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Stylistic Fronting in spoken Icelandic relatives

Jim Wood

Since Maling's (1980) study of embedded verb-second, Icelandic Stylistic Fronting has been an extensively studied aspect of Icelandic syntax. It is widely regarded as an optional fronting operation which moves an ordinarily post-verbal constituent to the pre-verbal domain just in case there is a subject gap. In this study, variationist methodology is employed to study quantitatively the conditioning effects of several syntactic and prosodic factors on Stylistic Fronting in two transcribed corpora of spoken Icelandic. The results show that some grammatical categories favor fronting more than others, and that fronting is affected by the number of syllables in the frontable constituent and the material surrounding the landing site. This lends support to the long-standing intuition that prosodic factors influence the choice to use Stylistic Fronting (which is syntactically optional), while at the same time suggests avenues for further research in addressing certain issues in the syntax of Stylistic Fronting, such as the 'accessibility hierarchy'.

Keywords Icelandic, optional movement, prosody, Stylistic Fronting, syntax, syntax–prosody interface

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1. INTRODUCTION

Maling (1980) observed that in Icelandic clauses with a subject gap, such as relative clauses where the subject has been extracted, various non-subject elements could be fronted to the pre-verbal position. In (1), the participle *farinn* 'gone' can appear in its ordinary post-verbal position, or front to the position preceding the finite verb.[1]

(1) Maðurinn sem {**farinn**} var {**farinn**} heim heitir Pétur.
the.man who gone was gone home is.named Pétur
'The man who had gone home is named Pétur.'

This phenomenon, known as 'Stylistic Fronting' (SF), has since been subject to a great deal of research in the syntax literature.[2] Although SF in many cases is reported to sound rather formal to native speakers (see Angantýsson 2011:211–212), it is usually taken to be optional and have no truth-conditional semantic effects; fronting negation, for example, is reported not to affect its scope (Jónsson 1991:35; Holmberg 2005:551). Given this, the question that arises is whether its use is completely optional, or whether it is constrained by other factors. The primary aim of this study

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is to use spoken corpora to study this kind of optional movement. A quantitative analysis is performed to tease apart various linguistic factors which favor or disfavor fronting, given that it is syntactically optional.

It is shown that SF is conditioned by both prosodic and syntactic factors. In the domain of prosody, the number of syllables in the frontable constituent makes a difference. Constituents with one syllable favor fronting, whereas those with two or more syllables disfavor fronting. In addition, the prosodic contour of the material surrounding the landing site has an effect. Fronting is disfavored if it breaks up an otherwise eurythmic set of trochees. The grammatical category of the frontable constituent is also a significant conditioning factor. Categories such as PPs, particles and verbal participles disfavor fronting, whereas adjectives and adverbials favor fronting.

2. THE PHENOMENON

Stylistic Fronting has been extensively studied since it was first discussed in Maling (1980). Similar phenomena have been identified in Italian (Cardinaletti 2003), Faroese (Barnes 1987), Old Catalan (Fischer & Alexiadou 2001), Old Spanish (Fontana 1993), Old French (Mathieu 2006), Old English (Kroch & Taylor 1997), Middle English (Trips 2003), Old Danish and Middle Danish (Hrafnbjargarson 2004), Old Swedish (Falk 1993; Delsing 2001), and other languages. It has been studied in Icelandic more extensively than any other language.

Possibly the most salient and unusual property of SF is that it is only possible when there is some kind of subject gap (see Poole 2007 for recent discussion). The subject gap constraint is illustrated with the following examples from Holmberg (2005) (glosses modified slightly).

(2) a. Hún sem {**fyrst**} var {**fyrst**} til að lýsa stílfærslu.
she who first was first for to investigate Stylistic.Fronting
'She who was first to investigate Stylistic Fronting.'

b. Afleiðslan sem {*__fyrst__} hún {*__fyrst__} var {__fyrst__} til að lýsa.
the.derivation which first she first was first for to investigate
'The derivation which she was first to investigate.'

c. *Afleiðslan sem **fyrst** var hún til að lýsa.
the.derivation which first was she for to investigate

In (2a), the subject has been extracted and the adjective can move to the pre-verbal position, whereas in (2b–c), the subject is not extracted and the adjective must stay post-verbal. Relative clauses with a subject gap are the primary object of study in this paper. Other ways of obtaining a subject gap involve impersonal clauses, where SF

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alternates with the expletive *það* 'it/there', indefinite NP post-posing, and embedded *wh*-subject extraction.

One of the more intriguing properties of the construction is the fact that a heterogeneous set of categories can undergo SF. Among the categories reported in Maling (1980), in addition to participles, as in (1), and adjectives, as in (2), are sentential adverbs such negation, as in (3a), locative adverbials, as in (3b), various other adverbials, as in (3c), and particles, as in (3d).[3]

(3) a. Þetta er glæpamaðurinn sem {**ekki**} hefur {**ekki**} verið dæmdur.
this is the criminal which not has not been convicted
'This is the criminal who has not been convicted.'

b. Hann fann stól sem {**hér**} hafði staðið {**hér**}.
he found chair which here had stood here
'He found a chair that had stood here.'

c. Hann fann mynd sem {**vandlega**} hafði verið {**vandlega**} falin.
he found picture which carefully had been carefully hidden
'He found a picture that had been carefully hidden.'

d. Sveinn fór að muna eftir öllu, sem {**fram**} hafði farið {**fram**}.
Sveinn began to remember all which on had gone on
'Sveinn began to remember all that had happened.'

Two other categories that can undergo SF are Prepositional Phrases (PPs) and Determiner Phrases (DPs). An example with a DP from the Ístal corpus is given in (4a), and one with a PP from the Alþingi corpus is given in (4b).[4] (The corpora are described below.)

(4) a. ég veit bara að **sá sem Steini var með**, hann var
I know just that the.one who Steinn.DAT was with he/it was
alveg fínn (Ístal)
just great
'I just know that the one who was with Steinn, he was just great.'

b. þau mál **sem að [undir hann] heyra** (Alþingi)
those issues which that to him appertain
'The issues that are his responsibility.'

The conditions governing accepability of fronting DPs are extremely subtle, and not fully understood. Definiteness (Maling 1980) and abstractness (Sigurðsson 1997) have been suggested to have an effect. Since the conditions governing DP fronting are unclear, and optionality is crucial to the methodology used here, I did not include DPs in the present study.

While many grammatical categories seem to be subject to the same movement, Maling (1980) showed that they are subject to an 'accessability hierarchy'. If a sentence adverb such as *ekki* 'not' or *sennilega* 'probably' is present, nothing else

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can be fronted. When a verbal participle and a particle are both present (and there is no sentence adverb), either may be fronted, but not both. An adjective can often only be fronted when none of the above are present (though see below). An example of blocking between a sentence adverb and a participle is shown in (5) (from Angantýsson 2011:148–9).

(5) a. Þetta er glæpamaðurinn sem {**dæmdur**} hefur verið {**dæmdur**}
this is the.criminal that convicted has been convicted
b. *Þetta er glæpamaðurinn sem {**dæmdur**} hefur {**ekki**} verið
this is the.criminal that convicted has not been
c. Þetta er glæpamaðurinn sem {**ekki**} hefur {**ekki**} verið dæmdur
this is the.criminal that not has not been convicted

Though the participle *dæmdur* 'convicted' can normally be fronted, as in (5a), this is not possible when a negative adverb is present, as shown in (5b); rather, the negative adverb can be fronted, as in (5c). I will discuss adjectives further in Section 5.2.

The accessibility hierarchy is a descriptive generalization, and while it does capture certain aspects of the availability of SF, it is not without exceptions. For example, Holmberg (2005) discusses the possibility that optionality between a particle and a participle is probably a specific instance of a more general fact. Heads and their complements tend to be equally accessible for SF (as long as both are independently accessible). There are thus cases where either a participle or a PP can be fronted. A near-minimal pair illustrating this from the Alþingi corpus is presented in (6).[5]

(6) a. þeim spurningum **sem** **beint** **var** til hennar (Alþingi)
those questions which directed was to her
'The questions which were directed to her.'
b. þeim spurningum sem **sem** **til** **hans** **er** beint (Alþingi)
those questions which which to him is directed
'The questions which were directed to him.'

This has led Holmberg (2000) and others to propose that what is at issue is something like Rizzi's (1990) 'Relativized Minimality'. The basic idea is that SF attracts the structurally closest frontable constituent. On this explanation, the reason that sentence adverbs such as negation block SF of everything else is that, when present, they are always the constituent closest to the landing site. Holmberg (2000) exploits a notion of structural distance where heads and their complements will always be equidistant to a c-commanding position; as long as the participle and PP (or particle) form a head–complement relation, either may be fronted.

However, there are some cases where there seems to be a three-way optionality between a participle, a particle, and a locative adverb such as *hér* 'here'.

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(7) verð ég líka að taka undir þær óskir **sem hér hafa**
have I also to take under those requests which here have
komið fram (Alþingi)
come forth
'I will also have to agree with the requests which have emerged here.'

(8) það sé alveg nauðsynlegt í ljósi þeirrar umræðu **sem**
it is quite necessary in light those.GEN discussions.GEN which
að hefur farið fram hér (Alþingi)
that has gone forth here
'It is quite necessary in light of the discussions which have progressed here.'

In sentences without a frontable adverbial, either the participle *komið/farið* 'come/gone' or the particle *fram* 'forth' could be fronted. Sentence (7), however, shows that the adverbial *hér* 'here' can also be fronted in such cases. Sentence (8) shows that *hér* 'here' occupies a base position which is at least linearly farther away from the landing site than either the participle or the particle.[6] The fact that fronting is possible in (7) leads to the conclusion either that *hér* 'here' is, or can be, structurally closer to the landing side than anything else, or that structural closeness is not necessarily a precondition for fronting.

The example in (7) does not, however, indicate that locative adverbs like *hér* 'here' are simply among the adverbs which outrank participles and particles on the accessibility hierarchy. There are a number of examples where *hér* 'here' is present but something else is fronted.

(9) í samræmi við samkomulag **sem gert var hér** (Alþingi)
in accordance with agreement which made was here
'In accordance with the agreement which was made here.'

(10) önnur mikilvæg forsenda **sem að tekin er til hér** í í
another important precondition which that taken is to here in in
stefnum (Alþingi)
the.summons
'Another important precondition which is included here in the summons.'

(11) háttvirtur formaður efnahags- og viðskiptanefndar **sem verið**
honorable president economic.GEN and trade.commission.GEN who been
hefur hér í allan dag (Alþingi)
has here in all day
'The honorable president of the economic and trade commission
who has been here all day.'

In (9)–(11), verbal participles are fronted and *hér* 'here' is not. While optionality between fronting a head and its complement is given a lot of attention in the syntax literature (e.g. Poole 1997; Holmberg 2000, 2005; Hrafnbjargarson 2004;

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Burton-Roberts & Poole 2006, among many others), this kind of apparent optionality is rarely discussed, except perhaps in Hrafnbjargarson (2004).[7] I return to this issue, as well as a discussion of the accessibility hierarchy, in Section 5.2. In the next section, I discuss the method used in this study and some preliminary quantitative results.

3. METHOD

3.1 The corpora used

The spoken corpora used for this study are available online, and include informal conversations (Ístal: 20 hours, 180,705 words) and unprepared parliament speeches (Alþingi: 20 hours, 169,315 words; both word counts from Thráinsson et al. 2007). Both are transcribed in Icelandic orthography.[8] The informal conversation corpus, known as Ístal, is comprised of 31 informal conversations with two to six participants in each (male and female). The recordings were made in natural settings in different parts of the country (Thráinsson et al. 2005). The Alþingi corpus is transcribed from recorded discussions in the Icelandic parliament. It is extracted from 11 meetings in 2004 and 2005. Fifty-two members of parliament, with birth dates ranging from 1938 to 1979, participate in the discussions (Thráinsson et al. 2005).

3.2 The dependent variable

The dependent variable in the present study is '+/− First-Position Filled' in the context of relative clauses with a subject gap. For the most part, this is in practice very close to saying '+/− Stylistic Fronting has applied', as most of the examples presented in this paper will show. For this reason, I refer to the dependent variable as SF throughout. However, to be clear, there are some cases considered here which may not strictly qualify as SF (such as (28) below). I include them because the main purpose here is to study the conditions on the optional presence of pre-verbal elements.

Thráinsson (2007:368–390) points out that researchers often have different notions of what the defining characteristic of SF is which distinguishes it from topicalization. One position is to treat any movement to the pre-verbal position in the presence of a subject gap as SF. Another position is that SF should properly be conceived of as moving only 'heads', not phrases, to this position. In the present study, SF and topicalization are not strongly distinguished. Instead, I take it as a given that both XPs and heads, when they move to the preverbal position in a relative clause with a subject gap, exhibit SF. This may or may not be a misnomer; it depends on what one takes to be the crucial 'distinguishing' property. The issues involving the syntax of SF and topicalization are detailed and subtle (see especially Rögnvaldsson & Thráinsson 1990; Holmberg 2005; and Thráinsson 2007:Ch. 7). But

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it is straightforward to see if fronting has occurred, and the conditions governing fronting are well-enough studied that it is usually possible to tell if fronting would be possible when it has not occurred.[9]

The reason for selecting relative clauses was methodological; the relativizer *sem* 'which' makes token extraction straightforward. First, all occurrences of *sem* were extracted and irrelevant examples manually removed. Initially, 960 tokens were coded, approximately half in the Ístal corpus and half in the Alþingi corpus, where SF would in principle be possible. Some tokens were later removed, for reasons described below.

By and large, relative clauses where SF is possible were subject relatives, where the head of the relative clause is understood to be the subject internal to that clause. However, SF is possible in other relative clauses, and I saw no reason to exclude them. One example is an 'impersonal' relative clause, which has no logical subject. Sentence (12) is an example of this.

(12) áfengisskattana þar sem er verið að hækka skatta á á sterkari
the.alcohol.taxes there which is been to raise taxes on on stronger
drykki (Alþingi)
drinks
'The alcohol taxes where they have been raising taxes on stronger drinks.'

3.3 Factor groups and GoldVarb

After the dependent variable is decided and tokens are extracted, each token is coded for a number of other properties which might 'condition', that is, favor or disfavor, the application of SF. These properties are called factor groups.[10] A regression analysis is then performed on the tokens to determine which factors, if any, favor or disfavor application of SF. Drawing from the literature on SF, I included the following factor groups:

(13) *Syntactic factors*
a. Category of frontable constituent
b. +/− optional complementizer *að* 'that'
c. XP vs. head
Phonological/prosodic factors
a. Syllable count in fronted constituent
b. Syllable count in finite verb/auxiliary
c. Syllable count in word preceding relativizer *sem*
Other factors
a. Number of intervening words
b. Corpus

The category of frontable constituent and the prosodic factors will be discussed in more detail below. +/− optional complementizer *að* 'that' refers to the fact that spoken Icelandic allows an optional complementizer, as shown in the examples in (14) (see Thráinsson 2007:449–450).

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(14) a. fyrir þann **sem að rifist er** við (Ístal3)
for that which that fought is with
'for the one who is fought with.'

b. um fjölda þræla **sem fluttir eru** inn til
about number of slaves who imported are in to
Bandaríkjanna (Ístal2)
the United States
'about the number of slaves who are imported into the United States'

XP vs. Head refers to the fact that sometimes what is fronted is unambiguously an XP, as in (15a); tokens which could be analyzed as (remnant) XP movement or head movement, as in (15b), were coded as heads.

(15) a. **sem að** [**um málið**] **á** að véla (Alþingi)
who that about the.issue should to address
'who should address the issue'

b. þar **sem** [**um**] **er** að ræða **einkahlutafélag** (Alþingi)
there which about is to talk private.limited.company
'Where we are talking about a private limited company.'

The number of intervening words refers to the number of words which appear between the finite verb/auxiliary and the base position of the frontable constituent; this is discussed further in the appendix, along with 'corpus'. Not all of these factors turned out to be significant. The appendix includes the full results for the regression analyses.

Table 1 shows the number of tokens in each factor and the percentage of fronting. For example, we see that 39% of all heads are fronted, whereas only 16% of XPs are. On the basis of such differences in raw frequency, we might be led to suspect that heads prefer fronting more than XPs. However, from raw frequency data alone, we actually do not know if this is the right way to characterize the effect of XPs on fronting. For illustration, consider the fact that only 14%–20% of tokens with between three and five syllables exhibit fronting. If all or most of the XPs in the data set happen to contain three or more syllables, it could be that XPs do not front very often simply because they often have too many syllables; the proper way of characterizing the situation, then, would be to say that constituents with between three and five syllables disfavor fronting.

This example illustrates the motivation for and intuition behind regression. A regression algorithm looks for which factors best explain the frequencies. GoldVarb X (Sankoff, Tagliamonte & Smith 2005), a logistic regression program used primarily by variationist sociolinguists, does this using a 'step-up, step-down' algorithm. First, it adds factor groups one at a time, trying to predict what the frequencies would be in each model. It picks the model that best matches the actual frequencies. Then, it starts with a model that includes all factor groups, and starts removing them one at a time, again picking the model that best matches the actual frequencies. Ideally, both the step-up and the step-down algorithms pick the same model.

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Factor group	Factor	# Tokens	% Fronted	Factor group	Factor	# Tokens	% Fronted
Category	V3 Adverb	57	35	Contour[†]	2–1–1	39	69
	Locative Adverb	187	60		2–1–2	59	46
	Temporal Adverb	40	35		2–2–1	37	24
	Negative Adverb	57	37		2–2–2	67	36
	Other Adverb	62	42		1–1–1	102	55
	Participle	150	23		1–1–2	110	60
	Particle	41	34		1–2–1	113	21
	PP	152	12		1–2–2	136	20
	Adjective	92	23		Other	197	18
XP vs. Head	Head	693	39	Intervening	0	709	29
	XP	172	16	words	1	75	67
					2	50	56
Frontable σs	1	313	57	Preceding σs	1	255	32
	2	365	25		2	286	29
	3	87	18		3	158	42
	4	66	20		4	83	42
	5	28	14		5	40	43
					6	35	46
Presence of *að* 'that'	Present	268	33	Verb σs	1	370	35
	Absent	598	40		2	484	35
Corpus	Ístal	432	13				
	Alþingi	434	57				

[†]The Contour factors are presented as described in Section 4.2: Comp-σ-Frontable-σ-Verb-σ. Thus, 2–1–2 means is that there are two complementizer syllables, one frontable syllable, and two finite verb syllables.

Table 1. Factor group frequencies.

Factor group	Factor	Factor weight
XP vs. Head	XP	.66
	Head	.46

Table 2. Factor weights for XP vs. head.

The statistically significant results are the ones that are included in the final model. It might seem that the sample size in this study is too small to have any statistically significant results (as suggested by a reviewer). However, statistical significance is based not on the raw number of tokens in a study, but rather on how much relevant variation those tokens exhibit. If there are too few tokens, it is possible that a regression analysis will not produce any statistically significant results. However, if, say, fronting or non-fronting can be explained (in part) by taking some factor into account, this can be statistically significant. Statistical significance means that the correlation between that factor and (non-)fronting is very unlikely to be an accident.[11]

The results of a GoldVarb run are presented as probabilities. Each factor is given a 'factor weight' ranging from 0 to 1. A factor weight of .50 means that the factor has no effect one way or another on the variable. Higher than .50 means that the factor increasingly favors (in this case) fronting; lower than .50 means that the factor disfavors fronting. The further from .50 that the factor weight is, the stronger it is. For example, taking all the factors from Table 1 into account, XP vs. Head came out as statistically significant with the factor weights in Table 2.[12] We see that XPs favor SF, while heads (only weakly) disfavor it.

This result suggests an explanation along the lines outlined above. XPs have various characteristics which make them unlikely to front. Many have 3 or more syllables, for example. What the regression analysis says, then, is that 16% of 172 is actually higher than one would expect for XPs, given other properties that they happen to manifest in the corpus. The important point is this: raw percentages (such as in Table 1) have no obvious or direct translation into favoring/disfavoring factors (such as in Table 2). There are a number of possible reasons for percentages, and the goal of a regression analysis is to figure out what those reasons might be.

4. PROSODIC FACTORS

4.1 The relevence of prosodic factors

Some linguists have argued that SF is prosodically conditioned. Poole (1997), for example, has argued that SF is the result of a 'prosodic flip' of the auxiliary and fronted constituent. Burton-Roberts & Poole (2006) have argued that SF exists to

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satisfy the verb-second constraint, which they argue to be a prosodic constraint. Bošković (2001, 2003) has argued that SF is the product of phonological merger (or 'PF' merger). While there is no explication in these works of exactly what it is prosodically that conditions SF, they do express the intuition that prosody is relevant to the optionality of SF.

Trips (2003) studied SF in an Early Middle English document, the Ormulum. The Ormulum has a strict, non-rhyming iambic meter, with 15-syllable lines. She shows that 'whenever there is a relative clause with a monosyllabic auxiliary followed by a two-syllable participle, SF is forced because inflectional endings of participles must not occur in the ictus of a foot' (Trips 2003:466).[13] This is shown in the following example, where accent marks indicate stress.

(16) *Old English*
þatt óferrwérrc **þatt tímmbredd wáss** abúfenn Gódess árrke
that over-work ***that built was*** *above God's ark*
'that over-work that was built above God's ark'

If the order were *wáss timmbrédd* 'was built', either the meter would be broken or the final syllable of the participle would have to be in the ictus of a foot, which is claimed to violate of the prosodic rules of Old English participles. Trips (2003:469) concludes that 'the fronting operation is metrically driven'. It is possible, then, that the metrical organization of syllables is behind the intuition that SF has a metrical effect or motivation. To address this, the number of syllables in the finite verb, the frontable constituent, and word preceding the relative marker *sem* were coded for each token.

Jaeger (to appear) has studied the factors conditioning the use of the optional complementizer *that* in English. He found that *that* is exploited by speakers for 'rhythmic optimization'. Specifically, speakers will avoid using *that* when the next syllable is unstressed; since *that* is usually unstressed, this would create a stress lapse and is thus disfavored. Similar interactions can be readily explored in Icelandic, where word and phrasal stress patterns are very regular, although phrasal stress can be affected by focus (Dehé 2006). Icelandic has primary word stress on the first syllable of each word, and secondary stress on alternating syllables thereafter.[14] A complex but consistent set of factors conspire to avoid hiatus and stress clash in compounds (see Árnason 1985, 1987, 1996). In addition, some functional elements are unlikely to carry stress. Icelandic phrasal stress is generally head-final (Árnason 1998; Dehé 2009). Given the systematicity of Icelandic stress, a lot can be inferred about prosodic rhythm by knowing how many syllables are in a word.

There are at least two other domains of Icelandic grammar where an optional process reportedly interacts with metrical prosody. Dehé (2008) has shown that eurhythmy has an effect on variable final-vowel deletion (FVD), a rule which deletes a word-final vowel when the following word begins with a vowel. In (17), boxes

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indicate the syllable which meets this description. In both cases, the final vowel *u* (IPA = [ʏ]) precedes the vowel *e* (IPA = [ɛ]).

(17) a. (σ σ) (σ σ) (σ σ [σ]) (σ σ)
Auður gefur Maríu epli
Auður gives Mary apple
'Auður gives Mary an apple.'

b. (σ σ σ) (σ σ σ) (σ σ [σ]) (σ σ σ)
Jónína lofaði Maríu eplinu
Jónína promised Mary the.apple
'Jónína promised Mary the apple.'

The participants in Dehé's (2008) experiment never deleted the vowel in (17b), but almost always did in (17a). Dehé argues that this is because deletion in (17a) results in a eurhythmic set of trochees, whereas deletion in (17b) would disturb the existing eurhythmic set of dactyls. There are a variety of similar contrasts, where the result preferred by subjects was always the one that preserved or created a more uniform set of trochees or dactyls.

The second case where prosody has an effect on an optional grammatical process, studied by Ingason (2008a, b), is Dative Substitution, where the prescriptively correct accusative case on a subject is replaced by dative (see Jónsson & Eythórsson 2005). Some speakers give categorical judgments with respect to subject case. For the ones who varied, though, it was always in one direction: subjects preferred the dative variant only when the dative was a two-syllable word. No one accepted (19b) without also accepting (18b), whereas many accepted (18b) without accepting (19b).

(18) a. (σ) (σ σ) (σ σ) (σ) (σ σ) (σ σ)
Hvers vegna vantar **Jón** þessa nagla?
why wants John.ACC this nail
'Why does John want this nail?'

b. (σ σ) (σ σ) (σ σ) (σ σ) (σ σ) (σ σ)
Það er ljóst að **Jóni** vantar betri hugmynd.
it is clear that John.DAT wants better idea
'It's clear that John wants a better idea.'

(19) a. (σ σ) (σ σ) (σ σ) (σ σ)
Guðmund vantar nýjan jakka.
Guðmundur.ACC wants new jacket
'Guðmundur wants a new jacket.'

b. (σ σ) (σ σ) (σ σ σ) (σ σ) (σ σ) (σ σ)
Vantar ekki **Guðmundi** bara stærri jeppa?
wants not Guðmundur.DAT just bigger jeep
'Doesn't Guðmundur just want a bigger jeep?'

Ingason (2008b) explains this in terms of the constraint 'Foot Binarity' (FtBin), which prohibits prosodic feet of more or fewer than two syllables.[15] However, in these examples the dative/accusative arguments are surrounded by other trochees.

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To be sure that the prosodic effects on case selection are the result of Foot Binarity rather than eurhythmy as in Dehé (2008), we would need sentences like (19b) except with *Guðmundi* surrounded by dactyls. If prosodic eurhythmy (or Foot Binarity) has an effect on variable syntactic and phonological phenomena, it might have an effect on SF as well.

4.2 Coding the prosodic factors

As mentioned above, each token was coded for the number of syllables in the finite verb, in the frontable constituent, and in the word preceding the relative marker *sem*. Each was also coded for the deletion/presence of an optional complementizer *að* 'that'. Ingason (2008b) argues that *að* 'that' is used in well-known Icelandic poetry to facilitate the appropriate prosodic rhythm.[16] The following line example from a Davíð Stefánsson poem illustrates this. After *og* 'and', the line is parsed into four consecutive trochees.

(20)	σ	(σ σ)	(σ	σ)	(σ σ)	(σ σ)	σ
	og	varir,	sem	að	aldrei	geta	kysst
	and	*lips*	*which*	*that*	*never*	*can*	*kiss*

If SF is affected by prosody, the presence of *að* 'that' is likely to have an effect.

These four factors together should be sufficient to investigate the prosodic contour of the relative clause with respect to syllable count. This is illustrated with example (21), from the Ístal corpus, where SF has not applied. Had SF applied, the contour in this case would have been the same, as shown in (22).

(21) *Attested*

							1	+*að*	(2)	2	2		
hvað	eigum	við	að	gera	við	þá	sem	að	ætla	**ekki**	í		
what	*should*	*we*	*do*	*with*		*those*	*who*	*that*	*intend*	*not*	*in*		
nein	samrænd	próf?	(Ístal2)										
any	*precollege*	*exams*											

(22) *Hypothetical*

							1	+*að*	(2)	2	2		
hvað	eigum	við	að	gera	við	þá	sem	að	**ekki**	ætla	í	nein	
what	*should*	*we*	*do*	*with*		*those*	*who*	*that*	*not*	*intend*	*in*	*any*	
samrænd	próf?												
precollege	*exams*												

'What should we do with the ones who aren't planning on taking any precollege exams?'

However, in some cases, the prosodic contour would be different. If SF had not applied in (23), the prosodic contour would have been as in (24). In this case, (23) can easily be organized into two consecutive dactyls, since function words and auxiliaries are usually unstressed, whereas (24) cannot.

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(23) *Attested*

						1	+*að*	(2)	1	2		
þá	hefur	hún	verið	mest	hjá	þeim	sem	að	**minnst**	hafa	(Alþingi)	
then	*has*	*she*	*been*	*most*	*with*	*those*	*who*	*that*	*least*	*have*		

(24) *Hypothetical*

						1	+*að*	(2)	2	1	
þá	hefur	hún	verið	mest	hjá	þeim	sem	að	hafa	**minnst**	
then	*has*	*she*	*been*	*most*	*with*	*those*	*who*	*that*	*have*	*least*	

'Then she has mostly been with those who have the least.'

Syllable-count factor groups were coded in two ways, to reflect two distinct possibilities of how prosody might condition SF. First, it is reasonable to suppose that each of these factor groups interact with each other. Perhaps fronting of two-syllable constituents is preferred when the verb is two syllables but dispreferred when the verb is one syllable. Along these lines, each sentence was coded as fitting into one of nine prosodic contours. These describe what the contour is (or would be) when SF applies. The contour factors vary between one and two syllables for each of the complementizer(s), the frontable constituent, and the finite verb. Any token which had more than two syllables in either the finite verb or the frontable constituent was counted as 'other'. In Table 3, I illustrate each of the contour groups used with hypothetical examples, along with the number of tokens exhibiting them and the percentage of fronting in each. (Though it is important to remember that these percentages do not translate directly into favoring/disfavoring fronting, since other factors affect these percentages as well.)

For the remainder of the paper, contours are described using the notation 2–1–2, 1–1–1, etc. This lists the number of syllables in the complementizer, followed by the frontable constituent, followed by the finite verb. Thus, for example, '2–1–2' means that there are two syllables in the complementizer, one frontable syllable, and two finite verb syllables.

Syllable-count factor groups were also coded individually, treating frontable syllables, verb syllables, and complementizer syllables as individual, non-interacting factors. This allows for the possibility that one or more factor groups have an effect on fronting independent of any interaction. It would not be possible, without significant problematic overlap, to run a regression with both 'contour' and the individual factor groups at the same time. Therefore, two analyses were performed: one with the above contour factor group, but no individual groups for frontable syllables, verb syllables or presence of *að* 'that', and another without the above contour factor groups, but with the individual groups instead.

4.3 Categorical results

Initially, 940 tokens were coded. These data were then run through GoldVarb X (Sankoff et al. 2005) to look for categorical effects. There were some factors which categorically exhibited or failed to exhibit fronting. Such effects are often

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Contour #	*Comp-σ s*	Frontable-σ s	Verb-σ s	Contour	# Tokens	% Fronted
	2	1	1			
1	sem að	reynt	var	2–1–1	39	69
	which that	*tried*	*was*			
	2	1	2			
2	sem að	reynt	höfðu	2–1–2	59	46
	which that	*tried*	*had*			
	2	2	1			
3	sem að	stolið	var	2–2–1	37	24
	which that	*stolen*	*was*			
	2	2	2			
4	sem að	stolið	höfðu	2–2–2	67	36
	which that	*stolen*	*had*			
	1	1	1			
5	sem	reynt	var	1–1–1	102	55
	which	*tried*	*was*			
	1	1	2			
6	sem	reynt	höfðu	1–1–2	110	60
	which	*tried*	*had*			
	1	2	1			
7	sem	stolið	var	1–2–1	113	21
	which	*stolen*	*was*			
	1	2	2			
8	sem	stolið	höfðu	1–2–2	136	20
	which	*stolen*	*had*			
9	sem	alvarlegast	var	Other	197	18
	which	*most.serious*	*var*			

Table 3. Prosodic contours.

linguistically revealing, but they are a problem for regression, since there is no variation for a categorical factor.

In the factor group 'syllables in frontable constituent', there were 36 tokens where a frontable constituent had seven or more syllables. None of these exhibited fronting. This was a categorical effect, so such tokens were excluded from the regression analysis. Note that in all cases, the relevant example was an XP, such as the following prepositional phrase (PP) in (25).

(25) það er Þóra Sigga sem að sér [$_{PP}$ um málið hennar
it is Þóra Sigga who that sees about issues hers
Ragnheiðar] (Ístal2)
Ragnheiður.GEN

On the other hand, for tokens with exactly six syllables, there was variation, with some fronting and others not fronting; an example with fronting is shown in (26).[17]

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Factor group	Factor	Issue	Result
Frontable σs	More than six σs	No fronting	Removed
Frontable σs	Six σs	Too few tokens	No value
Prec. Word σs	More than six σs	Too few tokens	No value
Verb σs	More than two σs	Too few tokens	No value

Table 4. Summary of (near) categorical effects for prosodic factors.

(26) að *for* réttaröryggi *legal.protection* þeirra *they.GEN* **sem** *who* [$_{PP}$ **fyrir** *subject.to* **skerðingunni**] **verða** *become* (Alþingi)
'For the legal protection of those who are subject to curtailment.'

Six-syllable tokens, however, were too small a fraction of the entire token set to yield reliable results. Such a situation does not warrant exclusion, but these tokens were not given a value for the 'frontable syllables' factor group. Similar considerations go for preceding-word and verb syllables. There were too few tokens with more than six preceding-word syllables, and too few tokens with more than two verb-syllables. These tokens were included, but not given a value for these factor groups. What this means is that a token whose frontable constituent had six syllables would be left in the regression model; the model would take into consideration how many syllables were in the finite verb, whether the optional *að* 'that' was present, etc. That is, such tokens still have valuable information on conditioning factors for SF. But since there were so few tokens with one certain value for one particular factor group, that it 'skips' that factor group but looks at other properties of the token. This is summarized in Table 4.

4.4 Regression results

As mentioned above, the prosodic categories were coded in two ways, and a seperate regression analysis was performed for each. First, the verb syllables, frontable syllables, and presence of *að* 'that' were combined into one factor group which I call 'contour'. The results of a run that uses this combined factor group, which was statistically significant, are shown in Table 5. The number of syllables in the word preceding *sem* 'which' was not selected as a significant factor group by GoldVarb.

In Table 5, we see gradient spread of factor weights. Contours 2–1–1, 1–1–1, and 1–1–2 strongly favor SF. The only contour which has one frontable syllable and does not favor SF is 2–1–2, which is neutral. Contours 1–2–2 and other strongly disfavor, and Contours 2–2–1 and 2–2–2 weakly disfavor, SF. The only contour with two frontable syllables which favors SF is 2–2–2.

In the second run, all syllable-counting factor groups are included independently. The results of this are shown in Table 6. Of the syllable-counting factor groups, only 'frontable syllables' was independently significant; the number of syllables in the

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Contour	Icelandic example	English gloss	Factor weight
1–1–1	sem reynt var	'which tried was'	.77
2–1–1	sem að reynt var	'which that tried was'	.76
1–1–2	sem reynt höfðu	'which tried had'	.70
2–2–2	sem að stolið höfðu	'which that stolen had'	.56
2–1–2	sem að reynt höfðu	'which that tried had'	.50
2–2–1	sem að stolið var	'which that stolen was'	.48
1–2–1	sem stolið var	'which stolen was'	.47
1–2–2	sem stolið höfðu	'which stolen had'	.34
Other	sem alvarlegast var	'which most.serious was'	.30

Table 5. First run: Contours.

Frontable syllables	Factor weight
1	.68
2	.45
4	.32
5	.29
3	.27

Table 6. Second run: Frontable syllables.

finite verb, the complementizer, and the word preceding *sem* were not selected as independently significant factors constraining the application of SF.

There is a robust effect of frontable syllables. Frontable constituents with 1 syllable highly favor fronting, those with 2 syllables weakly disfavor fronting, and those with 3–5 strongly disfavor fronting. This puts some quantitative support behind the intuition that phonological or perhaps syntactic weight has an effect on SF (see e.g. Ott 2009:149, citing Gunnar Hrafn Hrafnbjargarson p.c.). However, no prosodic account of SF that I am aware of would predict this to be the case. In Bošković (2001, 2003), the fronted constituent moves to the specifier of a silent functional head, and the functional head must 'affix-hop' to the finite verb. There is no reason that the functional head should care about the prosodic properties of the constituent in its specifier. In his discussion of Icelandic SF, Poole (1997) suggested that phonological deficiency of the finite verb forces it to move rightward to cliticize onto the 'fronted' element.[18] It is possible that a one-syllable host is somehow better for this, but this is certainly not predicted by his account. This result could be consistent with Trips (2003), who argues that SF is metrically driven, but more would have to be said about how fronting a one-syllable constituent satisfies metrical constraints better than other constituents. I must leave the explanation of the one-syllable effect for future work.

The presence of *að* 'that' was not independently significant, but it did show effects in the Contour factor group of the first run. Consider Contours 1–2–2 and 2–2–2 in Table 5. Both have two syllables in the frontable constituent and two syllables in the finite verb. When *að* 'that' is present, the factor weight is favoring (.56), and when it is absent, the factor weight is strongly disfavoring (.34). This is a

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large difference, and it is only the presence of *að* 'that' that makes this difference. A similarly drastic effect in Contours 1–1–2 and 2–1–2, which both have one syllable in the frontable constituent and two syllables in the finite verb. When *að* 'that' is present, the factor weight is neutral (.50), but when it is absent, the factor weight is strongly favoring (.70). Note that the effect of *að* 'that' is different in each case. In the first case, its presence drastically increases the factor weight. In the second case, its presence decreases the factor weight. This shows that *að* 'that' does not have a consistent favoring or disfavoring effect, though it does have an effect.

In the case where the presence of *að* 'that' decreases the factor weight, the result is a contour of 2–1–2. This is (i) the only situation where the there is no tendency to front a one-syllable word, and (ii) the only case where such fronting breaks up a sequence of two trochees. The powerful effect of having one frontable syllable is offset only when the resulting prosody is worse. In the opposite case, where *að* 'that' increases the factor weight, the result is a series of trochees 2–2–2. The general disfavoring effect of having two frontable syllables is only offset when the result is a completely eurhythmic set of trochees. These two results suggest that the presence of *að* 'that' has a strong prosodic effect, but only by interacting with surrounding material. On its own, it does not favor or disfavor fronting. But its presence can have a dramatic favoring or disfavoring effect depending on the number of syllables in the frontable constituent.

In summary, the results here show a powerful conditioning effect of having one syllable in the frontable constituent. More than one syllable disfavors fronting. Further, this effect interacts with its prosodic environment. The presence of an extra syllable in the complementizer can annul the FAVORING effect of one frontable syllable just in case the verb has two syllables. That same extra complementizer can also annul the DISFAVORING effect of two frontable syllables, again just in case the verb has two syllables. This shows that with respect to prosody, fronting is first and foremost sensitive to the number of syllables in the frontable constituent. In addition, the number of syllables in the complementizer and the finite verb interacts with the number of frontable syllables in a way that is sensitive to the overall prosodic contour. Specifically, there is a tendency toward preserving adjacent trochees. Further research is required to determine if this is an effect of something like FTBIN (as in Ingason 2008b) or eurhythmy (as in Dehé 2008).

5. GRAMMATICAL CATEGORY

5.1 Coding for grammatical category

The factors in the grammatical category factor group are as follows: adverb, participle, particle, PP, and Adjective(P).[19] Adverbs were divided into the subcategories of V3 adverb (see below), negative adverb, locative adverb, temporal adverb, and other adverb.[20]

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There were roughly 16 tokens where a potentially frontable adjective had an adverbial modifier, but none of these fronted. This excludes other tokens which had already been removed for other reasons, such as having too many syllables. Some of these were prosodically quite small, such as *mjög skýr* 'very clear', so this effect is not likely to be due to general phonological weight. Since it did seem to be a categorical effect, however, these tokens were removed.

A 'V3 adverb', as discussed by Sigurðsson (1986) and Thráinsson (1986), is a kind of speaker-oriented adverb which can appear between the subject and the finite verb in main and subordinate clauses alike (see also Wiklund et al. 2009:1917, Fn.5).[21] These have become known as 'verb third (V3)' adverbs because they can be positioned between the subject and the verb, resulting in the verb being third, rather than second, in its clause.[22] Example (27) shows that *bara* 'just' can occur in several positions, including the position between the subject *ég* 'I' and the verb *veit* 'know'; in this position, the verb is thus the third, rather than the second constituent in the clause.

(27) Ég {**bara**} veit {**bara**} ekkert um það {**bara**}
I just know just nothing about it just
'I just don't know anything about it.' (Thráinsson 1986:175)

When these adverbs appear in the preverbal position of subject relatives, they are in principle ambiguous between SF and 'second-position' uses. An example of this from Ístal is presented in (28).

(28) sem **bara** tók af skarið og stjórnaði þessu öllu saman (Ístal2)
who just went for it and managed this all together
'who just went for it and took charge of the whole thing'

Most researchers would probably not consider an example like (28) to exhibit SF, since these kinds of adverbs can independently occur in the pre-verbal position, unlike Stylistically Fronted elements. An anecdotal reason to suspect that they might not undergo SF is that SF tends to sound formal, whereas V3 adverbs often sound colloquial. However, since the same adverbs can occur post-verbally, SF cannot be ruled out as a grammatical mechanism in some cases, whatever the stylistic effects are. Since the main aim of the present study is to tease apart prosodic and syntactic aspects of overtly filling the 'first position' of relative clauses with a subject gap, adverbs of this kind were included and sentences like (28) were coded as exhibiting SF. But given the differences between these and other adverbs, and since it is not possible to know if a V3 adverb has undergone SF or not, they were coded as a distinct category.

Unlike V3 adverbs, negative adverbs like *ekki* 'not' cannot usually appear in the position preceding the finite verb in main clauses. The standard assumption is that the verb moves to a position higher than negation, as indicated in (29).

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(29) Ég {*ekki} hef {ekki} lesið bókina {*ekki}.
I not have not read the book not
'I have not read the book.' (Angantýsson 2007:241)

However, Wiklund et al. (2007) have argued that verb movement is sometimes optional in relative clauses (see also Sigurðsson 1986). Angantýsson (2001, 2007, 2011) has argued that *ekki* 'not' (as well as some other sentential adverbs) can sometimes exceptionally adjoin to a higher position in the clause, namely TP.[23] Angantýsson (2001, 2007, 2011) argues that the possibility of this word order varies depending on the kind of subordinate clause in question. Two examples of this from Ístal are given in (30)–(31).

(30) við getum þá bakkað þau upp í því **sem** **þau** **ekki** **vita** en
we can then back them up in that which they not know but
við fáum ekki að vita hvað þau vita (Ístal2)
we get not to know what they know
'We can then back them up in what they don't know but we don't get to know what they know.'

(31) ég er búin að kenna honum það það **sem** **hann** **ekki**
I am finished to teach him it it which he not
má hreyfa og taka (Ístal1)
may move and take
'I've taught him what he's not allowed to move or take.'

There is an intuition that cases like this are different from SF of negation, as in sentences like (3a) above. Angantýsson (2007:Fn.8) expresses this intuition: '[a] central pre-VP adverb [e.g. *ekki* 'not'] can easily occur before the finite verb in [subject relative] clauses but that would be stylistic fronting in my view'. However, the possibility that sentences like (3a) are ambiguous between SF and 'subordinate V3' cannot in principle be ruled out (see the discussion of Faroese in Angantýsson 2011:171).[24] But since the syntax of 'subordinate V3' adverbs is different from V3 adverbs of the type illustrated in (27)–(28) above, they were coded as separate categories.

Locative adverbs and temporal adverbs were frequently fronted; examples of locative adverbs were seen in Section 2 above. The sentence in (32) is an example of temporal adverb fronting.

(32) í sambandi við áhættuþættina **sem** **að** **núna** **eru** til
in connection with the.risk.factors which that now are out
staðar (Alþingi)
there
'In connection with the risk factors which are out there now.'

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		Factor weight	
		First run	Second run
Favor Fronting	V3 Adverb	.68	.77
	Negative Adverb	.79	.76
	Other Adverb	.79	.68
	Adjective	.58	.60
	Locative Adverb	.57	.59
Disfavor Fronting	Participle	.40	.39
	Particle	.34	.37
	Temporal Adverb	.34	.33
	PP	.25	.26

Table 7. Factor weights for category.

Locative and temporal adverbs were coded separately and, as we will see below, were distinguished in the regression analysis.

5.2 Regression results

The syntactic category of the frontable constituent was significant. There is a sharp distinction between categories that favor fronting and those that disfavor it. This is unlike the situation with prosodic contour, where there was a much more gradient spread. There, some factors strongly favored fronting, others fell within a more or less neutral range (i.e. either weakly (dis)favoring or neutral), and still others strongly disfavored fronting. Here, participles, temporal adverbs, particles, and PPs disfavor SF, while adjectives and all the other adverb categories favor it. This is shown in Table 7. No factors are neutral; everything below locative adverb disfavors SF, and everything above participle favors it.[25]

I will first address adjectives, since, as pointed out by an anonymous reviewer, it may seem a bit surprising that they favor rather than disfavor fronting. This is because many adjectives are quite odd when they are stylistically fronted. A reviewer provides judgments such as the following.

(33) a. ?? sem stór var.
which large was
b. ?? sem fátækir voru
who poor were

There are a number of unresolved issues with respect to the fronting of adjectives, involving what kinds of adjectives can front and where they sit on the accessibility hierarchy. For example, Jónsson (1991:6–7, 36) reports the following contrast (glosses modified slightly):

(34) a. Þeir töluðu um hvað **hægt** **hefði** **verið** að gera.
they discussed what ***possible*** ***had*** ***been*** *to do*
'They discussed what had been possible to do.'

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b. *Þeir töluðu um hvað **verið hefði hægt** að gera.
they discussed what been had possible to do

(35) a. ??Þeir sem **veikir hafa verið** þurfa að fara til læknis.
those who sick have been need to go to doctor
b. Þeir sem **verið hafa veikir** þurfa að fara til læknis.
those who been have sick need to go to doctor
'Those have been sick have to go to the doctor.'
c. Þeir sem **veikir eru** þurfa að fara til læknis.
they who sick are need to go to doctor
'Those who are sick have to go to the doctor.'

While both (34) and (35) involve predicative adjectives, they differ as to when adjective fronting past the participial form of the copula is acceptable. Note that example (35b) seems to pattern with (11) above.

Like the example in (34a), the adjective *hægt* is quite frequently fronted in the spoken corpora. Some other predicative adjectives which are fronted are shown in (36).

(36) a. hæstvirtan forsætisráðherra sem fróðlegt hefði nú verið
honorable prime.minister which instructive had.SBJV now been
að hafa hérna í salnum (Alþingi)
to have here in the.assembly.room
'The honorable representative whom it would have
been instructive to have had here in the assembly room.'
b. . . . hafa farið í útlán langt umfram það sem eðlilegt
. . . have gone in debt far beyond that which appropriate
þykir (Alþingi)
is.thought
'. . . have gone into debt far beyond what is thought appropriate.'

In (36a), the adjective *fróðlegt* 'instructive' is fronted past the participle *verið* 'been', and like *hægt* 'possible', takes an infinitival complement. While there is no infinitive clause in (36b), the adjective *eðlilegt* 'appropriate' does seem to be associated with a proposition. There are other cases where the fronted adjectives are in comparative or superlative forms, which Halldór Sigurðsson (p.c.) tells me often improves otherwise marginal examples of adjective fronting.

(37) það **sem að alvarlegast er** . . . (Alþingi)
it which that most.serious is . . .
'What is most serious . . . '

What seems to be a strong tendency in the corpus is for adjectives which take (perhaps sometimes implicit) complements to front. It may be that unfronted adjectives in the spoken corpora which did not take complements had properties which independently

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disfavored SF. This suggests avenues for further research, but I must set them aside for now.[26]

The primary question raised by the result in Table 7 is why there is a split between favoring and disfavoring categories. I would like to hypothesize that what separates the favoring and disfavoring categories is syntactic. All of the disfavoring categories, with the exception of temporal adverbs, are canonically involved in verbal argument structure, whereas none of the favoring categories are.[27] Prepositions generally assign case to their objects. Further, they very often interact directly with the lexical verb to do so. For example, in (38), the argument *barnafólkið* 'the people with children' can only be interpreted thematically with respect to the verbal participle *haft* 'had' along with the preposition *af* 'from' (similarly with examples (4b), (15a, b), and (39)).[28]

(38) hluta af því sem [$_{PP}$ **af** **barnafólkið** [*sic*]] hefur verið
part of that which from the.people.with.children has been
haft (Alþingi)
had
'Part of what has been taken from people with children.'

(39) að greiða þá eignarskatta sem að **sem** **að**
to pay those property.taxes which that which that
[$_{PP}$ **af** **fasteigninni**] **leiða** (Alþingi)
from real.estate comes
'Paying the property taxes that come from real estate.'

Particles do not assign case, and according to some researchers (e.g. Harley & Noyer 1998), this is the crucial difference between particles and prepositions (see also Thráinsson 1979:25f.; Svenonius 2007:83–85). But they do interact intimately with verbal argument structure. Participles, of course, are themselves verb forms. What prepositions, particles, and participles have in common, then, is that they can all be directly involved in verbal argument structure; they can all be responsible for assigning verbal thematic roles.[29] The reason that the groups split up quantitatively, I suggest, is that we are looking at two different SF processes (see immediately below for a suggestion for how they differ). They appear similar because each clause has certain grammatical requirements that must be fulfilled, and there are various ways to do this.

Sigurðsson (2010) argues that what is traditionally referred to as the 'EPP', often understood as the requirement that SpecIP be filled, should be understood as involving at least four subcomponents, which I simplify and summarize here. First, IP must match grammatical 'Person' features of some element; this is what is behind obligatory movement of definite DPs to SpecIP. Further, various heads in the CP domain must match other features in the clause, positively or negatively. The relevant CP heads and their feature content are summarized in (40).

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(40) Fin(iteness)P Speech time and location features
ΛP Speaker and hearer features
TopicP Topic features: aboutness shift, contrastive topic, familiar topic

Different kinds of constituents are able to match different subsets of these features:

(41) Subject DP matches features in FinP, ΛP, and IP (Person).
Expletive *það* 'it/there' matches features in FinP and ΛP.
Stylistic Fronting matches features in FinP.

This matching obeys a kind of subset requirement; if X is available and can match two features, while Y, which is also available, can only match one of those two features, then X is chosen and Y is unable to do so, since X is a better overall match. Further, 'positive' matching, such as valuing FinP as [+SPEECH LOCAL], takes precedence over 'negative' matching.

If the grammatical motivation for SF is a syntactic requirement to match FinP features, note that SF is not the only way to match FinP. Subject DPs and expletives can do so as well. Supposing that SF involves at least two syntactically different fronting processes, there is no reason that why could not in principle involve matching features of Fin. Blocking effects, rather than arising from structural locality, would derive from the featural makeup of the constituents involved. On this view, adverbs' blocking of participles is similar to overt subjects' blocking of SF of any kind (the subject gap requirement).[30] Adverbials would match FinP in some way that is distinct from everything else. FinP relates speech time and location to event time and location, and adverbials often say something specific about the event (either its place, time, manner, or the subject's or speaker's attitude toward it); the presence of the right kind of adverbial prevents movement of something less specific, like the verbal elements themselves.[31] The distinction between temporal and locative adverbs on this understanding might be that temporal features can be matched by the finite verb in a way that locative features cannot.[32]

6. CONCLUSION

The results of this study reveal several hitherto unknown aspects of the interaction of an optional syntactic process with other domains. In the domain of prosody, we see clear effects of syllable counts and prosodic contour. The strongest effect is that one-syllable constituents favor fronting, two-syllable constituents weakly disfavor it, and anything higher strongly disfavors fronting. Further, fronting is especially favored in prosodic contexts which allow for a more eurhythmic syllable stress alternation. While two-syllable constituents tend to disfavor fronting, they favor it when the surrounding verb and complementizer(s) also have two-syllables. On the other hand, while one-syllable constituents strongly favor fronting, the effect is neutralized when fronting would break up two adjacent trochees.

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In the domain of syntax, we see a quantitative split between fronting of elements involved in verbal argument structure (PPs, participles, particles) and non-verbal elements (adverbs and adjectives). I have suggested that this result is best understood if we see SF as a heterogenous process, a possibility that can be explored naturally in the framework pursued by Sigurðsson (2010). That is, I hypothesize that the fronting of adverbs and adjectives is syntactically distinct from the fronting of PPs, participles, and particles. Whether this is ultimately on the right track remains to be seen. The goal here has been to see what influences an optional syntactic operation, to provide a basis for forming new hypotheses. The next step is to find ways of testing these hypotheses, exploiting, where appropriate, quantitative, experimental, and theoretical paradigms.

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APPENDIX

Overall GoldVarb results

In this appendix, I briefly present the overall results of the GoldVarb analyses. Of the factor groups included (shown in (13) in the main text), the following did not come out as (independently) significant: presence of optional complementizer *að* 'that', number of syllables in finite verb, number of syllables in word preceding the relative marker *sem* (see Table A1).

The other results in Table A1 which were not presented in the main text are (i) the effect of corpus, and (ii) the effect of intervening words. The Alþingi corpus highly favors, and the Ístal corpus highly disfavors, application of SF. Since SF tends to be considered a formal construction, this is expected. 'Intervening words' refers to the number of words intervening between the auxiliary and the base position of the frontable constituent. Tokens with one or two intervening words were combined. When taken separately, they exhibited an ordering where one intervening word had a

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Factor group	Factor	First run	Second run
Category	Other Adverb	.79	.68
	Negative Adverb	.79	.76
	V3 Adverb	.68	.77
	Adjective	.58	.60
	Locative Adverb	.57	.59
	Participle	.40	.39
	Particle	.34	.37
	Temporal Adverb	.34	.33
	PP	.25	.26
XP vs. Head	XP	.66	.66
	Head	.46	.46
Intervening words	1 or 2	.64	.61
	None	.48	.48
Corpus	Alþingi	.74	.74
	Ístal	.26	.26
Contour	1–1–1	.77	–
	2–1–1	.76	–
	1–1–2	.70	–
	2–2–2	.56	–
	2–1–2	.50	–
	2–2–1	.48	–
	1–2–1	.47	–
	1–2–2	.34	–
	Other	.30	–
Frontable syllables	1	–	.68
	2	–	.45
	4	–	.32
	5	–	.29
	3	–	.27

Table A1. Factor weights.

factor weight higher than two, making the order $1 > 2 > 0$; this ordering is surprising but not statistically significant (i.e. it was not picked out by GoldVarb presented in this way). When '1' and '2' are combined, the factor group comes out as significant, as seen above. This suggests that what is important is not how many intervening words there are, but rather whether words intervene at all. Having no intervening words is almost neutral with respect to SF, while having one or two favors it. There were 17 tokens with three words intervening, 15 of which exhibited fronting. These tokens were included but not given a value for this factor, since they made up only 2% of the total token set. Similarly, there were six tokens with four or six words intervening between the landing site and the frontable constituent, none of which exhibited fronting. They were not included, since this seemed to be a categorical effect.

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These factor groups were included in the regression analyses to control for their effects; by including intervening words, for example, the independent effect of intervening words is factored out of the regression analysis making the the other results more reliable. However, as John Singler (p.c.) emphasizes, it need not be the case that all the significant factor groups are linguistically interesting, which is why not all factor groups are discussed in the main text of this article.

NOTES

1. In this paper, I will use brackets to show when a constituent can be in either one position or another (for constructed examples only). For examples taken from the corpora, I have noted which corpus they come from, either Alþingi, or one of the Ístal corpora, for which the number which appears with the token in the search function is retained.
2. See Holmberg (2005) for an excellent overview, as well as references cited below.
3. Examples (3a-d) are from Maling (1980). Maling (1980) referred to examples like (3b, c) as embedded topicalization. As mentioned in Section 3.2, this distinction is not made here. Out of 915 relative clauses with no subject gap, however, none exhibited this kind of embedded topicalization. Note further that Hrafnbjargarson (2004) refers to fronting of adverbials such as *áreiðanlega* 'undoubtedly', *áður* 'before', *örugglega* 'surely', Middle Danish *sidhan* 'then' and Old Danish *fǫrre* 'before' as SF.
4. In (4a), the case marking on *Steini* 'Steinn.DAT' shows that it is the object of the preposition *með* 'with' and not the subject of the clause. I am assuming that *hann* 'he/it' refers to a person, but it could be referring to something else in the discourse.
5. In the examples pulled from spoken corpora, I leave in repetitions of words, as in *sem* 'which' in (6b).
6. According to Thráinsson (2007:38-9), other adverbs which pattern generally with *hér* 'here' include *hérna* 'here', *inni* 'in', *í fyrra* 'last year', *í gær* 'yesterday', *nú* 'now', *núna* 'now', *úti* 'outside', *þar* 'there', *þarna* 'there', and *þá* 'then'.
7. A methodological difficulty arises in deciding which constituent should be coded as the 'frontable' one in cases where there is no fronting at all, such as (8). There were 60 sentences which exhibited fronting, where either *hér* 'here' or some other constituent could have been fronted. In 50 of these cases, *hér* 'here' was chosen. In only 10 cases were participles or particles fronted. Thus, I coded sentences like (8) as having a frontable locative adverbial.
8. Various transcription marks are used in Ístal. Details can be found at http://www3.hi.is/~eirikur/istal/skraning.htm. The corpora are generally available for searching at http://www.lexis.hi.is/corpus/leit.pl. See below for a description of how tokens were extracted.
9. For cases which seemed less clear, I thank Theódóra A. Torfadóttir (p.c.) for help, judgments, and discussion.
10. 'Factor group' is the term from the variationist tradition, which I will adopt here. Johnson (2009) points out that elsewhere, factor groups are called 'factors', and what are called 'factors' here are called 'levels'.
11. It is always possible, of course, that a result is due to some other property of the tokens which the researcher failed to consider, which is why it is important to have qualitative hypotheses to drive quantitative research.
12. As noted below, the present study reports on the results of two regression analyses; the results for XP vs. Head were identical in both cases, as shown in the appendix.

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13. The 'ictus' is the stressed syllable of a foot. Trips (2003:457) also notes that 'although [the Ormulum] has a metrical pattern, it is written in unrhymed verse and seems to be a witness of spoken language rather than an artifact which has nothing to do with naturally produced language'.
14. The exception to this is a small class of prefixes which do not carry stress, such as *ó-*, which is similar to English *un-*.
15. Since Icelandic is a weight-insensitive syllabic-trochee language, syllable weight is not a factor.
16. Ingason (2008b:52) also notes that this is prescriptively marked: 'The conjunction *sem að* "which that" is often frowned on by prescriptivists, and probably few have made it through the Icelandic school system without at some point or another having heard a teacher explain that it is more correct to say *sem* than *sem að*' [Samtengingin *sem að* er oft litin hornauga frá sjónarhóli málvöndunar og líklega hafa fáir farið í gegnum íslenskt skólakerfi án þess að hafa einhvern tíma heyrt kennara sinn útskýra að réttara sé að segja *sem* en *sem að*]. As a reviewer points out, though, Davíð Stefánsson is considered to be a master of verse, so the optional *að* is not due to sloppiness. Jóhannsson (2006:392) refers to him as 'the most celebrated poet of his time' who 'in many ways [...] became the last "national poet."'
17. A reviewer asks why there should be a line drawn between six and seven syllables. The answer in this case is that there just is one; constituents with six syllables varied, while those with seven did not. So constituents with seven syllables could not be included in the regression analysis, since the effect is categorical – and that is the most important point here. There is a general effect of heaviness throughout the data, as will be seen below, but it is not obvious that there is any hard line in the grammatical system, considering that examples like (i), from Sigurðsson (1997), front a constituent with eight syllables:

    (i) sem [DP þessa erfiðu ákvörðun] verða að taka
        who this difficult decision have to take

18. Poole (1997) hypothesizes that the finite verb can optionally be a clitic which cannot form its own prosodic word. See Burton-Roberts & Poole (2006:574–576) for a discussion of some problems with this approach.
19. As discussed earlier, if a head and its complement are both in the class of elements which undergo SF, either (but again not both) can be fronted (unless, of course, something else, such as negation, prevents fronting of either). Such cases were coded as not having a value for Category. Further, some of the other factor groups in cases like this could not be given values. For example, if there were two frontable constituents, neither of which underwent fronting, and they had different numbers of syllables, they could not be given a value for 'syllables in frontable constituent'. Fortunately, the number of cases like this were relatively few, on the order of approximately 27/900, so this is unlikely to have had a drastic effect on the results.
20. The class of 'other adverbials' is not homogenous. They include manner adverbials, speaker-oriented adverbs, subject-oriented adverbs, focus-type adverbs such as *einungis* 'solely' and so on. Examples include *skyndilega* 'suddenly', *heldur* 'rather', *títt* 'frequently', *fyrst* 'first', *yfirleitt* 'generally', *eldsnemma* 'bright and early', *mikið* 'much', *alltaf* 'always', *eitthvað* 'somehow', *oft* 'often', *víst* 'certainly', *hressilega* 'in a lively way', *rækilega* 'thoroughly', *líka* 'also', *óðum* 'fast', *þannig* 'in this way', *svo* 'next', *engan veginn* 'no how', *reyndar* 'in fact', *alveg* 'quite', and *gjörsamlega* 'totally'.

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21. Also discussed in Sigurðsson (1986) and Thráinsson (1986) is another class of V3 adverb, including *loksins* 'finally', which can only appear between the subject and the finite verb in embedded clauses. These did not show up in the relative clauses of the present study in any cases where they might be relevant.
22. In some cases more than one V3 adverb can occur simultaneously, making the verb 'fourth'. See Sigurðsson (1986:144–145) and Thráinsson (2007:39) for some examples of this kind. Adverbs which were not on these lists were classified with the help of grammaticality judgments from Theódóra A. Torfadóttir, to whom I express my gratitude.
23. For Angantýsson (2007), the subject position is AgrSP, which is higher than TP; thus, the position to which *ekki* 'not' adjoins is still lower than the subject, but higher than the finite verb.
24. If some process independent of SF puts negation in the pre-verbal position when a subject is present in a relative clause, it would actually be quite surprising if it could not do this when the subject is relativized. In fact, given that negation goes between the subject and the verb much more easily when the subject is a pronoun (see Angantýsson 2007:239, Fn.2), I would not in principle rule out the possibility that SF of negation is always an instance of this independent fronting operation, and that the null trace or operator makes it 'even easier' than pronouns.
25. One must be careful not to over-interpret the specific factor weights; what is important is the relative ordering. Most of the differences between the first and second run are quite negligible, since they are very small and do not change the relative ordering of the conditioning factors. Nor do they change the fact that it is not a gradient spread, or the fact that the same 'groups' of categories favor and disfavor fronting in each case. The only case that comes close to being interesting is the switch between V3 adverbs and other adverbs, but they are both strongly favoring and it would take the article too far afield to discuss this in any depth.
26. One potential complication involves a construction where *búin*(*n*) 'finished' with an infinitive forms a kind of perfect aspect, which is contextually restricted, but quite common (see example 31). I analyzed *búin*(*n*) 'finished', but a reviewer suggests that it would be more accurate to call it a participle. The reviewer asks if this is perhaps why adjectives are favored in the present study. In fact, out of 14 instances of this use of *búin*(*n*), only one exhibitied fronting. Including it among the participles, then, would have likely made the adjectives come out even more strongly favoring fronting, and participles even less strongly. See Sigurðsson (1989:55, Fn.7), Jónsson (1992), Thráinsson (2007:12), and Larsson (2008) on this construction.
27. It is unclear why temporal adverbs disfavor fronting, although there is some indication that prosodic factors may be at work. Two out of ten one-syllable temporal adverbs front when *að* 'that' is present, while eight out of fifteen front when *að* 'that' is not present. This suggests that adverbs like *nú* 'now' can serve the metrical function of *að* 'that' when the latter is not present. This kind of interaction would not show up in the present method unless specifically coded for. See Dehé (2008:744) for another case where *nú* 'now' serves a metrical function. Below, I provide another suggestion that relates to the function of temporal adverbials. Distinguishing between these two possibilities must be left for future research.
28. This example is presented as transcribed in the Alþingi corpus. Standardly, the complement of *af* 'from' would be dative *barnafólkinu* (or indefinite *barnafólki*), but it is transcribed as accusative.
29. Some adjectives do assign a particular case to a complement, or require a certain case for a subject, but they seem to have their own argument structure, and do not interact with verbal

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argument structure in the way that prepositions, particles and participles do. Of course, some PPs are much less (if at all) involved in verbal argument structure; in future research it would be useful to distinguish between different classes of PPs, if the dataset were large enough to do so. From this point on, for convenience, I will refer to PPs, particles, and participles as verbal elements and the rest as non-verbal elements.

30. I would not necessarily want to say that subjects get 'stylistically fronted' to the subject position. Subject fronting differs from SF in that it is not an 'optional' fronting operation in the way that SF is. Still, in Sigurðsson's (2010) analysis, subject fronting is not unrelated to SF, since it involves matching a superset of the features matched in SF.
31. Though see Sigurðsson (2004:28–29) for a different notion of the role of adverbs.
32. Though see note 27 above for another possibility. Since the place of adjectives on the accessibility hierarchy still seems unclear (recall examples (34)–(37) above), it is not possible at present to speculate as to why they seem to favor fronting (although the stage-level/individual-level distinction might relate to temporal anchoring).

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