Detailed description of the research program

1. Scientific Background

The phenomenon of Object Shift (OS) in general and Holmberg’s Generalization in particular have been intriguing to linguists working within the Minimalist Program since Holmberg 1986 in view of the restriction (in Scandinavian languages) of OS to structures that have undergone verb-movement. This type of restriction is problematic since there is no obvious way of linking the occurrence of one rule to the occurrence of another. The linkage of OS to verb-movement is illustrated in (1) and (2) (all examples are in Danish unless otherwise specified):

(1) Peter mødte ham ikke.
   Peter met him not
   Peter didn’t meet him.

(2) a. Peter har ikke mødt ham./*Peter har ikke ham mødt.
   Peter has not met him

   b. . . . at Peter ikke mødte ham./*…at Peter ham ikke mødte.
   that Peter not met him

In (1) both the verb and the object have moved. In the sentences in (2), neither the verb nor the object have moved. In (2)a, the presence of the auxiliary blocks verb-movement and (2)b illustrates the lack of verb movement in subordinate clauses. In spite of the challenge, the problem has engendered innovative syntactic analyses since its inception by Holmberg. More recent syntactic contributions include (e.g., Bobaljik 2002, Nilsen 2003, Fox and Pesetsky 2005, Åfarli 1997, 2010, Vogel 2006 and Vikner 2012 (optimality theoretical implementation)). (Bobaljik 2002 and Vogel 2006 offer an account involving the syntax-phonology interface). That Information Structure and interpretation impacts OS has also been recognized importantly by Holmberg himself (Holmberg 1999) and further implemented in Chomsky 2001. Information structure and interpretation also plays a role in many other accounts (e.g., Diesing and Jelinek 1995, Erteschik-Shir and Strahov 2004, the work of Josefsson (see references in the bibliography) Anderssen and Bentzen 2012). Most work on OS also takes into account the prosodic features of the phenomenon. Prominent among these are Hellan 1994, Erteschik-Shir 2005a, Erteschik-Shir 2005b, Hosono 2010a, and Josefsson, 2012.

Erteschik-Shir 2005a and b (funded by ISF grant 1012/03) argues that OS in mainland Scandinavian, in which OS is restricted to weak pronouns, follows from prosodic properties of the linearization of adverbs together with the requirement that weak pronouns must prosodically incorporate or cliticize into a legitimate host. This
predicts OS, but not, as noted in these papers, the linguistic variation with respect to OS between the Scandinavian languages and dialects, in particular the fact that OS is obligatory in Standard Danish but optional in Swedish and Norwegian allowing not only for OS as in (3)a, but also the non-shifted order in (3)b akin to the order with full DPs as in (3)c.

(3) a. Mannen såg den inte. (Swedish)
   man-the saw it not
   ‘The man didn’t see it.’

b. Mannen såg inte den.
   Man-the saw not it

c. Mannen såg inte Peter.
   Man-the saw not Peter.

Erteschik-Shir 2005b speculates, inspired by Hellan 2005 and based on the analysis of the pitch contour with which the sentence was pronounced, that the pitch contour on (3)b is associated with accent 2 in Swedish. Most dialects of Swedish and Norwegian distinguish two accents or tones, referred to as accent 1 and accent 2. These accents differentiate (two-syllable) word pairs in these languages and are particularly relevant in the formation of compounds. Wetterlin and Lahiri 2012, 280 categorize Scandinavian languages and dialects into three groups according to how tone is assigned to “compound-like” forms consisting of two prosodic words. In Central Swedish, for example, “all forms consisting of two prosodic words have exclusively Accent 2.” The idea that accent 2 identifies prosodic units can be found already in Haugen,1967. According to Haugen “tone serves to join successive elements more closely than would otherwise be the case” (198) and it helps the hearer identify the morphemic structure (201). Interestingly, he points out that “tone is added to a stressed monosyllabic verb form . . . in rapid speech with certain following adverbs, especially så (‘so’) and ikke (‘not’)” (198). In view of these observations, it is plausible that a correlation can be found between languages and dialects in which tone is available to integrate adverbs, and in which the order in (3)b can be pronounced. It is the aim of the proposed research to explore the existence of this correlation.

Danish grammarians have observed that in certain South Danish dialects OS is also not required as it is in standard Danish allowing also for the order parallel to the Swedish (3)b above. Basbøll 1986, Pedersen 1993 view OS as an application of the lightness rule (lethedsregelen) whereas the unshifted version follows the likeness rule (lighedsregelen) in that the word order matches that of full DP objects, as in (3)c. Optional OS is attested in the dialects spoken on the island of Ærø (a small island
with less than 6000 inhabitants located to the east of Fyn). Danish dialect researchers (e.g., Køster 1980, Kroman 1947, Ejskjær 1993, 2005) describe a number of dialects in Southern Denmark as having 2 distinct pitch accents. These dialects occur south of the so-called *stød line* (isogloss), below which the characteristic Danish glottal stop is not found. (Whether the tonal system existed in all mainland Scandinavian dialects and then disappeared in most of Denmark (with *stød* replacing accent 1) or whether the tonal distinctions were imported into parts of Southern Denmark due to Swedish settlement (possibly during the time of the Vikings is a matter of great disagreement, a matter not to be probed in the current research). Surprisingly, the connection between the existence of tone and the optionality of OS has not, to my knowledge, been explored before. (Pedersen 1993 considers various morphological and phonological correlations between the availability of optional OS, but does not consider the tonal correlation.)

2. Research Objectives and expected significance

One of the central issues in linguistic theory is the question of how human language differs from that of animal communication. One hypothesis currently under discussion is that human language abilities are divided into narrow and broad language faculties. The narrow language faculty (the computational system) consists of grammar and syntax and in particular recursion. It is the only uniquely human component of the faculty of language. The broad language faculty involves externalization and includes perceptual and cognitive abilities (the sensory-motor system, a conceptual-intentional system) that are not specific to language and are shared with non-human animals (Hauser, Chomsky and Fitch 2002). Current linguistic research, inspired by these distinctions, is reexamining the division of labor between syntax and the interfaces and in the face of the immense linguistic variability is also questioning the role of parameters in explaining language variation. According to Berwick and Chomsky 2011, among others, displacement is constrained by the computational system (merge) and the PF externalization system (phonology and morphology) is responsible for at least microvariation.

The central aim of the proposed project is to demonstrate that the optionality of object shift in Scandinavian languages is driven by the occurrence of tone distinctions in those dialects which allow it. This is significant in that it shows that PF is responsible for microvariation in word order. If this is the case, the claim that word order is determined by the computational system is put into question.
We conclude that what drives the variation in word order is the microparametric prosodic properties of each dialect. Our conclusion supports the view that OS is a prosodically driven process and therefore also provides evidence against syntactic accounts of OS which cannot account for the covariation of prosodic properties and the optionality of OS presented here.

Side benefits of the research lie in procuring new data in the languages and dialects investigated in order to map out their prosodic properties as well as the constraints on the optionality of object shift. In the case of Ærø Danish, this may be the last chance to collect the data because the dialect is dying out quickly. Another important aspect of the research lies in the investigation of the prosody of these compound-like forms, their prosodic definition as well as reaching a better understanding of their morpho-syntactic composition.

3. Detailed description of the proposed research

The basic premise is that weak pronouns must form a prosodic unit with a legitimate host. In the shifted word order the pronoun is prosodically incorporated or cliticized into a verbal or nominal host as shown in the Danish (4)a and b, respectively.

(4) a. Jeg mødte+ham ikke
    I met him not

b. Hvorfor mødte Peter+ham ikke
    why met Peter him not

'Why didn’t Peter meet him.'

As argued in Erteschik-Shir 2005, Scandinavian adverbs do not provide proper hosts for such incorporation, ruling out the Danish unshifted (5).

(5) *Jeg mødte ikke ham.
    I met not him

The fact that the parallel Swedish, Norwegian and South Danish (Ærø) versions of (5) are well-formed cannot be explained by simply stipulating that in these languages or dialects, the adverb does provide a host. This requires an explanation. What is proposed here is that the prosodic incorporation of a pronoun into an element which does not provide a legitimate host such as an adverb requires a different mechanism to license incorporation. According to Selkirk 1996, weak object pronouns are affixal clitics which do not themselves have the status of prosodic words. The prosodic unit formed by incorporation of a weak object pronoun into the verb as in (4)a would form a new prosodic word as shown in (6)a ($\omega =$ prosodic word), but this would be impossible in the case of (5) as shown in (6)b since adverbs do not host clitics.
The proposal here is that what allows (6)b is the occurrence of a tonal accent that allows the formation of one prosodic ‘tone’ unit (TU), Hellan 2005; Riad 2008. The hypothesis pursued here is that this prosodic unit is formed in the same way as compounds. Since Swedish compounds have accent 2 (with a few exceptions), it is predicted that that the adverb(s)+pronoun(s) sequence is also pronounced with accent 2. Vigário 2010 argues that compounds have the same structure as cliticized words and also argues for a prosodic domain between the prosodic word and the phonological phrase – the Prosodic Word Group (PWG) --which groups compound-like expressions but does not play a role in the prosodic organization of clitics. (See also Vogel 2009 for the notion Composite Group (CG) which has similar properties). It is therefore worth pursuing whether the accented adverb+pronoun sequence forms a PWG, whereas the incorporated pronoun and its host does not. The different properties associated with these different units may afford an explanation for the linguistic variation at the crux of this proposal. One property of PWGs mentioned by Vigário (521) is that they need not be isomorphic to morphosyntactic constituents and may be subject to size restrictions (possibly contra the Match Theory of Selkirk 2011 and its recursive properties). As a result elements under one syntactic head may be separated into several PWGs whereas elements under two syntactic heads may form a single PWG. This would allow for the adverb+pronoun unit to form a PWG even though it does not form a syntactic constituent, yet it would also allow for a PWG formed from V+adverb+pronoun, for example. From initial observations, it seems that what is included in the prosodic unit to which accent 2 is assigned depends on the length of the units involved: a short adverb may inquire the inclusion of the verb in the tone unit, a long one may not. One of the research questions posed here is whether the prosodic properties of the accents correlate with the size of the elements included in the unit thus formed and whether this unit should be identified with the PWG defined by Vigário or not.

In (Central) Swedish Accent 2 shows up in polysyllabic forms, where the primary stressed syllable is followed by another syllable. Monosyllables or final stressed words do not get Accent 2 (e.g., Riad 2009 among many others) and compounds are normally pronounced with Accent 2. The prediction for Swedish is therefore, under the assumption that the adverb+pronoun is compound-like, that accent 2 will correlate with this word order. The way the Accents are pronounced across the various Swedish dialects differs (see Riad 2006 for the typology). Care
must therefore be taken to compare the accentuation of compounds to the accentuation of the adverb+pronoun sequences separately within each dialect.

The picture in Norwegian is more complex since compounds may have either accent 1 or Accent 2. Wetterlin and Lahiri 2012 (298) derive this distribution from the lexical marking of the first constituent of the compound: “if the first constituent is lexically specified for Accent 1, the entire compound will have Accent 1. If lexical specification for accent is lacking, the compound will have default Accent 2.” (Their proposal is part of a much discussed issue concerning which of the two accents is basic. Riad 2008, 2009, for example, argues for a different approach. The current proposal will not impact this issue.) The prediction for Norwegian is therefore correspondingly more complex in that the sequence of adverb(s)+pronoun(s) may have either accent 1 or accent 2 depending on the accentual properties of the first element.

Ærø Danish instantiates a dialect with both tonal distinctions and optional object shift and therefore provides a strong case in favor of the current project. Tonal distinctions are limited to certain south Danish dialects which vary greatly in the way the tones are instantiated. Even on Ærø there are at least three different varieties are spoken. According to Kroman 1947 (71-72) the following properties are to be found in the Marstal dialect of Ærø: Accent 1 rises until the stressed syllable and then descends, whereas Accent 2 has an initial descending tone followed by a rise at the end of the word. The descending tone is more pronounced in Accent 1 and the rising tone is more pronounced in Accent 2. (See also Køster’s comments on dialect.dk for similar observations). Monosyllabic words have Accent 1 and polysyllabic words have accent 2. However, currently monosyllabic words may have accent 2 if they are derived from originally polysyllabic ones. Kroman interestingly observes that when a weak unstressed word is preceded by a stressed word, it will have the same tone as the preceding word independently of its inherent tone. Kroman also notes that many compounds with an initial one syllable word (inherently Accent 1) in fact have Accent 2 (143) whereas compounds have Accent 1 if the first constituent ends in a vowel. Here he also states that the accent on compounds depends on the accent on the first constituent (145) (on a par with Norwegian) and speculates that exceptions are likely in cases where the original form of the first constituent has undergone change. The prediction concerning the particular tone to be found on the sequence of adverb(s)+pronoun(s) is therefore not simple and involves, to a large extent, unchartered territory. Initial observations (see description of the pilot experiment below) look promising with the adverb+pronoun sequence exhibiting accent 2.
The initial stage of the project involves Swedish and Ærø Danish for which pilot experiments have been performed with promising preliminary results. The next stage will be to see if Norwegian patterns the same way. The details of the prosodic instantiation of tone in Adverb+pronoun sequences, may turn out to differ across these languages and dialects, still the correlation between languages in which tonal distinctions are to be found and the optionality of object shift remains firm and is theoretically significant in and of itself. In addition, the tonal instantiations that remain to be discovered will shed light on the way tone allows the pronunciation of these compound-like sequences to be pronounced as one prosodic unit.

**Experimental design & methods**
The proposed research will be based on experimental reading studies as well as data collected from corpora which include sound files (The Nordic dialect corpus, dialect.dk). The reading studies will include sentences with and without object shift and they will vary according to number and type of adverbs (length, tone), type of verbs (length, tone) as well as number and type of objects (full DP, pronoun, number of syllables, personal/sentence pronoun). In addition there will be sentences including compounds of various types, with an attempt to find compounds which match the properties of the Verb+adverb+pronoun sequences as well as sentences preceded by questions so that information structure is also taken into account. Since the sentences containing compounds do not involve object shift there is no need for further distractors. The data for the reading studies is randomized and will be prepared according to the preliminary results from the pilot studies performed which indicated that all these variations should be controlled for. The participants in the study are instructed to familiarize themselves with the data items and to pronounce them as naturally as possible. The data is analyzed using PRAAT with a pitch-tone setting for semitones (which subtracts mean pressure) and controlling for pitch ranges of male (75Hz-300Hz) and female voices (100Hz-500Hz). The resulting pitch curves are then analyzed (using the TOBI annotation system) to see if they correlate with the pitch curves of the parallel compounds.

The research will be done in a number of stages. First data will be collected from speakers of central Swedish (controlling for the instantiation of the two accents) and speakers of the Ærø dialect. These data will be fully analyzed and depending on the results and the new research questions that present themselves, the research will be extended to Norwegian.

**Preliminary results (Pilot)**
The pilot study included reading tasks of sentences with and without object shift, compounds and distractors. Some of the sentences were given in context. The task
was administered to 4 speakers of Swedish (3 from Southern Sweden: Kalmar, East and West Gotaland, 1 from northern Sweden (Sandviken) and 3 speakers of Ærø Danish (aged 65 and above). Here only a small sample of the results is presented. None of the data analyzed so far contradicts these findings, however many details clearly remain to be investigated.

The figures 1-3 describe the utterances by the northern Swedish speaker. In figure 1, the verb+adverb+pronoun sequence is pronounced H* L H characteristic of Accent 2 (e.g., Myrberg 2010 for central Swedish). Figure 2 shows that the same pattern with a clearly 2-syllable adverb. The sentences were both embedded in the context:

(7) Jag tror faktiskt inte att den är där.
    I think in fact not that it is there
    1. (För) jag såg inte den.
    for I saw not it
    2. (För) jag såg aldrig den.
    for I saw never it

The information structure of both sentences is therefore as given in (8) (illustrated with 1). (For the theory of information structure employed see Erteschik-Shir 1997, 2007.)

(8) Jagtop [såg inte den]top

Here the VP is focused and since the object is also a topic (in view of the context), the pitch accent is instantiated on the verb. Figure 3 shows the correlation with Accent 2 on a compound in this dialect.

Figures 4-6 illustrate findings in the Ærø dialect of Danish. According to Køster’s comments on the dialect on dialect.dk, Accent 1 in this dialect is pronounced with a falling accent whereas accent 2 is pronounced with a rising accent. Kroman 1947, 71 specifies this in more detail: Accent 1 rises until the top of the stressed syllable and then drops; Accent 2 is reversed, it first drops and then rises with the rising tone more pronounced. Figures 4 and 5 in which the pronoun follows the adverb clearly instantiate accent 2 with a rise until the stressed syllable of the verb and a following drop. The compound in 6 is stressed on the first syllable and therefore only displays a rise.

One interesting observation should be mentioned here: All three informants reversed most of the test sentences with OS and rendered them with the object following the adverb. This was consistently the case with the adverb not (’ikke’ in standard Danish, ‘it’ in the Ærø dialect) but not with the adverb ‘aldrig’ (never).
seems that the number of syllables in the adverb is at stake here and this will be controlled for in the proposed experiments.

Conditions, staff
Data collection for this project involves field work for which we require a high quality recorder and laptop computer. To help with the prosodic analysis research assistants will be employed at BGU. The work on Swedish will be partially performed at Lund University by the cooperating researcher. The primary investigator has already spent the months of May and June 2012 on a sabbatical in Scandinavia. During this time the premises of the research project were defined and the pilot experiment was set up in cooperation with Gunlög Josefsson and the initial data in Swedish and Ærø Danish was collected. Another sabbatical is planned for May and June 2013 to continue the research with further visits to be made according to the requirements of the research.

The Primary investigator is a native speaker of Danish and the cooperating investigator is a native speaker of Swedish enabling the production and collection of data in the relevant languages and dialects.

Expected results
Once the data has been collected and analyzed and predicted correlation refined and verified, the more theoretical questions will be explored. Given its exploratory nature, the proposal opens up perspectives, creates new problems, and is particularly challenging in its architectural repercussions. Here lies its main significance. At this stage it is likely that the following venues of research will lead to valuable results:

1. An examination of dialects with no object shift. It has been claimed that Finland-Swedish and the Danish dialect spoken on Falster belong to his category. Broekhuis 2008, 160 cites Christensen 2005, 153 for this fact. (The information on Finland-Swedish in turn stems from Bergroth.) These dialects also do not have tonal distinctions. There are two research questions that present themselves – what enables the requirement for object shift to be relaxed, that is how is the pronoun pronounced following the adverb in the absence of tone. (In fact, several instances of object shift, and no instances of pronouns following adverbs have been found on dialekt.dk among the Falster dialect data. Whether Finland-Swedish also allows OS should also be checked.)

Övdalian, a Swedish dialect spoken in the north western part of Dalecarlia, also does not instantiate object shift according to Levander 1909 but does exhibit tonal distinctions. Hosono 2010b offers a prosodic account different from the one proposed here suggesting that the verb is focus-accented and it is H peak on the verb that allows for the following weak elements consisting of the adverb and the
pronoun. Interestingly, she also cites Garbacz 2009 for the fact that object shift does occur in this dialect when the object is focused. This is exactly the reverse of what is found in all Scandinavian dialects and is therefore highly intriguing.

2. An examination of the prosodic (and information structural) properties of Icelandic and Faroese in order to explain the puzzling distinction between the two quite similar Scandinavian languages: Icelandic allows object shift of full DP topics, Faroese does not. (For an initial attempt at a prosodic account see Erteschik-Shir 2005a. For arguments against this account see Thráinsson 2012 who also shows that object shift is not prevalent in Icelandic both historically and synchronically and in fact can be found in certain cases in Faroese.)

3. The interaction with information structure: Anderssen and Bentzen 2012, Bentzen and Anderssen 2012 refine the notion that OS applies to topics and argue that the reason pronouns that refer to (non-individuated) clausal, VP or type DP pronouns don’t shift because they are aboutness topics and that only familiar-topic pronouns shift. This distinction is pertinent in view of the claim in Erteschik-Shir, Ibnbari and Taube 2012 (following Sigurðsson 2011) that missing objects are also restricted to familiar topics. (see also Andréasson 2009, 2012 for similar data including Danish examples without OS.)

4. Acquisition: It has been observed by Pedersen 1993 (note 14, 216) who also cites Hansen 1976 for this observation (see also Basbøll 1986, 173) that drunk people rarely perform OS of weak pronouns and that children at an early stage of acquiring Danish also do not perform OS. The early preference for the non-shifted order has been attested by Josefsson 1996 and also analyzed in Anderssen, Bentzen and Rodina 2011, and Anderssen, Bentzen, Rodina and Westergaard 2010. A study correlating such data with the acquisition of prosody as well as the actual prosody pronounced at early stages would be of great significance to a better understanding of the role of prosody in acquisition as well as the role of prosody in determining word order, the main topic of this proposal.
Figures: 1-3 Swedish

Figure 1:

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Figures 4-6: Ærø Danish
I know not it
dog house

Pitch (semitones re 100 Hz)
Time (s)
0 0.7077
0
5

Pitch (semitones re 100 Hz)
Time (s)
0 0.7194
0
6
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