

## Successes and shortcomings of phonological accounts of Scandinavian Object Shift

Paulina Lyskawa, Jade Sandstedt, Eline Visser, Nathan Young & Björn Lundquist\*

**Abstract.** Object Shift (OS) is a word order phenomenon in Scandinavian languages where under some circumstances the object appears before a sentential adverb. Despite the frequent assumptions that word order is determined in syntax, and despite the link of OS and syntactic phenomena like V2, there is no consensus that OS is a syntactic phenomenon. Particularly, it has been observed that OS targets specifically prosodically weak elements. This motivated recent analyses of OS as a prosodic phenomenon. We focus on two proposals that look for a synchronic motivation for OS in a correlation between its distribution and some prosodic property: (i) Erteschik-Shir et al. (2020) posit that OS is motivated and modulated by prosodic incorporation, and (ii) Hosono (2013) hypothesizes that shifted pronominal objects help facilitate downstep. We identify concrete predictions from both proposals (default prosodic incorporation, and no downstep in unshifted OS-context sentences, respectively) and test them using novel data. The results show that neither of the proposals can be maintained in its original form. In addition to the empirical shortcomings of the prosodic proposals, we explore a missed syntactic generalization regarding the role objecthood plays in OS.

**Keywords.** word order; prosody; syntax-phonology interface; Object Shift; Mainland Scandinavian; prosodic incorporation; downstep

**1. Object Shift – brief overview.** Object Shift (henceforth OS) is a word order phenomenon in Scandinavian languages where under some circumstances the object appears before a sentential adverb (also called medial or mid-field adverbs, e.g., negation), as in (1-a). This word order where the object precedes the adverb (henceforth *shifted*) contrasts with the order where adverb precedes the object (henceforth *unshifted*), as in (1-b). All our examples are from standard Swedish unless otherwise specified.

- |   |   |           |             |
|---|---|-----------|-------------|
| (1) a. Hon hjälpte mig inte.<br>she helped me not<br>'She did not help me.' | b. Hon hjälpte inte mig.<br>she helped not me<br>'She did not help me.' | (shifted) | (unshifted) |
|---|---|-----------|-------------|

OS is modulated by several conditions. First, OS is linked to the movement of the verb into the second position in a clause (V2 movement). Shifted order does not occur if V2 has not occurred either, as in complex tenses in (2) or within embedded clauses in (3) (Holmberg 1986):

- |  |   |
|--|---|
| (2) Hon kommer inte att hjälpa mig.<br>she will not INF help me<br>'She will not help me.' | (3) Jag sa att hon inte hjälpte mig.<br>I said that she not helped me<br>'I said that she did not help me.' |
|--|---|

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Another restriction on OS is that in Mainland Scandinavian languages like Swedish, Norwegian and Danish, shifted order is not available with full noun phrases, i.e., shifted order is restricted to (some types of unfocused) pronominal objects:<sup>1</sup>

- (4) Hon hjälpte {\*studenten} inte {studenten}.  
she helped {\*the.student} not {the.student}  
'She did not help the student.'

In sum, shifted word order is only possible if V2 has occurred as well, and the object is an unfocused pronoun. We refer to the sentences with V2 and unfocused pronominal objects as *OS-context* in Mainland Scandinavian.

Another observed property of OS is that across different Scandinavian languages and dialects, there seem to be different 'degrees' of optionality of shifted word order, and as a consequence different probabilities of occurrence. For example, in standard Swedish an unfocused pronominal object in a clause with V2 may appear in a shifted or unshifted word order, as in (1-a)–(1-b) (Josefsson 2003, *contra* Josefsson 1992), without any difference in interpretation. By contrast, in an analogous sentence in standard Danish or Norwegian, there is a strong preference (or straight up obligatoriness) of shifted word order:

- (5) Hun hjalp {meg} ikke {\*meg}.  
she helped {meg} not {\*meg}  
'She did not help me.' (Norwegian)

To summarize, we take a successful account of OS to be able to address at minimum the following observed properties: (i) link to V2, (ii) type of object, and (iii) typological differences in optionality. There are many more properties of OS that have been observed throughout the decades of research on this topic. As we explore OS in greater detail in the following sections, we will discuss the observation that OS targets specifically prosodically weak pronominal objects. Scandinavian OS has therefore attracted a number of analyses that probe the relationship between prosody and its potential influence on word order. In this paper, we test the empirical predictions of two recent prosodic approaches to OS, demonstrating that apparent links to prosody and prosodic incorporation are either weaker than reported or entirely absent – problematizing the role of prosody in OS patterns. The paper is structured as follows. In §2 we summarize the recent proposals and highlight their respective predictions that we then test in §3. After presenting our results that challenge these prosodic proposals, in §4 we return to some of the classic observations regarding the role of objecthood in OS.

**2. Prosodic accounts of OS.** Scandinavian OS has received considerable attention in syntactic literature due to links to syntactic phenomena like V2 (Åfarli 1995; Fox & Pesetsky 2005; Bobaljik 2002; a.o.). In most of these analyses, shifted word order is a result of a syntactic movement of a pronominal object. However, it has been pointed out that OS fails the classic diagnostics for determining the type of a syntactic movement (e.g., Hosono 2013; §2.1). These analyses also fall short of accounting for dialectal differences and the optional vs. obligatory status of shifted word order. These gaps contributed to the exploration of alternative loci of ex-

<sup>1</sup> There are some pronominal objects that do not shift, e.g., pronouns with non-nominal antecedents (Bentzen & Anderssen 2019) and pronouns that are information-structurally and/or focially-accented (Holmberg 1999; Mikkelsen 2011). In this paper, we set both types aside.

planations for OS. In this article, we describe and test some of the empirical predictions made by two recent and distinct prosodic accounts of OS, one by Erteschik-Shir et al. (2020) and one by Hosono (2013). Both of these accounts posit apparent correlations between the distribution of OS and the distribution of a variety of prosodic properties. Specifically, Erteschik-Shir et al. (2020) argue that light pronominal objects in Mainland Scandinavian languages prototypically attach to the preceding verb or subject, which on the surface appears as shift. By contrast, Hosono (2013) claims that light pronominal objects can be positioned between stressed syllables, in order to facilitate downstep, ensuring broad focus interpretation of the sentence. Together, these accounts identify a number of possible mechanisms of prosodically motivated and/or at least modulated word order.

**2.1. PROSODIC INCORPORATION.** Erteschik-Shir & Josefsson (2017) and more recently Erteschik-Shir, Josefsson & Köhnlein (2020) propose a prosodic account of Mainland Scandinavian OS. They take as their starting point a well-observed property that Scandinavian pronouns (similarly to many other functional elements) are prosodically weak and stand in a close relation with an adjacent host (Kristoffersen 2000; Riad 2013; a.o.). This is typically realized via reduction and/or deletion of segmental material on the pronouns and incorporation into preceding tonal accent melodies (Myrberg & Riad 2015; §3.3.1). We refer to such a relation more generally as *prosodic incorporation*. In relation to this observation, Erteschik-Shir et al. claim that not all lexical items make good hosts for prosodic incorporation. Specifically, they argue that cross-linguistically sentential adverbs are by default poor hosts. Following Åfarli (1995), they obtain this special status of sentential adverbs by assuming that sentential adverbs are initially merged in a different syntactic plane than the rest of the clause (or at least a different plane than where the verb and the object are). Under this analysis, pronouns incorporate prosodically to whatever is available to their left. In general in OS-contexts, this turns out to be the verb or the subject since sentential adverbs are absent on this plane, as illustrated in (6). Even upon later linearization of the adverb, the prosodic incorporation of a constituent (host = pronoun) cannot be undone. The result of such a derivation is surface shifted word order.

- (6) {Läraren *hjälpte* <sup>inte</sup> mig}  $\Rightarrow$  (Läraren) (hjälpte=mig) (inte)  
 the.teacher helped <sup>not</sup> me  
 ‘The teacher didn’t help me.’

In sum, under this analysis, shifted word order is an automatic result of a derivation following default prosodic incorporation. Without any further interactions, the proposal so far would predict obligatory shifted word order in configurations such as (6), but not all Scandinavian varieties do this. The majority of Swedish dialects and a minority of Danish dialects display optional shifted word order – permitting both shifted and unshifted word orders: i.e., *Läraren hjälpte mig inte* (shifted word order, as in (1-a)) alongside *Läraren hjälpte inte mig* (unshifted word order, as in (1-b)). Here Erteschik-Shir et al. observe a correlation between microvariation in optional shifted word order and tonal prosody: roughly, unshifted word order (a non-default result) is in general only displayed in Scandinavian dialects with tone accent distinctions (e.g., standard Swedish), and shifted word order is obligatory in non-tonal varieties (e.g., standard Danish). In the rest of our discussion, we focus on the tonal varieties since (non-)incorporation is more clearly manifested there than in the non-tonal varieties.

There is considerable variation in the realization of the Scandinavian tones, but two accent

melodies with contrasting H and L tones are distinguished: for example, accent 1 *anden* ‘the duck’ vs. accent 2 *anden* ‘the spirit’ in Swedish (Riad 2013). In Scandinavian, these tonal accent melodies are not limited only to prosodic words but define an important larger prosodic constituent: what may be referred to as the Tonal Accent Phrase (Kristoffersen 2000). Crucially relevant for the prosodic incorporation of pronominal objects, the accent phrase groups accented and unaccented (i.e., prosodically weak) material. Specifically, accent phrases are built from left to right, defined at their left edge by a primary stressed syllable and spreading rightward until the next primary stressed syllable – extending the lexical word’s tonal melody over any following unaccented material. An example of accent phrasing in Swedish with the incorporated unaccented pronoun *mig* and preposition *med* is provided in (7) with underlined primary stressed syllables.<sup>2</sup>

- (7) (Läraren) (hjälpte mig) (inte med) (läxan).  
 the.teacher helped me not with the.homework  
 ‘The teacher didn’t help me with the homework.’ (shift)

As illustrated above, in tonal varieties weak pronominal objects are incorporated into tonal accent phrases. If OS is fundamentally motivated and limited by the prosodic incorporation of weak pronominal objects, then a relationship between OS and tonal accent phrasing is not entirely surprising. In canonical sentences with broad focus where Swedish displays optional shifted word order, the pronoun will be incorporated into an accent phrase regardless of its position and realized with that phrase’s accent melody, either of the verb as in (7) or of the negation as in (8).

- (8) (Läraren) (hjälpte) (inte mig med) (läxan).  
 the.teacher helped not me with the.homework  
 ‘The teacher didn’t help me with the homework.’ (non-shift)

In summary, Swedish permits optional shifted word order and pronominal objects can be prosodically incorporated into the tonal accent phrase in both shifted and unshifted positions. Erteschik-Shir et al. interpret these facts as evidence that tonality manifests a special prosodic level that allows for a timely linearization of adverbs such that they can serve as prosodic hosts for pronouns – permitting prosodic incorporation both in shifted and unshifted positions in standard Swedish but not in standard Danish. In other words, the proposal is that tonal prosodic systems provide essentially an additional mechanism for prosodic incorporation of weak prosodic elements like pronouns which non-tonal prosodies lack – permitting objects optionally to remain unshifted following adverbs as long as they are incorporated into the adverb’s accent phrase.<sup>3</sup>

In our study, we test these claims by modulating the position and strength of focal accent in Swedish sentences and demonstrate (i) how these can optionally leave unaccented pronominal objects non-incorporated, both in shifted and unshifted positions, and (ii) that shifted order nevertheless remains optional in these cases, contrary to the predictions of Erteschik-Shir et al..

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<sup>2</sup> Note also the misalignment between syntactic and prosodic constituency structures in (7). This fact is relevant for the discussion of the limits of the word order computation by prosody in §4.

<sup>3</sup> It is important to note that the relationship between tonal prosody and optional shifted word order is not required, however, as evidenced by Norwegian which features both tonal prosody but nevertheless typically shifted word order like Danish. In other words, following Erteschik-Shir et al., tonal prosody is a necessary but not sufficient property for non-obligatory shifted word order – a language without tonal distinctions (e.g., Danish) has obligatory shift and languages with tonal distinctions (e.g., Norwegian and Swedish) may have obligatory or optional shift.

We do not observe a necessary link between prosodic incorporation and OS.

**2.2. DOWNSTEP.** Hosono (2013) observes *downstep* in Scandinavian V2-sentences (i.e., OS-contexts) – a particular intonational pattern, where following a focally accented verb, each subsequent tonal H(igh) is smaller than the previous one, as in Figure 1.<sup>4</sup> Downstep is meant to be distinct from declination, the mechanical downward trend of tones over the course of an utterance.

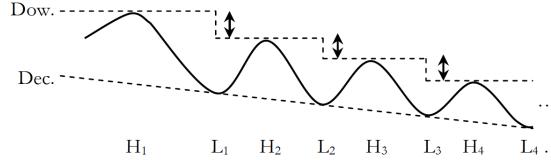


Figure 1. Downstep schema from Hosono 2013; p.45

Hosono also observes that no downstep occurs following the main verb in sentences without V2-movement (non-OS-contexts), and that downstep is in general more likely to occur in shifted than in unshifted sentences. Capitalizing on the proposal by Gussenhoven (2004) that downstep intonation is driven by a L(ow)-tone element intervening between two Hs, Hosono proposes that light pronouns in Scandinavian can provide such L-elements. Thus, when placed in the right configuration ( $H_{VERB}L_{PRONOUN}H_{NEGATION}$ ), Hosono claims that the pronoun triggers downstep between the adjacent Hs.<sup>5</sup> In other words, shift entails downstep. Furthermore, if the shift does not take place and the downstep is not observed, the sentence receives a special information-structural interpretation – loosely, a sentence cannot be used in an all-new information context like an answer to a question “What happened?”. Simply put, Hosono argues that the shift occurs to cause downstep to ensure an unmarked broad focus interpretation.<sup>6</sup>

Out of several theoretically-relevant predictions that this analysis makes, we focus here on one stemming from a stronger version of Hosono’s claim, namely that the lack of shift results in no downstep (mentioned on p. 54–56 with a key example in (70a)). We investigate whether this correlation holds true for elicited Swedish production data in the Nordic Word Order Database (Lundquist et al. 2019). Specifically, Hosono’s prediction is that the difference in tonal peaks (max F0) of  $H_{VERB}$  and  $H_{NEGATION}$  in the shifted configuration  $H_{VERB}L_{PRONOUN}H_{NEGATION}$  should be larger than in the unshifted configuration  $H_{VERB}H_{NEGATION}L_{PRONOUN}$  where downstep is predicted to be less likely. We show in §3.2 that there is no discernible correlation between downstep and OS.

<sup>4</sup>This part of Hosono’s analysis pertains to intonational patterns, i.e., a higher level representation than, e.g., word-level tone. Thus, description of intonation in terms of Hs and Ls applies equally to languages with word-level lexical tone like standard Swedish and Norwegian as well as languages without such tone like standard Danish. In the former group, the intonational H interacts in an intricate with the word-level H, but this issue can be set aside for the current question under discussion.

<sup>5</sup>Note that  $L_{PRONOUN}$  does not specifically refer to *object* pronoun, i.e., it could be a *subject* pronoun. Such a word order is possible in OS-contexts when something else than a subject occupies the first position in a clause (e.g., a temporal adverb). We return to this point in §4 where we discuss the role of objecthood in OS.

<sup>6</sup>Hosono (2013) also proposes an analysis of the obligatory vs. optional status of shifted word order across Scandinavian dialects that has to do with the typological difference in the number of peaks and gestural timing (see Table (168) in Hosono 2013; p.153). Testing this proposal rather than the downstep & shifted order would provide a more direct contrast with the proposal we highlight in §2.1. But it remains unclear whether typological asymmetries such as these are only accidental or have an explanatory role. We leave this investigation for future research.

### 3. (Re-)testing the predictions.

3.1. PROSODIC (NON-)INCORPORATION. As outlined in §2.1, Erteschik-Shir et al. (2020) claim that OS is motivated by the prosodic incorporation of prosodically weak pronominal objects, which preferably incorporate into preceding non-adverbial prosodic hosts. They argue that this process can remain flexible in certain Scandinavian dialects that have tone accent distinctions since their prosody provides more variants of prosodic incorporation which non-tonal varieties lack. Specifically, in tonal varieties with optional shifted word order like Swedish, weak pronouns can be incorporated into either preceding verbal, subject, or adverbs' tonal accent phrase – allowing for prosodic incorporation in both shifted and unshifted positions.

This depiction of tonal incorporation is however somewhat oversimplified. It is not the case that unaccented elements like light pronominal objects *always* get tonally incorporated. For example, focally accented phrases may or may not incorporate following unaccented material (Kristoffersen 2000; §10.3.5).<sup>7</sup> In brief, a focally accented phrase is realized with a special tonal contour, demarcated in Swedish by a final H-boundary tone (HFoc%). For example, in Central Swedish (Stockholm), an accent 2 verb like *hjälpte* ‘helped’ is realized with an H\*L melody when unfocused, but H\*L-HFoc% when focally accented. The final H-focal boundary tone of a focally accented phrase may be realized either only on the head of the phrase or on additional incorporated weak elements. That is, both prosodic structures in (9) are possible, where the non-incorporated weak element in (9-b) constitute accent phrase external syllables.

- (9) a. (host=weak element<sup>HFoc%</sup>) b. (host<sup>HFoc%</sup>) weak element

Practical examples of contrasting incorporated and non-incorporated shifted objects following a focally accented verb are provided in (10-a)–(10-b); parentheses demarcate accent phrase boundaries. The phonetic realization of incorporated vs. non-incorporated objects is outlined in greater detail in Figure 2. Each intonational utterance includes one focal accent (Kristoffersen 2000), and where the negation has focus, we also expect possible variable incorporation of weak unaccented material in unshifted positions (11-a)–(11-b).

- (10) Variation in tonal incorporation following focally accented verb

- a. Nej, han (**HJÄLPTE** dom<sup>HFoc%</sup>) (inte med) (läxan).
- b. Nej, han (**HJÄLPTE**<sup>HFoc%</sup>) dom (inte med) (läxan).  
No, he HELPED them not with the.homework  
'No, he didn't HELP them with the homework. (He only told them about it...)'

- (11) Variation in tonal incorporation following focally accented negation

- a. Nej, han (hjälpte) (**INTE** dom med<sup>HFoc%</sup>) (läxan).
- b. Nej, han (hjälpte) (**INTE**<sup>HFoc%</sup>) dom med (läxan).  
No, he helped NOT them with the.homework  
'No, he did NOT help them with the homework. (He would never do such a thing...)'

<sup>7</sup> A remark on our use of terminology and related assumptions: Myrberg & Riad (2015; p.117) note that in Swedish the mapping between information-structural focus and prosodic focus is many-to-many, i.e., there are IS-focused phrases that are not realized with prosodic focus (see also Mikkelsen 2011 for this scenario in Danish) and there are prosodically focused phrases that are not IS-focused. In our paper, we restrict our examples to the sentences where the two align, i.e., a focused or focally-accented phrase means a phrase is prosodically and IS-focused and unfocused means a phrase is neither prosodically nor IS-focused.

In prosodic configurations where tonal incorporation does not occur (10-b)–(11-b), Erteschik-Shir et al.’s proposals make two corresponding predictions with respect to acceptability of word order variants:

(12) Predictions of Erteschik-Shir et al. proposals

- a. Shifted word order should be unacceptable with non-incorporating focally accented verbs.
- b. Shifted word order should be obligatory with non-incorporating focally accented negation.

In other words, an unshifted and yet non-incorporated object like (11-b) should be illicit, since the object *dom* could have been incorporated into the preceding verb accent phrase if shifted. In the same way, shifted word order should be unacceptable in configurations like (10-b) since the object could have been incorporated into the negation accent phrase if left unshifted.

To test these predictions, we have recorded sentences whose contexts elicit corrective focus on either the verb (13) or negation (14). A native speaker of standard Swedish read out repetitions of sentences of the following types:

(13) Nej, jag KÄNDE henne inte, men jag visste vem hon var.

No I KNEW her not but I knew who she was  
‘I didn’t KNOW her (personally), but I knew who she was.’

(14) a. Nej, han hjälpte dom INTE med läxan.

No he helped them NOT with homework

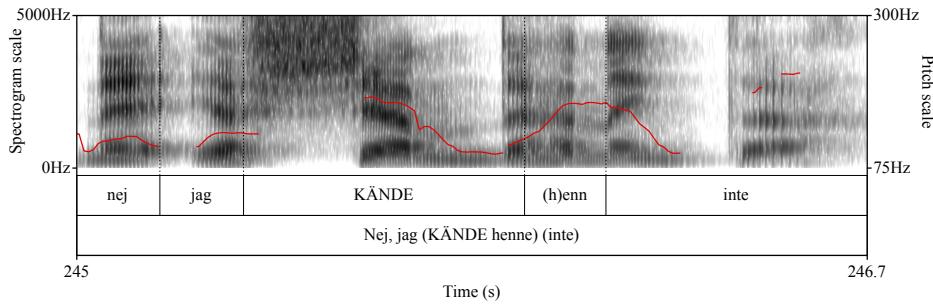
b. Nej, han hjälpte INTE dom med läxan.

No he helped NOT them with homework  
‘No, he did NOT help them with the homework.’

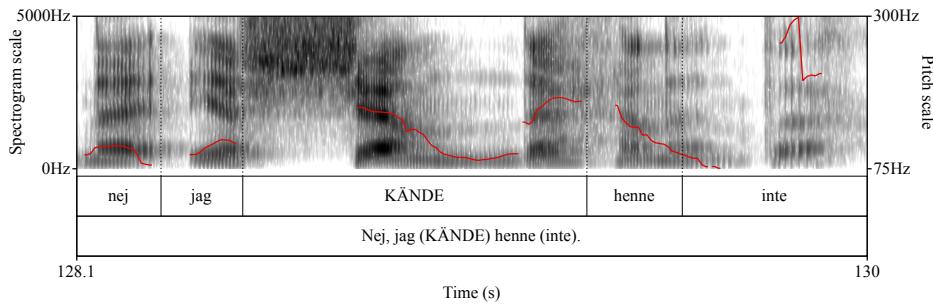
(as a correction to an utterance ‘He helped them with the homework yesterday.’)

Sentences like (13)–(14) elicit variation in the position and strength of focal accent (varying incorporation of following weak elements) in both shifted and unshifted word orders, allowing us to test the proposal that OS is driven and/or limited by prosodic incorporation. Summary examples of the produced sentences are provided in Figures 2–3. All word orders and prosodic configurations are judged as acceptable.

(Non-)incorporation of the pronominal object can be diagnosed by multiple metrics. In incorporated cases, the pronoun will be realized with the high focal boundary tone (HFoc%) of the focally accented phrase and may optionally display multiple forms of phonetic reduction depending on the shape of the object: e.g., *h*-deletion, *d*-continuuation ( $/d/ \rightarrow [r]$ ), shortening, etc. (Myrberg & Riad 2015; §3.3.1). This is illustrated by the incorporated object pronoun *henne* in Figure 2a which displays a late H-peak of the focally accented phrase ( $KÄN^H.DE^L.(h)enn^{HFoc\%}$ ) with corresponding *h*-deletion. In non-incorporated cases, the pronoun will be realised with a falling L-tone and lack other forms of phonetic reduction, as illustrated by the non-incorporated object *henne* in Figure 2b which features a falling L-tone, clear *h*-frication, and where the H-focal boundary tone peaks on the final syllable of the verb, leaving the object non-incorporated in any accent phrase: i.e., ( $KÄN^{HL}.DE^{HFoc\%}$ ) *henne<sup>L</sup>*. These examples confirm the optionality of incorporation of weak unaccented material following focally accented phrases. Crucially, sentence in 2b is predicted to be impossible by (12-a).



(a) Focally accented verb with incorporated shifted object



(b) Focally accented verb with non-incorporated shifted object

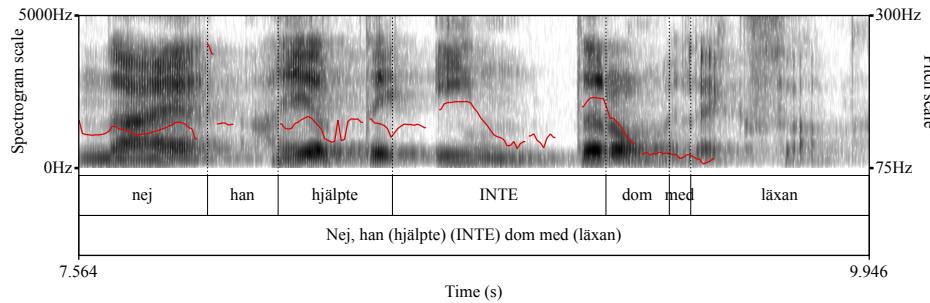
Figure 2. Varying incorporation of pronominal objects with verbal focal accent

A corresponding analogously non-incorporated object *dom* with focused negation is provided in Figure 3a. Here, like *henne* in Figure 2b, *dom* displays a falling L-tone (the default for unaccented material), lacks *d*-continuation or shortening, and the H-focus boundary tone peaks on the final syllable of the negation *inte*. This example is predicted to be unavailable according to (12-b). By contrast, Figure 3b demonstrates that shifted word order is possible despite focused negation, in which case the object pronoun *dom* does get incorporated into the preceding non-focused verbal accent phrase with corresponding spreading of the final L-tone of non-focused accent 2 H\*L melody of the verb and corresponding *d*-continuation plus shortening: i.e., (hjälpt<sup>H</sup>te=rom<sup>L</sup>).

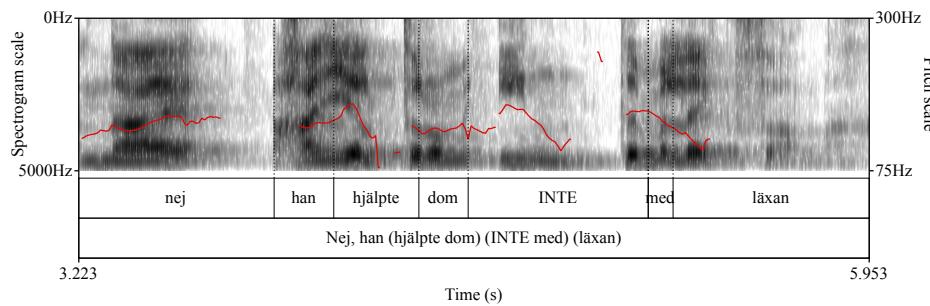
These results show that it is possible to strand a non-incorporated weak pronominal object in both shifted and unshifted positions, despite both prosodic and word order optionality which could otherwise ensure the incorporation of weak elements. This disconfirms Erteschik-Shir et al.'s hypothesis that prosodic incorporation drives and modulates OS. All possible combinations of shifted and unshifted word order and incorporation and non-incorporation of weak objects are licit, showing that there is no necessary link between prosodic incorporation and OS.

**3.2. DOWNSTEP IN SHIFTED VS. UNSHIFTED SENTENCES.** Hosono (2013) argues that shifting of the object applies in order to facilitate downstep, and that downstep is more likely with a shifted word order. We evaluate this prediction by examining the rate of downstep in OS-contexts.

The data we use to test the proposal come from the Nordic Word Order Database [[link](#)].



(a) Focally accented negation with non-incorporated unshifted object



(b) Focally accented negation with incorporated shifted object

Figure 3. Varying position and incorporation of pronominal objects with negation focal accent

The database consists of elicited sentences targeting variable word order across or within the North Germanic languages (Lundquist et al. 2019). The sentences are elicited by a participant reading a provided sentence (always without V2, a non-OS-context), as in (15-a) and (16-a), and then producing a transformation of that sentence based on a provided prompt (the beginning of a sentence) – e.g., *i går hjälpte* and *polisen arresterade* in (15-b) and (16-b), respectively. The provided beginning of the sentence was such that the participants needed to alter the word order based on the lexical items from the Read sentence. The structure of the Read sentences are designed such that participants are forced to choose between producing shifted or unshifted word order in the production condition, as illustrated in (15-b) and (16-b).

- (15) a. Hon kommer inte att hjälpa mig med läxorna.  
she will not INF help me with the.homeworks  
'She will not help me with the homework.' (Read sentence)
- b. **I** **går** **hjälpte** hon {mig} inte {mig} med läxorna.  
**yesterday helped** she {me} not {me} with the.homeworks  
'Yesterday she did not help me with the homework.' (Produced sentence)
- (16) a. De blev inte arresterade av polisen i går.  
they were not arrested by the.police yesterday  
'They were not arrested by the police yesterday.' (Read sentence)
- b. **Polisen** **arresterade** {dom} inte {dom} i går.  
**the.police arrested** {them} not {them} yesterday  
'The police did not arrest them yesterday.' (Produced sentence)

The sentences were transcribed and Force-Aligned (Young & McGarrah 2021) (currently only for Swedish and Norwegian).

In order to provide a measure of downstep in OS-contexts, we measured the maximal F0 (tonal Hs) of the verb and negation in Produced sentences, first in Oslo Norwegian and then in Stockholm Swedish. In Oslo Norwegian shift is more-or-less obligatory, thus we analyze only sentences with shifted word order. In Stockholm Swedish, we observe and analyze both shifted and unshifted order. We restricted our sample to verbs with accent 2, which according to Hosono (2013; p.41) manifest intonational behavior like downstep more clearly than verbs with accent 1. We followed the minimum threshold for downstep set by Hosono at 2 semitones, i.e., the difference between the first  $H_{VERB}$  and the second  $H_{NEGATION}$  must be at least 2st to be classified as downstep.

The data for Oslo Norwegian comes from 22 participants, each producing between 1–8 distinct sentences (median=4, any sentences for which F0 could not be measured for both the verb and the negation were removed from the analysis). The measures for the Oslo Norwegian shifted sentences are plotted in Figure 4. Sentences with verb~negation F0-ratios at or below the dotted reference line display downstep, those above do not. Overall, verb and negation max F0 are generally positively linearly correlated without any obvious relationship to downstep. We observe that 40 (43%) out of 92 sentences display the expected difference of at least 2 semitones. In contrast, in the remaining 52 (57%) sentences we do not observe downstep despite the shifted word order.

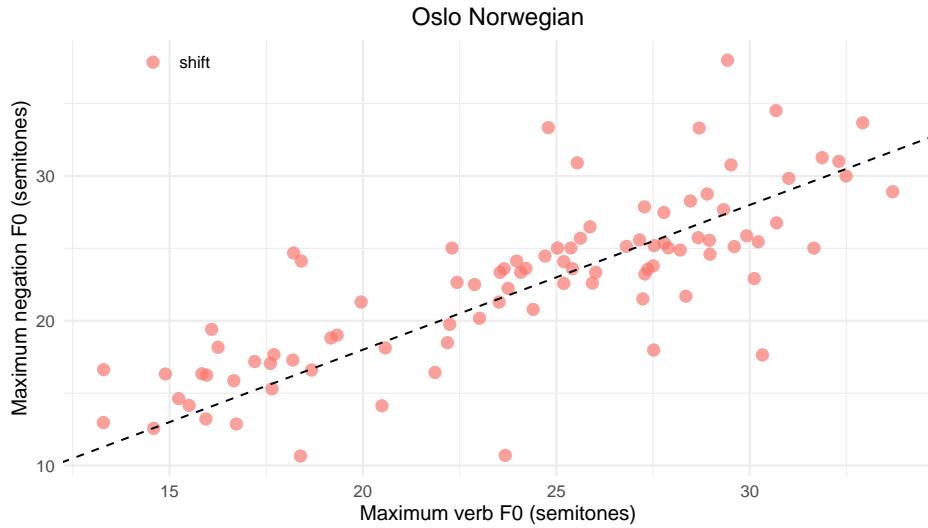


Figure 4. H peaks on verb and negation in shifted sentences in Oslo Norwegian (each dot represents a single sentence, and the dashed line marks the downstep threshold)

For Stockholm Swedish, the data come from 26 participants, each producing 2–10 distinct sentences (median=6). We contrasted the measures for shifted sentences with the parallel unshifted sentences, see Figure 5. Here we observe no clear difference between shifted and unshifted sentences. 45 (45%) out of 101 shift sentences display downstep, while among parallel unshifted sentences 20 out of 47 do so (43%).

In sum, we do not find corroborating results that shift entails downstep in sentences where shift occurs. In fact, the proportion of downstep sentences is the roughly same in shifted and

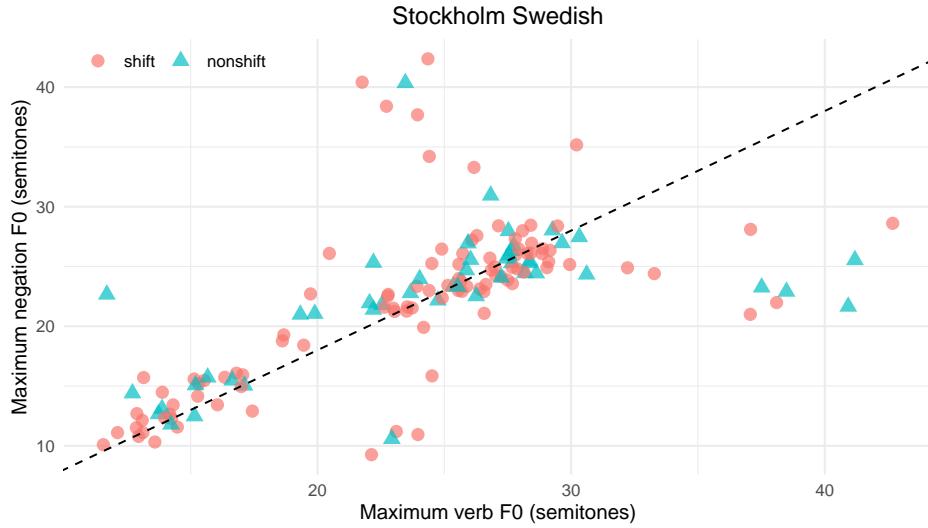


Figure 5. H peaks on verb and negation in shifted sentence (red circles) vs. unshifted (blue triangles) in Stockholm Swedish

unshifted sentences; shifted word order does not provide any reliable prediction of the distribution of downstep in our data. This result weakens the claim that downstep is solely a result of shift. If there are pathways for downstep other than shift, shift is not necessary for a information-structural neutral interpretation.

**4. The “O” part of “OS”.** In addition to the empirical shortcomings outlined in §3, prosodic approaches to OS miss certain robust syntactic generalizations. Both proposals we have reviewed by Hosono (2013) and Erteschik-Shir et al. (2020) posit that OS is primarily prosodically motivated and constrained. In other words, OS is a misnomer – the syntactic function (objecthood) of the shifted material is not relevant, only its phonological representation (e.g., prosodic weakness forcing prosodic incorporation). Below we discuss the data that previously had been taken to point to the relevance of objecthood.

Recall that Hosono’s proposal assumes that downstep is triggered by L-tone items intervening between two H-tones, as in the  $H_{VERB}L_{PRONOUN}H_{NEGATION}$  configuration, but L is not restricted to object pronouns. For example, OS-context sentences allow a word order where the L under consideration is a subject pronoun, as seen in (15-b), repeated below as (17):

- (17) I går hjälpte hon {mig} inte {mig} med läxorna.  
       yesterday helped she {me} not {me} with the.homework  
       ‘Yesterday she did not help me with the homework.’

This possible word order weakens the causal relation between downstep and shift, at least as a synchronic motivation. In other words, if  $H_{VERB}LH_{NEGATION}$  was a configuration derived in order to circumvent marked information structure, shift would be one possible way to obtain such a configuration, but by no means the only one. In fact, as we stated, there seem to be other possible ways to obtain such a configuration that Scandinavian languages exhibit independently of information structure, OS or downstep. These include subject staying low if there is something else occupying the first position in a sentence, and in a scenario where such a subject is

a pronoun, we arrive at  $H_{VERB}L_{SUBJECT}H_{NEGATION}$ .

In a parallel way, the Erteschik-Shir et al. (2020) proposal predicts that prosodically weak elements other than just pronominal objects should fall under the umbrella of what we refer to as an OS phenomenon. Svenonius (2005) has already challenged an earlier version of the same proposal in Erteschik-Shir (2005), pointing out that homophonous weak articles do not shift the same way that objects do. Consider the ambiguous example in (18) where *den* can be the object of a verb *så* or a determiner of a noun *oppgaven*:

- (18) Han så **den** løse oppgaven.  
he saw **it/the** solve/loose the.assignment  
'He saw it solve the assignment.' or 'He saw the loose assignment.' (Norwegian)

In the presence of a sentential adverb, the object *den* shifts (19), but the article does not (20):

- (19) Han så **den** aldri løse oppgaven.  
he saw **it** never solve the.assignment  
'He never saw it solve the assignment.' (Norwegian)
- (20) Han så aldri **den** løse oppgaven.  
he saw never **the** loose the.assignment  
'He never saw the loose assignment.' (Norwegian)

Ultimately, there might be a way to maintain the prosodic incorporation analysis by constraining the surface word order with some independent phenomenon like syntactic phases (Chomsky 2001). In a nutshell, the ultimate analysis of how word order driven by prosody works would hopefully address its interaction (or lack thereof) with phase theory. A satisfying revision of such an analysis could also shed light on some related facts that currently remain a puzzle for the prosodic incorporation analysis. For example, it is not clear why coordination of pronouns never shift (Holmberg & Platzack 1995; Thráinsson 2003) despite the linking element being prosodically weak:<sup>8</sup>

- (21) a. Hun så ikke meg og deg.  
she saw not me and you  
'She didn't see me and you.'  
b. \*Hun så meg og deg ikke.  
she saw me and you not  
*Intended:* 'She didn't see me and you.' (Norwegian)

At the same time, in a double object construction, either both or the first of the pronominal arguments can shift (Collins & Thráinsson 1996), showing that there is no constraint on how

<sup>8</sup> The coordination does not shift either in its entirety or as individual conjuncts. The latter option might be explained by invoking the Coordinate Structure Constraint (Ross 1967). However, if CSC is a syntactic constraint (especially if it really has to do with island constraints), it is not clear why CSC would restrict a true *post-syntactic* movement. See Bennett et al. (2016; p.183-184, ex. (29)) for a mirror scenario where a prosodically light element is argued to shift post-syntactically into a coordination. As for the second conjunct specifically, the unavailability of shifting falls under a version of Holmberg's generalization where nothing can shift over a phonologically overt material within a VP (be it a non-moved verb or perhaps a linking element like in (21)). While it is a well-established generalization, it is not an explanation. Depending on whether such an over element is prosodically weak or strong, and whether it is in the same plane as the pronouns or not, this version of a generalization may or may not be an issue for an analysis like (Erteschik-Shir et al. 2020). We leave this issue for future research.

many weak elements shift:

- (22) Jag gav henne den inte.  
I gave her it not.  
'I didn't give it to her.'

On the other hand, there are word order phenomena in Mainland Scandinavian languages that resemble OS in that the surface position of a pronoun appears in a different position than if it was a full DP, but such pronouns are not objects. Consider for example, expletive subject pronouns of a small clause:

- (23) Jeg hørte {det} ikke {det} regne.  
I heard {it} not {it} rain  
'I didn't hear it rain.'

(Danish, Erteschik-Shir 2005; p.62)

In fact, at least descriptively, OS resembles other phenomena of variable argument placement in Scandinavian (Lundquist 2020; Larsson & Lundquist To appear; Lundquist & Tengesdal To appear) like *subject shift* – a variable pre- or post-adverbial position of a subject (e.g., Bentzen 2014) and *long object shift* (e.g., Heinat 2007) – shift of a pronominal object all the way to a pre-subject position. Since the prosodic accounts of OS should not be restricted to objects, they may appear promising in accounting for other cases of variable argument placement. We hope that the current investigation will spark interest in research on this topic.

To summarize, both of the prosodic proposals we consider in this paper claim that object-hood is a red herring. Yet in the current formulation, they do not account for the data. Both proposals under- and overgenerate.

**5. Conclusions.** Scandinavian OS describes a word order pattern where an object appears either before or after a sentential adverb. The pattern displays varying properties and degrees of optionality across Scandinavian dialects, but their distribution and the factors that constrain them are not well understood. Given that the phenomenon in Mainland Scandinavian targets specifically prosodically weak pronominal objects, OS has recently attracted a variety of prosodic approaches. Here, we have explored two distinct proposals relating to the fundamental motivation for OS and factors which enable optionality of the shifted word order. First, Erteschik-Shir et al. (2020) hypothesize that prosodically weak pronominal objects must attach to a prosodic host and that tonal prosody provides more flexible incorporation of weak elements, enabling variable shift. In our paper we show that all possible combinations of shifted and unshifted word order and incorporation and non-incorporation of weak objects are licit, demonstrating that there is no necessary link between prosodic incorporation and OS. In the second prosodic analysis we tested, Hosono (2013) hypothesizes that unaccented pronominal objects (displaying by default an L-tone realization) are motivated to shift to produce some ideal prosodic configuration (e.g., breaking up potentially consecutive H-tones and thereby facilitating downstep which should help ensure a broad focus reading of the sentence). In our study, we do not find corroborating results that shift entails downstep in sentences where shift occurs. We conclude that the prosodic proposals we reviewed do not account for the patterning of OS.

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