

MATCHING Phrases in Norwegian Object Shift

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1 Introduction

One significant contribution of generative linguistics has been to our understanding of ‘movement’, which occurs when a word is linearized in a position different from where it is interpreted or generated. Even though movement is often considered a syntactic phenomenon, some cases seem best analyzed prosodically, such as pronoun post-posing in Irish (Bennett et al., 2016) or the positioning of Chamorro second-position clitics (Chung, 2003; Bibbs, 2019). In addition to these cases of prosodically driven movement, there is growing evidence that the phenomenon known as Scandinavian Object Shift (OS) is also determined by prosodic factors (Erteschik-Shir, 2005; Erteschik-Shir & Josefsson, 2017; Erteschik-Shir et al., 2019). OS occurs when a prosodically deficient pronoun moves to a position outside of the VP where it originated, which is seen when the pronoun moves across an adverb or negation, (1).

- (1) *Jeg så_V ham_O aldri [_{VP} t_V t_O]*
I saw him never
‘I never saw him.’

OS occurs in all Scandinavian languages, except for Övdalian (Övdalska), which is reported to lack OS completely (Garbacz, 2010). Among the languages that do allow OS, it is either an obligatory or optional process. Icelandic, Faroese, and Danish have obligatory OS and Swedish has optional OS. Norwegian, however, seems to be more subject to dialectal variation with some exhibiting either obligatory or optional OS (Holmberg, 1986, 1999; Thráinsson, 2001, 2010; Vikner, 2017).

In addition to pronominal OS, some Scandinavian varieties—primarily Icelandic—also allow heavy DP shift, which is called OS by some authors. Heavy DP shift is an optional process that occurs when a full DP shifts to a position to the left of the adverbials and negation.

- (2) *Jón las {þessa bók} ekki {þessa bók}.*
Jón read this book not
‘Jón didn’t read this book.’

Even though heavy DP shift appears to be identical to pronominal OS, Broekhuis (2020) shows that this is more akin to *object scrambling* in West-Germanic languages than to pronominal OS. Following this we will not consider these cases in our prosodic analysis.

We propose that pronominal OS is best analyzed prosodically using Match Theory (Selkirk, 2009, 2011) to explain why OS occurs. Our analysis builds on previous work by Erteschik-Shir et al. (2019), which attempts to provide an analysis for OS. In their paper, Erteschik-Shir et al. propose that OS could potentially be accounted for in two different ways: (i) pronominals shift and linearize, or (ii) adverbials shift and linearize. Erteschik-Shir et al. (2019) assume the latter of these two options only in their analysis, which is summarized in §5. We provide an extrapolation of their analysis for object shift where we assume that pronominals shift and linearize.

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We argue that Match Theory (Selkirk, 2009, 2011) is able to account for leftward movement of prosodically deficient elements. However, this is only possible if MATCH constraints are sensitive to lexical items and their projections. We show that the reformulation of MATCH in Elfner (2012), which is also sensitive to functional items and their projections, cannot account for OS.

The rest of this paper consists of a summary of OS in Norwegian in §2. In §3, we present our analysis of OS with lexically sensitive MATCH constraints. §4 shows how MATCH constraints that follow Elfner (2012) fail to account for OS, all else being equal. §5 summarizes Erteschik-Shir et al. (2019). §6 concludes this paper.

2 Norwegian Object Shift

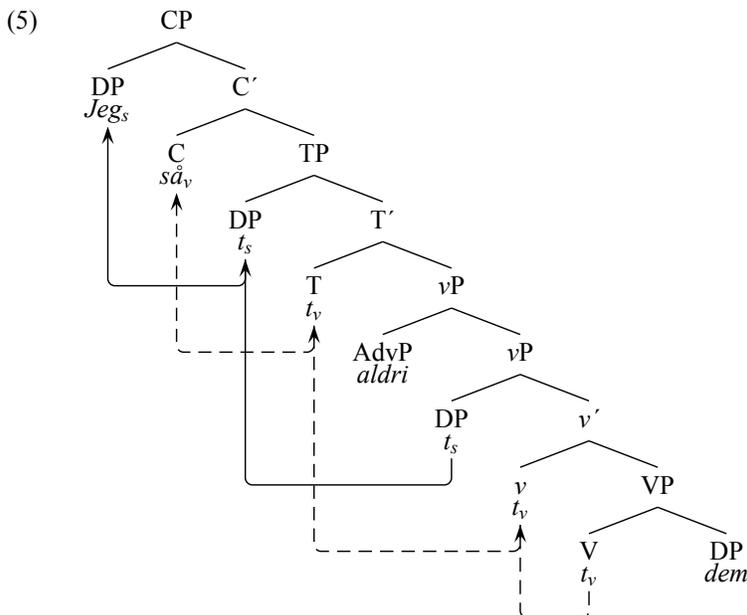
2.1 Data and some syntactic abstractions In this section, we present data on Norwegian Object Shift. Given the dialectal variation within the Norwegian dialects, we here present data for Urban East Norwegian (UEN), which appears to have obligatory OS (Bentzen, 2014). We assume a DP structure with a determiner as its head. For the sake of clarity, we exemplify in (3) that DPs that contain full NPs cannot shift across adverbials and negation in UEN.

- (3) *Jeg så {*studenten} aldri {studenten}.*
 I saw {*student-DEF} never {student-DEF}
 ‘I never saw the student.’

We now turn to pronominal OS. It has been widely observed that OS is subject to certain restrictions as to when it is allowed or not allowed to occur. This restriction is known as Holmberg’s generalization, which is defined in Holmberg (1999) as:

- (4) Holmberg’s generalization
 Object Shift cannot apply across a phonologically visible category, which asymmetrically c-commands the object position except adjuncts.

In other words, OS can only occur if the verb has moved out of VP and there is no intervening phonological material except for adjuncts (e.g. adverbs) between its base and where the pronoun is pronounced. This can be seen in the syntactic structure in (5) illustrating *Jeg så ham aldri* ‘I never saw him,’ where the pronoun has no intervening phonological material. The regular word order of Norwegian is SVO (V2 in main clauses). We assume that the phonologically deficient object pronouns crucially remain *in situ* in the syntactic input to the syntax–prosody mapping.



We now consider more examples of pronominal OS. The examples in (6) show that object pronouns obligatorily shift across adverbs and negation.¹ The issue at hand is to explain why UEN OS only occurs with pronouns. As we will see in §3, the pronoun cliticizes to the verb, suggesting a prosodic process due to its locality.

- (6) a. *Jeg så_v ham_o ofte* [_{VP} *t_v t_o*]
 I saw him often
 ‘I saw him often.’
 b. *Jeg så_v ham_o ikke* [_{VP} *t_v t_o*]
 I saw him not
 ‘I didn’t see him.’

Now consider another construction, namely that of double objects (7), here with the adverb *ofte* ‘often.’ The acceptability depends, in part, on the argument structure, and it varies across the Scandinavian varieties (Thráinsson, 2001).² Full DP objects must remain *in situ* in double object constructions (7-a), and none of them can shift (7-b–d). Conversely, direct object cannot shift if the indirect object is a pronoun (8-a), neither if the indirect object is a full DP and the direct object a pronoun (8-b). The indirect object can shift if the direct object is a full DP, but crucially not if the direct object is a pronoun (8-c). Both objects can shift if they are pronouns (8-d). What is the explanation for the direct object’s inability to shift when it is a pronoun?

- (7) a. *Jeg lånte_v ofte* [_{VP} *studenten_{io} t_v bøkene_o*]
 I lent often student-DEF books-DEF
 ‘I often lent the books to the students.’
 b. *?*Jeg lånte_v studenten_{io} ofte* [_{VP} *t_{io} t_v bøkene_o*]
 I lent student-DEF not books-DEF
 ‘I often lent the books to the students.’
 c. **Jeg lånte_v bøkene_o ofte* [_{VP} *studenten_o t_v t_{io}*]
 I lent books-DEF often student-DEF
 ‘I often lent the books to the student.’
 d. **Jeg lånte_v studenten_{io} bøkene_o ofte* [_{VP} *t_{io} t_v t_o*]
 I lent student-DEF books-DEF not
 ‘I often lent the books to the students.’
- (8) a. **Jeg lånte_v ofte* [_{VP} *ham_{io} t_v {bøkene}/{*dem}_o*]
 I lent often him books-DEF/them
 ‘I often lent him them/the books to him.’
 b. *?Jeg lånte_v ofte* [_{VP} *studenten_{io} t_v dem_o*]
 I lent often student-DEF them
 ‘I often lent them to the student.’
 c. *Jeg lånte_v ham_{io} ofte* [_{VP} *t_{io} t_v {bøkene}/{*dem}_o*]
 I lent him often books-DEF/them
 ‘I often lent him them/the books to him.’
 d. *Jeg lånte_v ham_{io} dem_o ofte* [_{VP} *t_{io} t_v t_o*]
 I lent him them often.
 ‘I often lent him them.’

The fact that a pronoun can cliticize to a noun as well as a verb, supports the notion that UEN pronominal OS is prosodically conditioned. This suggests that the crucial factor is prosodic adjacency. Blindness to syntactic category distinctions are traditionally taken to support the notion of the Indirect Reference Theory (Nespor & Vogel, [1987] 2007; Bennett & Elfner, 2019).

¹ UEN negation and so-called ‘weak’ adverbs appear to behave differently from ‘full’ adverbs in that the members of the former category can cliticize, while those of the latter cannot. This also holds for other varieties of Norwegian.

² Other suggested factors include (lack of) focus (Holmberg, 1999; Mikkelsen, 2011) and topicalization/individual reference (Anderssen et al., 2012).

2.2 Prosodic factors We follow Kristoffersen (2007) in assuming that the tone-bearing unit (TBU) in UEN is the syllable. We also assume that the tonal accent contrast in UEN is limited to the primary stressed syllable, and that it cannot occur in monosyllabic words. Further, we assume that the L phonologically is associated with the stressed syllable in accent 1 words (L*H, e.g., *rommet*), while the H is associated with the stressed syllable in accent 2 words (H*LH, e.g., *romme*). We assume a recursive prosodic word (ω) in line with Myrberg & Riad (2015), where the head of a maximal ω is defined by the presence of one tonal accent.

We also follow Myrberg & Riad (2015) in assuming two prominence categories, namely SMALL and BIG ACCENTS, that are crossed with the tonal accents. Table 1 illustrates the basic tonal contours in Stockholm Swedish. Compare Table 2, which is a simplified description of UEN basic tonal contours. Crucially for our analysis, the primary defining property of a prosodic phrase (ϕ) is the presence of a big accent. Every big accent is the head of some ϕ , and we assume that there is a relationship between the ω and ϕ (cf. the Strict Layering Hypothesis, Selkirk 1984). This differs from Kristoffersen (2007), where the domain of the corresponding Accent Phrase (AP) is defined by a left edge delimited by a primary stressed syllable, and a right edge defined by the next primary stress or by the utterance final syllable. Myrberg & Riad (2015) also note that small and big accents are not tied to the melodic shape of the accents. According to them, big accents usually differ phonetically from small accents in terms of scaling (e.g., larger fundamental frequency excursions) and their perceptually higher prominence compared to small accents.

	Tonal accent 1	Tonal accent 2	
		One stress	Two stresses
Small accent	HL*	H*L	H*L
Big accent	L*H	H*LH	H*L*H

Table 1: Basic tonal contours in Stockholm Swedish (adapted from Myrberg & Riad, 2015).

There are two properties that cause the four distinct contours. First, we assume that Swedish has a lexical tone, resulting in a binary surface tonal distinction between tonal accent 1 (intonation only) and tonal accent 2 (lexical tone and intonation). In this account, the rightmost column in table 1 shows the tonal accent 2 contour that appears in words with several stresses.

	Accent 1	Accent 2
Tones	L*H	H*LH

Table 2: Simplified basic tonal contours in Urban East Norwegian.

To the best of our knowledge, the phonetic realizations of these categories in Norwegian varieties have still not been extensively studied. It is out of the scope of this paper to fully investigate these differences in prominence levels, but we follow previous works and introspection in assuming that we can differentiate between these levels, which we will take to correspond to ϕ^{\min} and ϕ^{\max} (see also Myrberg 2013).

3 Lexical Matching

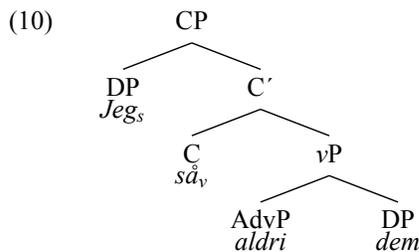
As mentioned in §1, we propose that Match Theory can account for OS if MATCH constraints are only sensitive to lexical elements and their projections. We take lexical elements to be nouns, verbs, adjectives, and adverbs following traditional instruction (O’Grady et al., 2017). The notion that prosody only operates on lexical items is not new and in fact has a long history prior to Match Theory (Nespor & Vogel, [1987] 2007; Selkirk, 1984, 1996; Truckenbrodt, 1999). In relation to Match Theory, Selkirk (2011:453) has this to say:

Turning next to MATCH PHRASE, the simple appeal to “phrase” in this constraint embodies the assumption ... that distinctions between lexical projections NP vs. VP vs. AP are not relevant to this correspondence ... But the notion XP needs to be further refined, since it is likely that lexical and functional phrasal projections – LexP and FncP – have to be distinguished.

From this discussion, the phrasal MATCH constraints need to be defined in relation to lexical items and their projections. These would be defined as follows:

- (9) a. $\text{MATCH}(\text{XP}, \varphi)$:
Assign a violation for every node s of a lexical category XP in the syntactic tree for which there is no node p of category φ in the prosodic tree such that every terminal node dominated by s corresponds to a terminal node dominated by p .
- b. $\text{MATCH}(\varphi, \text{XP})$:
Assign a violation for every node p of category φ in the prosodic tree for which there is no node s of a lexical category XP in the syntactic tree such that every terminal node dominated by p corresponds to a terminal node dominated by s .

It is commonly understood that the input to the prosody needs to be a syntactic structure that these MATCH constraints operate on to produce an isomorphic prosodic structure. As discussed by Bennett et al. (2016), the syntactic structure in (5) is not necessarily the same structure that prosody interacts with. Instead the prosody interacts with a syntactic structure that has had all phonologically empty terminals and categories removed (i.e., traces and their projections). This results in the following trimmed syntactic structure for Norwegian:



In order to account for why nonisomorphism takes place, there needs to be prosodic markedness constraints. We propose that in order to account for OS two additional constraints are required for this analysis. The first of these constraints is HEADEDNESS (Selkirk, 2007).³

- (11) HEADEDNESS :
Assign one violation for every non-terminal prosodic constituent of level p such that it does not immediately dominate a prosodic constituent that is of level $p-1$.

This constraint ensures that each prosodic level immediately dominates a constituent that is of one level lower than itself. Specifically for our analysis, we are only concerned with phonological phrases (φ) and prosodic words (ω). This means that for our analysis HEADEDNESS is specific to phonological phrases. This means that each phonological phrase must immediately dominate a prosodic word. It will be shown that this constraint is crucial to accounting for why pronominal objects, which do not form prosodic words on their own are forced to shift. The second constraint that we require for our analysis is NOSHIFT (Bennett et al., 2016).

- (12) NOSHIFT :
If a terminal element α is linearly ordered before a terminal element β in the syntactic representation of an expression E , then the phonological exponent of α should precede the phonological exponent of β in the phonological representation of E .

NOSHIFT ensures that the same linear order that exists in the syntactic representation is maintained in the prosodic structure. This constraint will assign violations when the pronouns displace for prosodic factors. The rest of this section will present our analysis for OS and the behavior of double object constructions in Norwegian.

3.1 Object Shift Our analysis of OS will take the syntactic structure in (10) which—besides representing the phrase *Jeg så aldri ham*—is the basic structure for any sentence containing a single object. In the tableau in (13), the input *Jeg så aldri dem* ‘I never saw them’ has the object DP *dem* in its base position. Because the AdvP *aldri* is the only lexical phrase in this structure, its boundaries are the only ones which we overtly label to show its status as a lexical projection.

³ Selkirk (2007) is not the first place that an OT style constraint for HEADEDNESS was used, but it was the first place that a formal definition was given.

We see in this tableau that we are able to account for OS in candidate (13a). Candidate (13c) loses to $\text{MATCH}(\text{XP},\varphi)$ because the pronoun *dem* is found within the phonological phrase that corresponds to the AdvP and there is no longer a correspondence between the terminals. Candidate (13b) is ruled out because the pronoun *dem* is heading a phonological phrase. This results in a violation of HEADEDNESS because this pronoun does not form a prosodic word. We also assume that the weak pronouns—represented with a subscripted CL—cliticize into the ω^{min} (Myrberg & Riad, 2013, 2015), indicated by $\langle \Rightarrow \rangle$ in the tableaux. We assume in all of the following tableaux that the object pronouns are smaller than a prosodic word, due to the fact that their realizations are not the same as the orthographical representations.

(13) Tableau for *Jeg så dem aldri* ‘I never saw them’.

[[Jeg] så [[AdvP aldri] [dem]]]	HEADEDNESS	MATCH(XP, φ)	NO SHIFT	MATCH(φ ,XP)
a. $\langle \Rightarrow \rangle (\varphi \text{ jeg}_{\text{CL}}=\text{s}\hat{\text{a}}_{\omega}=\text{dem}_{\text{CL}})(\varphi \text{ aldri}_{\omega})$			*	*
b. $(\varphi \text{ jeg}_{\text{CL}}=\text{s}\hat{\text{a}}_{\omega})(\varphi \text{ aldri}_{\omega})(\varphi \text{ dem}_{\text{CL}})$	*W		L	**W
c. $(\varphi \text{ jeg}_{\text{CL}}=\text{s}\hat{\text{a}}_{\omega})(\varphi \text{ aldri}_{\omega}=\text{dem}_{\text{CL}})$		*W	L	*

An additional candidate to consider is the candidate that is nearly identical with the optimum but instead has *dem* belonging to a phonological phrase with *aldri* headed by *dem*: $(\varphi \text{ jeg}_{\text{CL}}=\text{s}\hat{\text{a}}_{\omega})(\varphi \text{ dem}_{\text{CL}}=\text{aldri}_{\omega})$. This candidate would be ruled out by the constraint STRONGSTART , which requires the left edge of every φ to be a ω or higher. In a sense this means that prosodic clitics cannot be the leftmost element in φ (Bennett et al., 2016). For simplicity’s sake, we will not include these candidates in our tableaux and assume that there is a highly ranked STRONGSTART constraint that eliminates them. This is also what forces the unmarked weak subject pronoun to cliticize into the verb. The resulting prosodic structure of subject pronouns is not quite known as to whether or not they incorporate at the minimal prosodic word or if they affix to a minimal prosodic word, forming a maximal prosodic word. Evidence for one or the other would be whether or not syllabification and stress shift occurs.

Crucially, we see that the constraint HEADEDNESS is responsible for determining when OS occurs. When HEADEDNESS is satisfied, full DPs like *studentene* ‘the students’ or stressed object pronouns remain *in situ* and form their own phonological phrases. This can be seen in the tableau in (14), where there are no violations of $\text{MATCH}(\text{XP},\varphi)$ and the optimum being chosen by violations in NO SHIFT .

(14) Tableau for *Jeg så aldri studentene* ‘I never saw the students’.

[[Jeg] så [[AdvP aldri] [DP studentene]]]	HEADEDNESS	MATCH(XP, φ)	NO SHIFT	MATCH(φ ,XP)
a. $(\varphi \text{ jeg}_{\text{CL}}=\text{s}\hat{\text{a}}_{\omega})(\varphi \text{ studentene}_{\omega})(\varphi \text{ aldri}_{\omega})$			*W	*
b. $\langle \Rightarrow \rangle (\varphi \text{ jeg}_{\text{CL}}=\text{s}\hat{\text{a}}_{\omega})(\varphi \text{ aldri}_{\omega})(\varphi \text{ studentene}_{\omega})$				*
c. $(\varphi \text{ jeg}_{\text{CL}}=\text{s}\hat{\text{a}}_{\omega})(\varphi \text{ aldri}_{\omega} \text{ studentene}_{\omega})$		*W	L	*

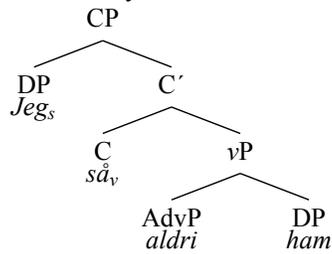
We have seen that, through simple constraint interactions, the grammar correctly outputs when OS does or does not occur. This is crucially seen through whether or not there are violations for the constraint HEADEDNESS , which will cause the prosodically deficient object pronouns to shift into a more optimal position at the expense of violations in NO SHIFT .

In summary, we see that we are able to account for pronominal OS when MATCH constraints are able to operate with lexical items.

4 Functional Matching

In this section, we compare our approach with MATCH as defined by Elfner (2012) which considers both lexical and functional items and their projections when evaluating violations. This results in all maximal projections from the abbreviated syntactic tree (10)—with the exception of CPs, which correspond to t -being counted during constraint evaluation.

(15) Trimmed syntactic tree



Under the Elfner version of $\text{MATCH}(XP, \varphi)$ and $\text{MATCH}(\varphi, XP)$ would be defined as follows. We will use $XP_{lex,func}$ and XP_{lex} when we need to make a distinction between the different versions of MATCH in the rest of this paper.

(16) Lexical and functional sensitive MATCH constraints

- a. $\text{MATCH}(XP_{lex,func}, \varphi)$:
Assign a violation for every node s of a lexical or functional category XP in the syntactic tree for which there is no node p of category φ in the prosodic tree such that every terminal node dominated by s corresponds to a terminal node dominated by p .
- b. $\text{MATCH}(\varphi, XP_{lex,func})$:
Assign a violation for every node p of category φ in the prosodic tree for which there is no node s of a lexical or functional category XP in the syntactic tree such that every terminal node dominated by p corresponds to a terminal node dominated by s .

Using the above defined constraints, we can now see how these constraints fare in evaluating our previous tableaux from §3.1. We look first at those cases involving full DPs, such as *studentene* ‘the students’ or stressed object pronouns, which, as mentioned earlier, remain *in situ*.

We see that the even though the violations of $\text{MATCH}(XP_{lex,func})$ are different between the two version, (17a) for $\text{MATCH}(XP_{lex,func})$ and (17b) for $\text{MATCH}(XP_{lex})$, than the violations when we have $\text{MATCH}(XP_{lex})$ the correct optima are selected in both cases. The reason this happens is because both tableaux prefer the candidate that remains *in situ*. Additionally, because $\text{MATCH}(XP, \varphi)$ is ranked higher than NoSHIFT , the object and adverb cannot form a single prosodic phrase.

(17) a. Tableau for *Jeg så aldri studentene* ‘I never saw the students’, $\text{MATCH}(XP_{lex,func}, \varphi)$.

[[DP Jeg] så [_{vP} [_{AdvP} aldri] [_{DP} studentene]]]	HEADEDNESS	$\text{MATCH}(XP_{lex,func}, \varphi)$	NO SHIFT	$\text{MATCH}(\varphi, XP_{lex,func})$
a. $(\varphi \text{ jeg}_{CL} = \text{så}_{\omega}) (\varphi \text{ studentene}_{\omega}) (\varphi \text{ aldri}_{\omega})$		**	*W	*
b. $\text{E}^{\text{OS}} (\varphi \text{ jeg}_{CL} = \text{så}) (\varphi \text{ aldri}) (\varphi \text{ studentene})$		**		*
c. $(\varphi \text{ jeg}_{CL} = \text{så}_{\omega}) (\varphi \text{ aldri}_{\omega} \text{ studentene}_{\omega})$		***W	L	*

b. Tableau for *Jeg så aldri studentene* ‘I never saw the students’, $\text{MATCH}(XP_{lex}, \varphi)$.

[[Jeg] så [[_{AdvP} aldri] [_{DP} studentene]]]	HEADEDNESS	$\text{MATCH}(XP_{lex}, \varphi)$	NO SHIFT	$\text{MATCH}(\varphi, XP_{lex})$
a. $(\varphi \text{ jeg}_{CL} = \text{så}_{\omega}) (\varphi \text{ studentene}_{\omega}) (\varphi \text{ aldri}_{\omega})$			*W	*
b. $\text{E}^{\text{OS}} (\varphi \text{ jeg}_{CL} = \text{så}) (\varphi \text{ aldri}) (\varphi \text{ studentene}_{\omega})$				*
c. $(\varphi \text{ jeg}_{CL} = \text{så}_{\omega}) (\varphi \text{ aldri}_{\omega} \text{ studentene}_{\omega})$		*W	L	*

However, in the case of pronominal OS, $\text{MATCH}(XP_{lex,func})$ incorrectly outputs candidate (18b) as the optimum, whereas candidate (18a) is the expected optimum.

(18) Harmonic Bounding, $\text{MATCH}(XP_{lex,func}, \varphi)$

[[DP Jeg] så [_{vP} [_{AdvP} aldri] [_{DP} dem]]]	HEADEDNESS	$\text{MATCH}(XP_{lex,func}, \varphi)$	NO SHIFT	$\text{MATCH}(\varphi, XP_{lex,func})$
a. $\text{E}^{\text{OS}} (\varphi \text{ jeg}_{CL} = \text{så}_{\omega} = \text{dem}_{CL}) (\varphi \text{ aldri}_{\omega})$		***	*W	*
b. $(\varphi \text{ jeg}_{CL} = \text{så}_{\omega}) (\varphi \text{ aldri}_{\omega}) (\varphi \text{ dem}_{CL})$	*W	**L		*
c. $\text{E}^{\text{OS}} (\varphi \text{ jeg}_{CL} = \text{så}_{\omega}) (\varphi \text{ aldri}_{\omega} = \text{dem}_{CL})$		***		*

The reason $\text{MATCH}(\text{XP}_{lex,func})$ fails to account for OS is because of the equal number of violations that candidates a and b have in $\text{MATCH}(\text{XP}_{lex,func}, \varphi)$, which then causes NoSHIFT to decide the winner out of the two candidates. Because OS involves the linearization of the pronominal object in a position different than where it is located in the input, NoSHIFT will assign a violation that causes the expected winner to lose and the candidate where the pronominal objects remain *in situ* to win.

However, when we compare the tableau in (18) to the tableau where we have $\text{MATCH}(\text{XP}_{lex})$, repeated here as (19), we see that we are able to account for OS when MATCH is sensitive to *lexical items* only.

(19) Tableau for *Jeg så dem aldri* ‘I never saw them’, $\text{MATCH}(\text{XP}_{lex})$.

[[Jeg] så [[AdvP aldri] [dem]]]	HEADEDNESS	$\text{MATCH}(\text{XP}_{lex}, \varphi)$	NoSHIFT	$\text{MATCH}(\varphi, \text{XP}_{lex})$
a. $\text{E}^{\text{S}} (\varphi \text{ jeg}_{\text{CL}} = \text{s}\hat{\text{a}}_{\omega} = \text{dem}_{\text{CL}}) (\varphi \text{ aldri}_{\omega})$			*	*
b. $(\varphi \text{ jeg}_{\text{CL}} = \text{s}\hat{\text{a}}_{\omega}) (\varphi \text{ aldri}_{\omega}) (\varphi \text{ dem}_{\text{CL}})$	*W		L	**W
c. $(\varphi \text{ jeg}_{\text{CL}} = \text{s}\hat{\text{a}}_{\omega}) (\varphi \text{ aldri}_{\omega} = \text{dem}_{\text{CL}})$		*W	L	*

We have seen in this section that, when MATCH is sensitive to both functional and lexical items and their projections, the grammar is able to produce the correct output when the object is a full DP because they remain *in situ*. However, the grammar fails to produce the correct output when we input a structure that has a weak pronominal object which should shift because of harmonic bounding.

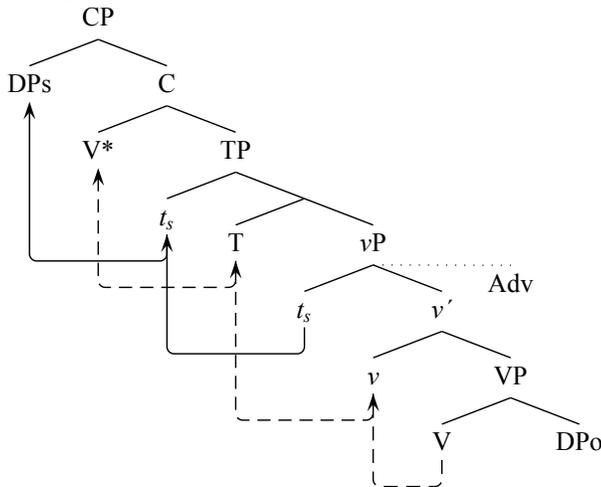
5 Erteschik-Shir, Josefsson, Köhnlén 2019

As mentioned in §1, Erteschik-Shir et al. (2019) present an analysis where OS is the result of adverb linearization, which is one of two different possible analyses. Their analysis does present strong evidence that these pronouns are incorporated into the host after linearization. This comes in the form of syllabification and the distribution of pitch accents following the tonal accent units, which builds on Riad (2014) and Myrberg & Riad (2013).

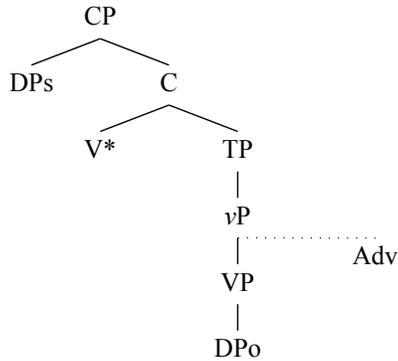
In order to account for OS being the by-product of adverb linearization, they assume that adverbs are 3-D adjoined in the syntactic structure following Åfarli (2010) and the citations therein. This means that adverbs are not part of the standard syntactic structure, but are only loosely attached to them, which is represented with the dotted line in the following syntactic structures. The two different linestyles for movement represent DP movement (solid) and verb movement (dashed).

(20) Syntactic structures adapted from Erteschik-Shir et al. (2019)

a. Full syntactic structure



b. Trimmed syntactic structure



They propose that adverbs are subject to the interaction of a constraint that requires adverbs to appear at the left edge of an intonational phrase. They call this constraint *LEFTMOST* which operates only for adverbs that interact with OS (OS-Adv).

- (21) *LEFTMOST*(OS-Adv, 1):
 Assign one violation mark for every ω in the phonological representation that interferes between the left edge of an intonational phrase and a ω that corresponds to an OS-Adv in the syntactic representation.

Because adverbs belong to this Åfarlian style 3-D plane, Erteschik-Shir et al. argue that another constraint is needed which prohibits prosodic words from containing material from different syntactic dimensions which they call **Multiple*.

- (22) **MULTIPLE*:
 Assign one violation mark for every prosodic word that contains elements from different dimensions of the syntactic representation.

In addition to these two constraints, they also require the constraint *NoSHIFT* to rule out the possibility of having the adverb appear at the left edge of an intonational phrase. Even though the adverb is 3-D adjoined to *vP*, they explain that *NoSHIFT* prevents the linearization of the adverb to the left of the *vP* because “elements in the CP and TP precede elements in the *vP* in the syntactic representation.” All of these factors produce the tableau in (23).

(23) Object Shift according to Erteschik-Shir et al. (2019).

	[_{CP} Peter [C mødte [_{TP} <i>vP</i> < _{Adv} ikke> [_{vP} ham]]]]	NoSHIFT	*MULTIPLE	LEFTMOST
a.	(_i (ϕ Peter (ϕ mødte=ham (ϕ ikke)))			***
b.	(_i (ϕ Peter (ϕ mødte (ϕ ikke=ham)))		*!	**
c.	(_i (ϕ Ikke (ϕ Peter (ϕ mødte=ham)))	**!		

This account does produce the correct output, but it requires a more complex syntactic structure than the more traditional structure that is proposed in §2. However, this is, in and of itself, not a problem. What is a problem is the requirement of a constraint that targets a specific lexical element. In this instance, the constraint *LEFTMOST* requires only a subset of a syntactic category (i.e., adverbs) to be the leftmost element in a prosodic category, intonational phrase. This is an undesirable solution, because once the syntactic structure is handed off to the prosody the syntactic differences between individual lexical terminals is no longer available. Instead all that the prosody is able to see is that there is a syntactic head, X^0 , with phonological material, if we assume that vocabulary insertion occurs prior to the spell-out of prosody.

6 Conclusion

In conclusion, we have argued that Norwegian OS can be accounted for through Match Theory. However, this is only possible if the MATCH constraints are sensitive to lexical items only. If the MATCH constraints are sensitive to both lexical and functional heads and their projections, as proposed by Elfner (2012), then we observe that the grammar does not select the correct output where the pronouns have shifted (see also Itô & Mester 2019). Instead the grammar selects those outputs which do not have the pronoun shifted.

Additionally, our account sketches out the missing alternative account as alluded to by Erteschik-Shir et al. (2019). They proposed two potential analyses of OS: one from the perspective of the pronoun and their own analysis with focuses on the linearization of adverbs. By filling in this missing proposal, we now have a more complete picture of what factors could be motivating OS. However, this also leaves room for further research into which of the two proposals yields the greater descriptive adequacy, especially as we pursue the interaction of verbal particles and double object constructions with OS.

References

- Áfarli, Tor A. (2010). Adjunction and 3D phrase structure: A study of Norwegian adverbials. Erteschik-Shir, Nomi & Lisa Rochman (eds.), *The Sound Patterns of Syntax*, Oxford University Press, 9–32.
- Anderssen, Merete, Kristine Bentzen & Yulia Rodina (2012). Topicality and Complexity in the Acquisition of Norwegian Object Shift. *Language Acquisition* 19:1, 39–72.
- Bennett, Ryan & Emily Elfner (2019). The Syntax–Prosody Interface. *Annual Review of Linguistics* 5:1, 151–171.
- Bennett, Ryan, Emily Elfner & James McCloskey (2016). Lightest to the Right: An Apparently Anomalous Displacement in Irish. *Linguistic Inquiry* 47:2, 169–234.
- Bentzen, Kristine (2014). Object Shift. *Nordic Atlas of Language Structures (NALS) Journal* 1:1, 332–343.
- Bibbs, Richard (2019). Prosodic alignment of weak pronouns in Chamorro. International Conference on Phonetics and Phonology (ICPP), NINJAL, Tokyo, Japan, Dec 13–15 (Poster).
- Broekhuis, Hans (2020). The Unification of Object Shift and Object Scrambling. Putnam, Michael T. & B. Richard Page (eds.), *The Cambridge Handbook of Germanic Linguistics*, Cambridge University Press, 413–435, first edn.
- Chung, Sandra (2003). The Syntax and Prosody of Weak Pronouns in Chamorro. *Linguistic Inquiry* 34:4, 547–599.
- Elfner, Emily (2012). *Syntax-Prosody Interactions in Irish*. Doctoral dissertation, University of Massachusetts-Amherst, Amherst, MA.
- Erteschik-Shir, Nomi (2005). Sound Patterns of Syntax: Object Shift. *Theoretical Linguistics* 31:1-2, 47–93.
- Erteschik-Shir, Nomi & Gunlög Josefsson (2017). Scandinavian Object Shift Is Phonology. Bailey, Laura R. & Michelle Sheehan (eds.), *Order and Structure in Syntax I: Word Order and Syntactic Structure*, no. 1 in Open Generative Syntax, Language Science Press, Berlin, 99–115.
- Erteschik-Shir, Nomi, Gunlög Josefsson & Björn Köhnlein (2019). Variation in Mainland Scandinavian Object Shift: A Prosodic Analysis. lingbuzz/003688.
- Garbacz, Piotr (2010). *Word Order in Övdalian: A Study in Variation and Change*. No. 70 in Lundastudier i Nordisk Språkvätsenskap A, Univ., Centre for languages and literature, Lund.
- Holmberg, Anders (1986). *Word Order and Syntactic Features in the Scandinavian Languages and English*. Doctoral dissertation, University of Stockholm, Stockholm, Sweden.
- Holmberg, Anders (1999). Remarks on Holmberg’s Generalization. *Studia Linguistica* 53:1, 1–39.
- Itô, Junko & Armin Mester (2019). Match as Syntax-Prosody Max/Dep: Prosodic Enclisis in English. *English Linguistics* 36:1, 1–28.
- Kristoffersen, Gjert (2007). *The Phonology of Norwegian*. Oxford University Press, Oxford.
- Mikkelsen, Line (2011). On Prosody and Focus in Object Shift. *Syntax (Oxford, England)* 14:3, 230–264.
- Myrberg, Sara (2013). Sisterhood in prosodic branching. *Phonology* 30:1, 73–124.
- Myrberg, Sara & Tomas Riad (2013). The prosodic word in Swedish. Asu-Garcia, Eva Liina & Pärtel Lippus (eds.), *Nordic Prosody Proceedings of the XIth Conference, Tartu 2012*, Peter Lang GmbH, Internationaler Verlag der Wissenschaften, Frankfurt am Main, Berlin, Bern, Bruxelles, New York, Oxford, Wien, p. 10.
- Myrberg, Sara & Tomas Riad (2015). The prosodic hierarchy of Swedish. *Nordic Journal of Linguistics* 38:2, 115–147.
- Nespor, Marina & Irene Vogel ([1987] 2007). *Prosodic Phonology: With a New Foreword*. No. 28 in *Studies in Generative Grammar*, de Gruyter, Berlin, second edn.
- O’Grady, William, John Archibald, Mark Aronoff & Janie Rees-Miller (2017). *Contemporary Linguistics: An Introduction*. Bedford/St. Martins, Macmillan Learning, Boston, seventh edition edn.
- Riad, Tomas (2014). *The Phonology of Swedish*. The Phonology of the World’s Languages, Oxford University Press, Oxford, United Kingdom.
- Selkirk, Elisabeth (1984). *Phonology and Syntax: The Relation between Sound and Structure*. MIT Press, Cambridge, MA.

- Selkirk, Elisabeth (1996). The prosodic structure of function words. Morgan, James L. & Katherine Demuth (eds.), *Signal to Syntax: Bootstrapping from Speech to Grammar in Early Acquisition*, Erlbaum, Mahwah, NJ, 187–214.
- Selkirk, Elisabeth (2007). Bengali intonation revisited: An optimality theoretic analysis in which FOCUS stress prominence drives FOCUS phrasing. Lee, Chungmin, Matthew Gordon & Daniel Büring (eds.), *Topic and Focus: Cross-Linguistic Perspectives on Meaning and Intonation*, Springer Netherlands, Dordrecht, 215–244.
- Selkirk, Elisabeth (2009). On Clause and intonational phrase in Japanese: The syntactic grounding of prosodic constituent structure. *Gengo Kenkyu* 2009:136, 35–73.
- Selkirk, Elisabeth (2011). The Syntax-Phonology Interface. *The Handbook of Phonological Theory*, Wiley-Blackwell, Oxford, UK, 435–484.
- Thráinsson, Höskuldur (2001). Object Shift and Scrambling. *The Handbook of Contemporary Syntactic Theory*, Blackwell Publishers Ltd, Oxford, UK, p. 55.
- Thráinsson, Höskuldur (2010). *The syntax of Icelandic*. Cambridge syntax guides, Cambridge Univ. Press, Cambridge, 1. paperback ed edn.
- Truckenbrodt, Hubert (1999). On the Relation between Syntactic Phrases and Phonological Phrases. *Linguistic Inquiry* 30:2, 219–255.
- Vikner, Sten (2017). Object Shift in Scandinavian. Everaert, Martin & Henk C. van Riemsdijk (eds.), *The Wiley Blackwell Companion to Syntax, Second Edition*, John Wiley & Sons, Inc., Hoboken, NJ, USA, 1–60.