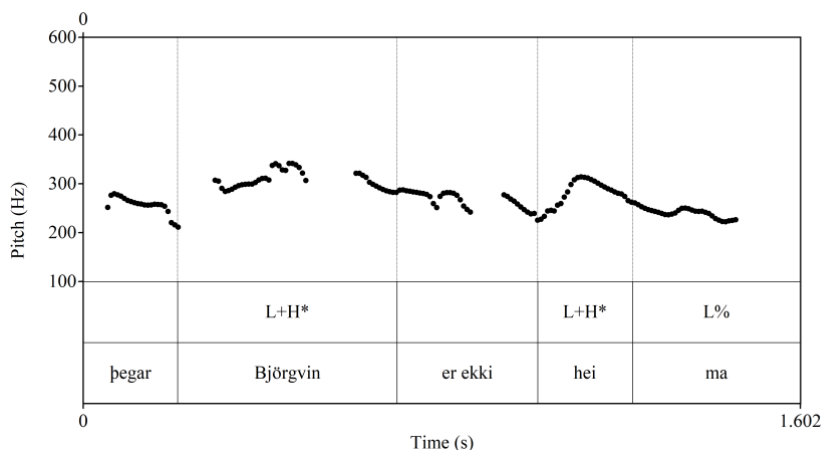


Figure 2. The adverbial clauses in (27) *þegar Björgvin er ekki heima* ‘when Björgvin is not at home’. Despite being read as a first constituent in a V3 order, the central adverbial clauses showed a low boundary tone.

The reason why the boundary tone was low instead of high in the adverbial clauses could be that the material was created in an experimental setting where no addressee was present. In other words, there may not have been a need to signal a continuation to an interlocutor.

All B sentences that were *wh*-questions were read as a continuation of the relevant central adverbial clause. Being the final utterances when read, these contained a low boundary tone as expected. Similarly, both A and B sentences that were subject-initial declaratives also had low boundary tones. The latter two were read as free-standing clauses.

The intonation and pitch contour of the test material was not manipulated after recording. There is, therefore, a possibility that these may have influenced the results of the experiment. For example, each part, i.e. A, ADV and B, had the potential to be understood as a final utterance, if a low boundary tone is indeed taken to indicate finality. I return to this issue in Section 4 where the results of the study are discussed.

Despite intonation and pitch contour not being manipulated, some editing of the test material was still carried out in *Praat* (Boersma and Weenink 2019). First, the filter function was used to remove noise from the recordings. Next, each sentence (A, B, and adverbial clause) was extracted manually from the original file. Test sequences were then created by recombining A sentences, adverbial clauses, and B sentences with the appropriate length of break (created in *Praat*) between each of the three parts.

Each prosodic break came in two lengths, a shorter break (500ms) and a longer break (900ms). The length of the breaks was based on break length in the recorded material, where the length between adverbial clauses and *wh*-B sentences varied between ca. 400ms and 935ms, with an average around 620ms. It was decided that the shorter break in the test material should be reasonably close to the average break length in the recorded material and that the longer break should be 400ms longer, but still within the 935ms length. This resulted in the choice of 500ms and 900ms. Two combinations of these breaks were then used

in the test sequences: short break (500ms) long break (900ms), and long break (900ms) short break (500ms). A visual representation of the study design with break lengths is given in Figure 3.

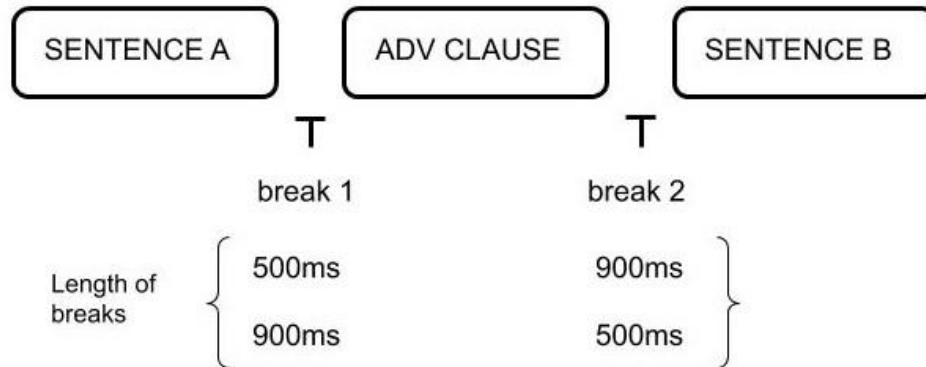


Figure 3: The design of the experiment. Each test item contained a sequence of A and B sentences with an adverbial clause sandwiched between them.

The experiment contained 30 instances of B sentences that were *wh*-questions and 30 instances of B sentences that were subject-initial declaratives. This resulted in 60 sequences of A and B sentences with an adverbial in between them. With two combinations of break length, this resulted in 120 test items.

Thirty-four fillers were added to the test material. These included reverse order of test sequences and sequences where the adverbial clause was more syntactically integrated into the B sentence, i.e. in the sense that the inflected verb in the B sentences occurred in the second position and the adverbial clause occupied the first position.

Once test items were ready, an online survey was created using Qualtrics. The test items were divided into 8 blocks to prevent participants from coming across the same combinations of A, B, and adverbial clause (with different break lengths) two or more times in a row. Questions within each block were then randomized so no two participants were exposed to the exact same order of test items.

3.2 Procedure

Participants were told they would hear a sequence of two sentences and then be asked to judge which one was longer, the first (A) or the second (B). Before the experiment started, participants had to go through a short training section containing three test items which resembled the items in the actual experiment. The only difference was that the training section included sequences where it was unambiguous which sentence was longer, i.e. A or B. This was done to ensure that participants understood the task they had to complete during the survey. If participants replied correctly to the training questions, they could proceed to the experiment itself. If participants replied incorrectly, they were notified and asked to repeat the task. All questions in the experiment were forced-response choice tasks, meaning that participants had to answer all the questions in order to complete the survey. The options for replying were A (is longer) and B (is longer).

3.3 Predictions

Given that the V3 pattern with initial adverbial clause is possible in the context of *wh*-questions in Icelandic, but not with subject-initial sentences (see discussion in Section 2.1), participants were expected to parse the adverbial clause with sentence A in all (or almost all) cases where sentence B was a regular subject-initial clause. However, in cases where sentence B was a *wh*-question, participants were expected to

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strongly favor parsing with the B sentence when the preceding break was short (500ms) and favor such parsing – although to a lesser extent – when the break was long (900ms).

4. Results from the study

The experiment targeted native speakers of Icelandic. There were no restrictions on age (other than being 18 years or older) or gender as these were not hypothesized to influence the outcome of the experiment. All in all, 12 participants completed the survey; 8 women and 4 men aged 30–71. Of these, 1 participant was excluded from analysis based on the criterion that they did not allow V3 sentences in any circumstances.

After the data was exported into Excel, the percentage of A and B responses for each participant in each category was calculated. The percentage of B responses for all participants in each category is shown in Table 2.

part	<i>wh</i>-short	<i>wh</i>-long	sub-short	subj-long
part1	20 %	13.3 %	0 %	0 %
part2	73.3 %	36.6 %	3.3 %	0 %
part3	100 %	60 %	0 %	0 %
part4	93.3 %	93.3 %	16.6 %	23.3 %
part5	13.3 %	3.3 %	0 %	0 %
part6	100 %	53.3 %	0 %	0 %
part7	90 %	83.3 %	90 %	83.3 %
part8	30 %	3.3 %	0 %	0 %
part9	96.6 %	63.3 %	3.3 %	0 %
part10	10 %	3.3 %	0 %	0 %
part11	20 %	13.3 %	3.3 %	3.3 %

Table 2: Percentages of B replies for each participant. The labels “short” and “long” refer to the break immediately preceding the *wh*-questions and the subject-initial declaratives

As can be seen, there is variation as to how often participants answered B in each category. Thus, in the category *wh*-short, where the B sentence was a *wh*-question preceded by a short (500ms) break, the percentage of B-replies ranged from 10–100%. B-replies for the same clause-condition containing a long break (900ms) ranged from 3.3–93.3%. For the category subj-long, where the B sentence was a subject-initial clause, the B-replies ranged from 0–83.3% when the break was long (900ms) and 0–90% when the it was short (500ms). The mean and standard deviation for each category is given in Table 3.

	Mean	Std. Dev.	N
<i>wh</i>-short	58.8	39.4	11
<i>wh</i>-long	38.8	33.6	11
sub-short	10.6	26.8	11
sub-long	10	25.9	11

Table 3: Mean and standard deviation for replies where the adverbial clause was parsed with the B sentence

Despite variation, a pattern still emerged where participants generally dispreferred parsing the adverbial clause with subject-initial B sentences, while allowing for them to be parsed with *wh*-question B sentences.

A combined percentage of A and B replies in each category is shown in Figure 4. While the percentage of B replies for subj-short, i.e. subject-initial B sentence preceded by 500ms break, and subj-long, i.e. subject-initial B sentence preceded by 900ms break, is 10.6% and 10% respectively, the percentage is substantially higher in cases where the B-sentence was a *wh*-question.

When preceded by a short break (500ms), the percentage of B replies for sequences including a *wh*-question was 58.8%. For the same type of sequences with a longer break (900ms) the B replies dropped to 38.8%.

Given how often participants perceived the A sentence to be longer (Figure 4), it is unlikely that intonation of the adverbial clause provided strong cues for being the first constituent in a V3 pattern. If intonation had favored a V3 interpretation, a higher percentage of B replies should have been expected in all conditions. This is simply not the case. Similarly, it is unlikely that responses were solely based on break length as that should have caused similar responses for conditions with the same break length, independent of clause-type. This is also not the case and, instead, interaction between break length and clause type is present.

A repeated measures ANOVA was used for determining whether the differences between each category were statistically significant. The percentage of B replies for each participant was entered into SPSS. Two main effects were identified: clause type and prosodic-break length.

Running an ANOVA indicated that clause type had a significant effect on how participants replied to the questions ($F(1,10)=14.56$, $p=0.003$, $\eta^2=0.593$). A significant effect of break length was also detected ($F(1,10)=14.51$, $p=0.003$, $\eta^2=0.592$). The interaction of break length and clause type also turned out to be a significant factor ($F(1,10)=15.67$, $p=0.003$, $\eta^2=0.610$).

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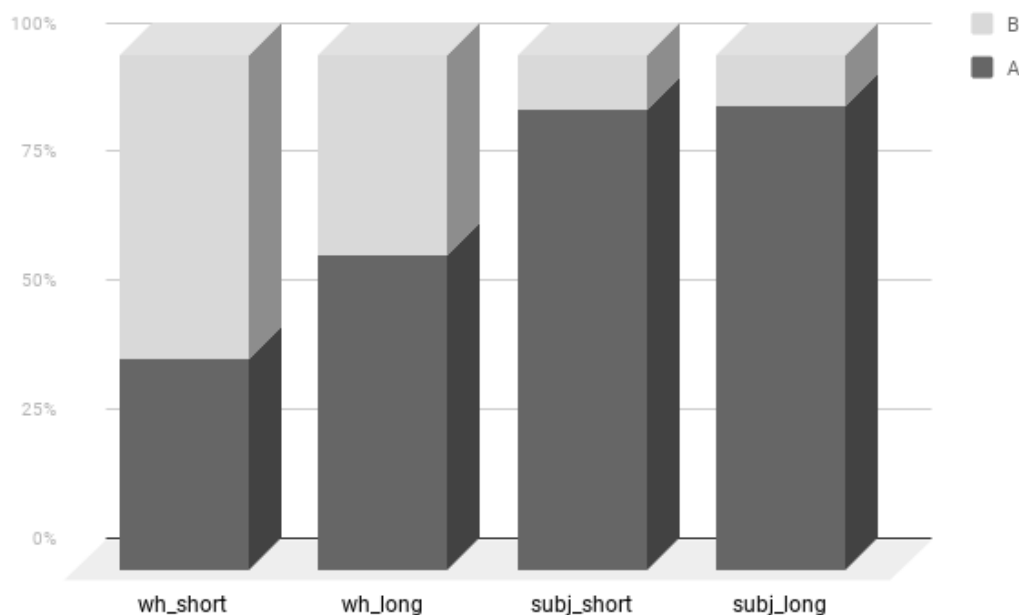


Figure 4: Conditions and percentage of A and B replies. The labels “short” and “long” refer to whether the break immediately preceding the B sentence (i.e. a *wh*-question or a subject-initial declarative) was 500ms (short) or 900ms (long).

Using a multiple comparison with Bonferroni correction (pairwise comparisons), it was possible to establish that the results of B replies for the condition *wh*-short were significantly higher than for the condition *wh*-long ($t(10)=3.95$, $p=0.003$). This means that although it is possible to get a verb-third clause with *wh*-questions when the preceding break ranges from 500ms to 900ms, a shorter break is better suited for such parsing. Interestingly, when comparing the condition *subj*-short and *subj*-long, the length of the break does not seem to matter ($t(10) = 0.614$, $p=0.553$). In both instances parsing the adverbial clause with a subject-initial B-sentence is highly dispreferred. This is in line with what was predicted and gives further support for marking verb-third clauses where an adverbial clause precedes a regular verb-second subject-initial clause as ungrammatical (see example in (8)–(9) above).

5. Summary and conclusion

In this paper, I focused on a type of V3 order in Icelandic, a V2 language. The V3 under discussion consists of an adverbial adjunct occurring to the left of an otherwise regular V2 clause. The pattern is similar to that found in West Flemish and Standard Dutch (Haegeman and Greco 2018), where an adverbial adjunct can combine with V2 questions and declaratives. In Icelandic, however, a combination with declaratives is ungrammatical; only imperatives, *wh*-in-situ questions, regular *wh*-questions, questions with declarative syntax and yes/no-questions may occur with an initial adverbial adjunct. Of these, the last three result in a V3 pattern (see Table 1).

Adopting an approach like that of Haegeman and Greco (2018), I assumed that the adverbial adjunct is generated outside of the regular clause, i.e. to the left of the CP layer in FrameP. The presence of a prosodic break between the adverbial and the main clause was taken to support this view. As for the syntactic mechanism, the external merger of the adjunct was assumed to be licensed by a temporal index

being carried up to the edge of the CP layer in association with the finite verb of the main clause. It is thus only when a finite verb moves to Foc that an external adjunct is allowed. In other cases, the finite verb is assumed to stay lower, for instance in Fin or in Top/Foc.

The presence of a prosodic break between the adverbial adjunct and the main clause raises the question how or if it might affect the possibility of getting V3. If the prosodic break is all that is needed for allowing V3, one would expect the V3 containing an initial adjunct to be allowed in more contexts than the grammatical judgments presented in Section 2.1 indicated. To test the interplay between the presence of a prosodic break and V3 in Icelandic, a type of perception study was conducted online. Participants were asked to listen to audio files containing a string of two sentences (A and B) with an adverbial clause sandwiched between them. They were then asked to indicate which sentence was longer with the reply reflecting how they were parsing the string.

The results of the perception study indicate a variation among speakers as to under which conditions they accept V3 orders. Despite variation, a statistical significance with respect to clause type and preceding break length emerged. While *wh*-questions were generally able to combine with an adverbial clause to form a verb-third pattern, subject-initial sentences were strongly dispreferred in this configuration for all but two speakers. The two speakers, participant 4 and 7, accepted V3 pattern containing a subject-initial declarative 16.6%–23.3% and 83.3%–90% of the time, respectively (see Table 2). This may either indicate that this pattern is allowed for some speakers (contrary to expected grammatical judgments presented in Section 2.1), or that we are observing an effect from how the testing material was created. As stated above, when the material was recorded, the adverbial clause was read together with a following *wh*-question. For this reason, the production of the adverbial clause may have favored a parsing in which it was the first constituent of a V3 pattern. This cannot, however, have had a significant effect since most speakers either never (0%) or very rarely (3.3%) parsed the adverbial with a following subject-initial declarative in each break-length condition. Additionally, the adverbial was not always parsed with a following *wh*-questions in test sequences of that type. Instead, these responses ranged from 3.3% to 100% and were dependent on the length of the break immediately preceding the *wh*-question.

As noted in Section 4, the length of the prosodic break between an adverbial and a following *wh*-question turned out to be statistically significant. While adverbial clauses could be parsed with following *wh*-questions both when the break length was 500ms and when it was 900ms, a shorter break favored such parsing more than a longer break did. The effect of the shorter break raises the question of why it did not trigger a perceived V3 pattern with subject-initial declaratives. The most straightforward answer is that those were already syntactically ungrammatical and prosodic cues in the form of break length could not override that judgment. Furthermore, the ungrammaticality of a V3 pattern containing subject-initial declaratives suggests that the participants in the study were not parsing the strings solely based on whether the break between the adverbial clause and the B sentence was long or short. Instead, there was an interplay between the break length and the type of clause that followed the adverbial adjunct.

Although the present study has offered some answers regarding syntactic parsing, verb-third clauses, and prosodic breaks in Icelandic, it also raises numerous new questions. For instance, how long or short can the breaks in the V3 patterns presented here be? Are there any other prosodic cues present for when (or if) adverbials can be parsed as the first constituent in V3 orders? What would those be, and do all speakers rely on the same cues? Finally, could the length of the prosodic break or other cues in V3 patterns play a role in diachronic syntactic changes, for instance, the loss of V2? In this respect, much work remains to be done.

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