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Preface

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Christer Platzack
editor

Wh-phrases and NEG-phrases in clauses and nominals[*]

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Abstract. *Wh*-phrases and NEG-phrases are usually assumed to carry features –
[+*wh*] and [+NEG], respectively –, which need to be licensed in Spec-head
configuration (*wh*-Criterion, NEG-Criterion; cf. Rizzi 1996, Haegeman & Zanuttini
1991, Haegeman 1995). Danish, German, English and French contrast in the
distribution of simple *wh*-phrases and NEG-phrases and DPs that contain
possessive *wh*-phrases and NEG-phrases. These asymmetries will be accounted for
by differences in licensing of [*wh*] and [NEG] (overt vs. covert movement) as well
as by differences in the possibilities for feature percolation.

1 Introduction

The distribution of *wh*-phrases and NEG-phrases varies cross-linguistically. For
instance, while a *wh*-object must occur in SpecCP in the Germanic languages
Danish, German and English, it may occur in the canonical object position in
French. In contrast, a NEG-object occurs in SpecNegP in Danish and German
whereas it occurs *in situ* in English and French. It will be shown that these
cross-linguistic differences can be accounted for by differences in licensing.
Wh-phrases and NEG-phrases are usually assumed to carry features ([*wh*] and
[NEG], respectively) that need to be licensed in Spec-head configuration with a
corresponding head, C° and Neg°, respectively (see *wh*-Criterion, Rizzi 1996:
64; NEG-Criterion, Haegeman & Zanuttini 1991: 244, Haegeman 1995: 106;
locality condition on feature checking, Chomsky 1995: 297). Languages
contrast as to whether licensing of [*wh*] and [NEG] is carried out overtly or
covertly, predicting the *wh*-phrases and NEG-phrases to appear in SpecCP and
SpecNegP or to remain *in situ*.

Moreover, not only the position of *wh*- and NEG-phrases within the clause
but also their position within DP would seem to be crucial for licensing. DP-
internal *wh*- and NEG-phrases are subject to the same licensing requirements as
simple *wh*- and NEG-phrases. This means, if a simple *wh*- or NEG-phrase requires
overt licensing in a given language, a complex DP with embedded *wh*- or NEG-
phrase is also expected to undergo overt movement to or through the respective

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specifier position, but it may stay *in situ* if covert licensing is possible. Nevertheless, complex DPs that contain a possessive *wh-* or NEG-phrase can have a different distribution from simple *wh-* and NEG-phrases and their distribution can vary depending on whether the DP-internal *wh-* and NEG-phrase occurs in pre-nominal position or post-nominal position. It will be argued that these asymmetries are due to the fact that licensing of [*wh*] or [NEG] might not be carried out in certain cases. For licensing in Spec-head configuration to be possible the phrase in specifier position must carry the relevant feature itself. In case of covert licensing, the DP-internal *wh-* or NEG-phrase can be extracted and moved covertly to SpecCP or SpecNegP on its own. However, licensing of [*wh*] or [NEG] by overt movement of the entire DP can only be carried out if the entire DP is marked for [*wh*] or [NEG] by feature percolation. While feature percolation is generally possible from pre-nominal (specifier) position (see Webelhuth 1992 and Horvath 2005), there is cross-linguistic variation in feature percolation from post-nominal position. More precisely, it will be shown that English and German contrast with Danish and French in that feature percolation from post-nominal position would seem to be permitted in the former languages but not in the latter ones, giving rise to subject-object asymmetries concerning DPs with a post-nominal *wh-* and NEG-phrase in French as well as asymmetries between DPs with pre-nominal *wh-* or NEG-phrases and ones with post-nominal *wh-* or NEG-phrases in Danish.

Section 2 presents the distribution of simple *wh-* and NEG-phrases in Danish, German, English and French and shows how the cross-linguistic variation can be accounted for by the contrast between overt and covert licensing.

Section 3 focuses on complex DPs with pre- and post-nominal possessive *wh-* and NEG-phrases, their licensing and feature percolation possibilities.

Section 4 briefly speculates on the sources for the observed cross-linguistic contrasts in feature percolation from post-nominal position, taking into consideration differences in the structural positions from which feature percolation may be induced and differences in the structural position of post-nominal phrases. However, the Appendix will call the latter option into question on the basis of interpretative data regarding complex DPs with quantified possessors in pre- and post-nominal position.

Section 5 summarizes the results.

2 Simple *wh*-phrases and NEG-phrases

2.1 *Wh*-movement

In Danish, German and English, a *wh*-object normally undergoes overt *wh*-movement. It occurs in clause-initial position, SpecCP.

(1) Da a. *Du   har   mødt **hvem**?
          b. **Hvem** har du   mødt t_{wh}?
             who   have you   met
             'Who have you met?'

(2) Ge a. *Du   hast   **wen** getroffen?
          b. **Wen** hast du t_{wh} getroffen?
             who have you   met
             'Who have you met?'

(3) En a. *You   have   met   **who**?
          b. **Who**   have you met t_{wh}?

However, there are two contexts, in which a *wh*-phrase may stay *in situ*: echo-questions, (4), and multiple questions, (5).

(4) En A: John ate ●⃰☒☠❄☺.
           B: John ate **WHAT**?

(5) En   **What** did you give **to whom**?

According to Reis (1991, 1992), echo-questions are not interrogative clauses but are only questions from a pragmatic perspective. The *wh*-phrase does not have a *wh*-feature, and consequently, it is not subject to the conditions on [*wh*]-licensing (see section 2.3 below). In multiple *wh*-questions, absorption takes place. The *in situ wh*-phrase is absorbed into the one in SpecCP such that it need not undergo *wh*-movement itself to licence its *wh*-feature (see Higginbotham & May 1981, May 1985).

   In contrast to the Germanic languages, overt *wh*-movement is optional in French. A *wh*-object may stay *in situ* or occur in clause-initial position.[1]

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[1] However, Bošković (1997) and Cheng & Rooryck (2000) claim that *wh-in situ* is restricted to main clauses in French; but see also Pollock (1998). A *wh*-phrase cannot occur *in situ* in an embedded clause; it must undergo movement to the clause-initial position, either of the embedded clause or of the main clause. (See also Chang 1997 and Mathieu 2004 on other contexts in which *wh*-movement is obligatory.)

(6) Fr a. Tu as   rencontré **qui**?
      b. **Qui** as-tu   rencontré t_{wh}?
         who have-you met
         'Who have you met?'

Similar to *wh*-objects, *wh*-subjects move to SpecCP overtly in the V2-languages Danish and German.[2]

(7) Da a. *I dag   er **hvem** kommet?
      b. **Hvem** er t_{wh} kommet i dag?
         who   is   come   today
         'Who has come today?'

(8) Ge a. *Heute   ist **wer**   gekommen?
      b. **Wer**   ist t_{wh} heute gekommen?
         who   is   today come
         'Who has come today?'

In English and French, *wh*-subjects also occur in clause-initial position.

(9) En   **Who** came today?

(10) Fr   **Qui** est arrivé   aujourd'hui?
         who is   arrived today
         'Who has arrived today?'

(i) Fr a. *Pierre   a   demandé   tu   as   vu **qui**.
      b. Pierre   a   demandé **qui**   tu   as   vu t_{wh}.
         Pierre   has asked   who   you have   seen
         'Pierre has asked who you have seen.'   (Bošković 1997: 46)

(ii) Fr a. *Jean et Pierre   croient   que   Marie a   vu   **qui**?
      b. **Qui** Jean et Pierre   croient-ils que   Marie a   vu?
         who   Jean and Pierre   think-they that   Marie has seen
         'Who do Jean and Pierre think that Marie has seen?'   (Bošković 1997: 48)

[2] Again, in echo-questions a *wh*-subject may occur in the canonical subject position, SpecIP.

(i) Da a. I dag   er HVEM kommet?
    Ge b. Heute ist WER   gekommen?
         today is who   come
         'Who has come today?'

But as these languages are not V2-languages, it cannot be inferred from surface order which structural position the *wh*-subject occupies, SpecCP or SpecIP. However, French displays a subject-object asymmetry as to clause-initial DPs that contain a possessive *wh*-phrase. As discussed in section 3.1, this points to the conclusion that just as a *wh*-object, a *wh*-subject must be able not to move to SpecCP overtly. It is not crucial here whether *wh*-subjects in English are taken to occur in SpecIP or SpecCP.[3]

2.2 NEG-shift

Under a sentential negation reading, a NEG-object cannot occur in its base position to the right of a non-finite verb in Danish (see the contrast between (11)a and (11)b below), but it must undergo negative shift, henceforth NEG-shift, which places the negative phrase in the specifier position of NegP, (11)c; see K. K. Christensen (1986, 1987), Rögnvaldsson (1987), Jónsson (1996), Svenonius (2000, 2002), K. R. Christensen (2005), and Engels (2009a, 2012).

(11) Da a. Han har   [NegP **ikke**   [VP sagt **noget**]]
      he   *has*   *not*   *said*   *anything*
      'He hasn't said anything.'
    b. *Han har   [NegP   [VP sagt **ingenting**]]
    c. Han har   [NegP **ingenting** [VP sagt t_{NEG}]]
      he   *has*   *nothing*   *said*
      'He has said nothing.'

Similar to *wh*-phrases in echo-questions, (4), negative phrases may stay *in situ* if they do not take sentential scope: *In situ* occurrence of a negative object is possible under a narrow scope reading (see Svenonius 2002).

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[3] The lack of *do*-support in subject *wh*-questions gave rise to the hypothesis that subject *wh*-phrases occur in SpecIP rather than in SpecCP in English (e.g. Chomsky 1986 and Grimshaw 1997; but see also Bobaljik 1995, Lasnik 1995 and Pesetsky & Torrego 2001). However, under the assumption that [*wh*] has to be licensed in Spec-head relation within CP overtly in English (section 2.3 below), subject *wh*-phrases are expected to occur in SpecCP. Empirical support for the SpecCP analysis of *wh*-subjects comes from *wh*-island effects and intensifiers like *the hell/on earth* (Pesetsky 1987; see also Rizzi 1996, 1997, Radford 2004, den Dikken 2006).

(12) Da a. Jeg har   [VP fået   **ingen point**]
           I   have   received no points
           'I scored zero points.'
        b. Jeg har   [NegP **ingen point** [VP fået   t_NEG]]
           I   have   no points   received
           'I haven't got any points yet/I haven't been judged yet.'

(K. R. Christensen 2005: 83)

In addition, Svenonius (2002) claims that similar to multiple questions, (5), a negative object can stay *in situ* in double negation constructions in Norwegian. Thus, a NEG-object can apparently be licensed *in situ* by another VP-external NEG-phrase (giving rise to a double negation reading).

(13) No a. ***Studentene**   kunne [VP svare   på **ingen oppgaver**]
            students-the   could   answer   on no assignments
            'The students couldn't answer any assignment.'
        b. **Ingen studenter** kunne [VP svare   på **ingen oppgaver**]
            no students   could   answer   on no assignments
            'No student wasn't able to answer any assignment.'
            (= 'Every student could answer some assignment.')

(Svenonius 2002: 142)

Though this is not obvious from surface order due to OV-order, NEG-shift is considered to take place overtly in German, too.

(14) Ge   Er   hat [NegP **nichts** [VP t_NEG gesagt]]
           he   has   nothing   said
           'He hasn't said anything.'

Haegeman (1995) presents data that support this hypothesis. Under a sentential negation reading the negative complement of an adjective must occur to the left of the adjective, (15), while it may remain inside AdjP under a narrow scope reading (constituent negation), as shown in (16).

(15) Ge   Ich hatte gerade ein sehr schwieriges Gespräch mit Peter über
            unseren Lösungsvorschlag. ('I just had a very difficult
            conversation with Peter about our new proposal for solution.')
        a. *Das ist immer so, weil Peter   zufrieden **mit nichts** ist.
        b. Das ist immer so, weil Peter **mit nichts** zufrieden   ist.
            that is always so as   Peter with nothing pleased   is
            'That is always so because Peter isn't pleased with anything.'
                                                    (Haegeman 1995: 167/68)

(16) Ge   Warum ist Peter stolz auf dieses miese Ergebnis?
            ('Why is Peter proud of this bad result?')
            Weil   Peter stolz **auf nichts**   ist.
            because Peter proud of nothing   is
            'Because Peter is proud of nothing.'   (Haegeman 1995: 169)

In English and French, in contrast, a NEG-object occurs to the right of a main verb *in situ*, indicating that NEG-shift does not take place overtly (but see also Müller 2000).[4]

(17) En a. He   had   [_NegP   [_VP seen **nobody**]]
          b. *He   had   [_NegP **nobody** [_VP seen t_NEG]]

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[4] In contrast to *personne* 'nobody', *rien* 'nothing' precedes a non-finite verb in French; compare (i) with (18).

(i)   Fr a. *Il n' a   dit **rien**.
            b. Il n' a   **rien**   dit t_NEG.
                he NE has   nothing   said
                'He hasn't said anything.'

However, Rowlett (1998: 191-193) claims that *rien* does not move to SpecNegP (which hosts the negation marker *pas* 'not') but to a lower position, as indicated by its position relative to the adverb *encore* 'yet'.

(ii)   Fr a. Jean n' a   encore **rien**   mangé.
            b. Jean n' a   **pas**   encore   mangé.
                Jean NE has not   yet   nothing   eaten
                'Jean hasn't eaten anything yet.'   (Rowlett 1998: 192)

In the following, I will concentrate on the syntactic behaviour of *personne* 'nobody'.

(18) Fr a. Il   n'   a [$_{NegP}$ [$_{VP}$ vu   **personne**]]
       b. *Il   n'   a [$_{VP}$ **personne** [$_{VP}$ vu   t$_{NEG}$]]
            he   NE   has   nobody   seen
            'He hasn't seen anybody.'

While there is cross-linguistic variation as to overt movement of a NEG-object, a NEG-subject appears in the canonical subject position SpecIP in all the languages under discussion.

(19) Da   I dag   er **ingen**   kommet.
             today   is nobody   come
             'Nobody has come today.'

(20) Ge   Heute   ist **keiner** gekommen.
             today   is nobody come
             'Nobody has come today.'

(21) En   **Nobody** has come today.

(22) Fr   **Personne** n'   est venu aujourd'hui.
             nobody   NE   is   come today
             'Nobody has come today.'

2.3 Licensing of [*wh*] and [NEG]

The preceding sections have shown that there is cross-linguistic variation as to the distribution of simple *wh*-phrases and NEG-phrases. For instance, while a *wh*-object must undergo *wh*-movement to SpecCP in the Germanic languages English, German and Danish, it may stay *in situ* in French. As regards NEG-objects, in contrast, English patterns with French in that a NEG-object stays *in situ*, following a lexical verb inside VP, whereas NEG-shift to SpecNegP takes place in German and Danish. The distribution of simple *wh*-phrases and NEG-phrases is summarized in Figure 1.

Figure 1: Distribution of *wh*- and NEG-phrases

		SpecCP	SpecIP	SpecNegP	V-Compl
wh	Da	*wh*_{SUB/OBJ}	*wh		*wh
	Ge	*wh*_{SUB/OBJ}	*wh		*wh
	En	*wh*_{(SUB/)OBJ}	*wh*_{SUB}		*wh
	Fr	*wh*_{(SUB/)OBJ}	*wh*_{SUB}		*wh*_{OBJ}
NEG	Da		NEG_{SUB}	NEG_{OBJ}	*NEG
	Ge		NEG_{SUB}	NEG_{OBJ}	*NEG
	En		NEG_{SUB}	*NEG	NEG_{OBJ}
	Fr		NEG_{SUB}	*NEG	NEG_{OBJ}

Wh-movement and NEG-shift are usually assumed to be triggered by the need to license the features [*wh*] and [NEG] carried by the corresponding phrases in a Spec-head configuration, as required by e.g. the *wh*-Criterion and the NEG-Criterion (Rizzi 1996: 64, Haegeman & Zanuttini 1991: 244, Haegeman 1995: 106) or a locality condition on feature checking (Chomsky 1995: 297). The observed contrasts in the distribution of *wh*-phrases and NEG-phrases can be accounted for by differences in whether licensing of [*wh*] and [NEG] takes place by overt movement (pied-piping the phonological features) or by covert movement (leaving behind the phonological features due to economy considerations); see e.g. Bošković (1997). This is illustrated in Figure 2.

Figure 2: Overt vs. covert licensing of [*wh*] and [NEG]

	Da	Ge	En	Fr
wh	overt	overt	overt	overt/covert
NEG	overt	overt	covert	covert

Assuming the copy theory of movement (Chomsky 1995), the copy of a constituent which includes the phonological features is marked in bold in the following whereas non-pronounced copies are marked by angle brackets. This is shown for overt NEG-shift in (23) [= the Danish example in (11)c] and for covert NEG-shift in (24) [= the English example in (17)], respectively.

(23)   *[NEG]-licensing by overt NEG-shift*
        Han har [_{NegP} **ingenting**_[NEG] Neg° ... [_{VP} sagt <ingenting_[NEG]>]]

(24)　　*[NEG]-licensing by covert NEG-shift*
　　　　He had [$_{NegP}$ <nobody$_{[NEG]}$> Neg° ... [$_{VP}$ seen **nobody$_{[NEG]}$**]]

Note that feature licensing only takes place under a sentential reading of the *wh-* or NEG-phrase: *In situ* occurrence is possible in echo-questions and with narrow scope negation, (4) and (12). In addition, licensing apparently only needs to take place once: *In situ* occurrence of a *wh-* or NEG-phrase is possible in multiple *wh-* questions and double negation constructions, where the *in situ wh-* or NEG-phrase is licensed by the presence of the higher *wh-* or NEG-phrase; see (5) and (13) above.

　　Moreover, although a NEG-object does not surface in SpecNegP in English and French, (17) and (18), this does not mean that NEG-phrases cannot undergo overt movement at all: A NEG-subject appears in the canonical subject position, SpecIP; cf. (21) and (22). In this case the NEG-phrase is moved to SpecIP by subject movement. In other words, the trigger for movement of the NEG-subject is the [phi]-features not the [NEG]-feature, which is licensed in a lower position, SpecNegP. *Wh*-movement, in contrast, targets a position above the canonical subject position, namely SpecCP; see the syntactic tree in (25).

(25)
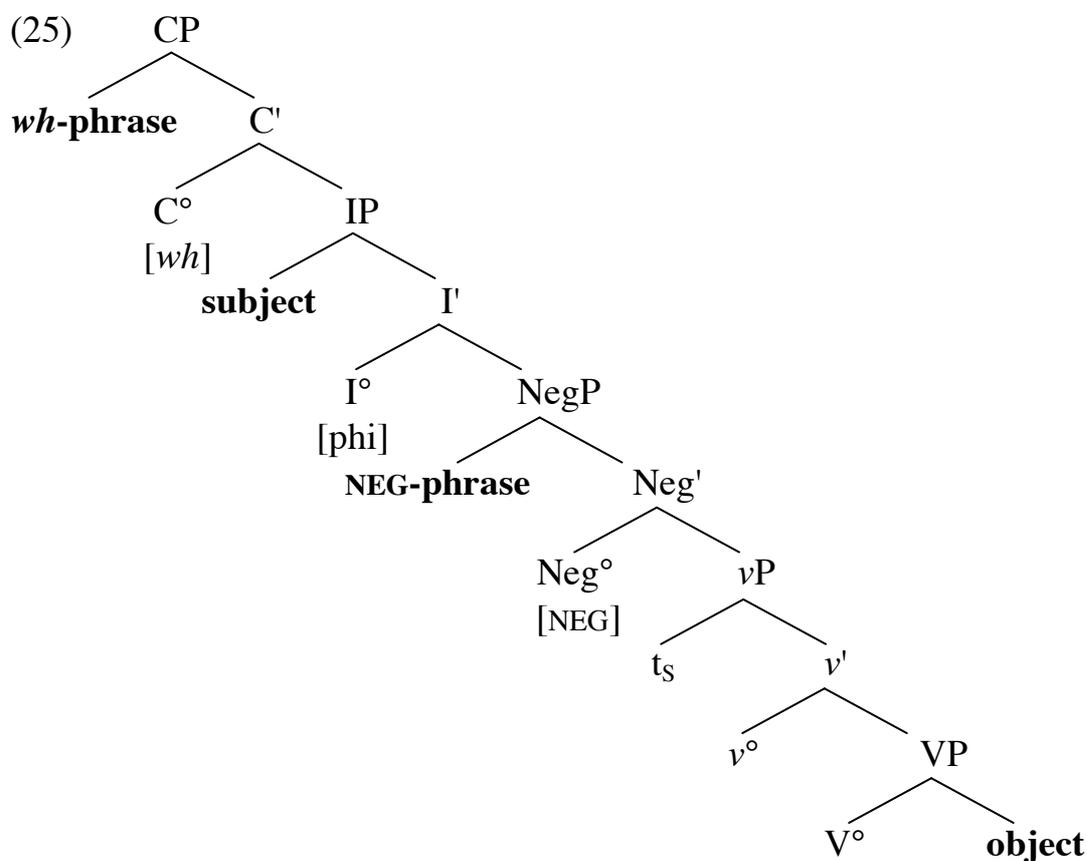
Summing up, there are cross-linguistic contrasts as to the distribution of simple *wh*- and NEG-phrases, which can be accounted for by differences in whether licensing of [*wh*] and [NEG] is carried out overtly or covertly. The following section on complex DPs, those that contain a possessive *wh*-phrase or NEG-phrase, shows that not only the position of *wh*- and NEG-phrases inside the clause but also their position inside DP may be crucial for licensing.

3   DP-internal *wh*-phrases and NEG-phrases

This section focuses on complex DPs that contain possessive *wh*- and NEG-phrases in pre-nominal and post-nominal position. These DP-internal *wh*- and NEG-phrases are subject to the same licensing requirements as simple *wh*- and NEG-phrases; i.e. like the simple *wh*- and NEG-phrases, they have to be licensed covertly (permitting occurrence of the complex DP *in situ*) or overtly (requiring the entire DP to move to the respective specifier position). However, the distribution of complex DPs with DP-internal *wh*- and NEG-phrases may differ from that of simple *wh*- and NEG-phrases. It will be argued that this is so because licensing of the DP-internal *wh*-phrase or NEG-phrase is sometimes impossible, suggesting that not only the position of a *wh*- or NEG-phrase within the clause but also its position within the nominal is crucial for licensing.

3.1   French: Object/subject and *wh*-phrase/NEG-phrase asymmetries

French displays a subject-object asymmetry regarding DPs that contain a possessive NEG-phrase or *wh*-phrase in post-nominal position.[5] As shown by the contrast between (26) and (27), a DP with a DP-internal NEG-phrase may occur in object position but not in subject position while a simple NEG-phrase is acceptable in both positions.

(26) Fr a. Lise n'   a   rencontré **personne**.
          b. Lise n'   a   rencontré **le frère de personne**.
              Lise NE   have   met   nobody/the brother of nobody
              'Lise hasn't met anybody/anybody's brother.'

(Moritz & Valois 1994: 687)

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[5] Possessive *wh*-phrases and NEG-phrases are restricted to post-nominal position in French.

(27) Fr a. **Personne** n' est arrivé.
      b. ***L'assistant de personne** n' est arrivé.
        nobody/the assistant of nobody   NE   is   arrived
        'Nobody/Nobody's assistant has arrived.'

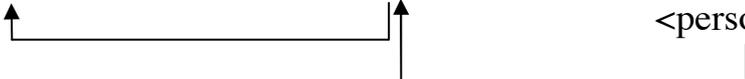<div align="right">(Moritz & Valois 1994: 674)</div>

This contrast can be accounted for under the assumption that *personne* 'nobody' but not the entire phrase *le frère de personne/l'assistant de personne* 'the brother/the assistant of nobody' carries [NEG] and may thus take part in feature checking: Licensing under Spec-head configuration requires that the phrase in specifier position carries the relevant feature itself.

    Recall that French does not require overt NEG-shift. Thus, a NEG-element in object position can be licensed by covert movement to SpecNegP, irrespective of whether it is simple, (26)a/(28)a, or DP-internal, (26)b/(28)b. (Note that covert movement in (28)b only targets the DP-internal NEG-phrase, not the entire object DP.)

(28)   [NEG]-*licensing by covert movement of* personne *to SpecNegP*
      a.[$_{IP}$ Lise n'a [$_{NegP}$ <personne$_{[NEG]}$> Neg° ...[$_{VP}$ rencontré **[personne$_{[NEG]}$**]]]]

      b. [$_{IP}$ Lise n'a [$_{NegP}$ <personne$_{[NEG]}$> Neg° ... [$_{VP}$ rencontré
                                [le frère de [personne$_{[NEG]}$]]]]]

Moreover, a simple NEG-subject as in (27)a may move through SpecNegP on its way to SpecIP. This is illustrated in (29).

(29)   *[NEG]-licensing by overt movement of* personne *through SpecNegP*
      [$_{IP}$ **Personne$_{[NEG]}$** n'est [$_{NegP}$ <personne$_{[NEG]}$> Neg° [$_{VP}$ arrivé
                                          <personne$_{[NEG]}$>]]]

However, if the NEG-phrase is internal to the subject DP as in (27)b, licensing of [NEG] is not possible. First, movement of the entire DP *l'assistant de personne* 'the assistant of nobody' through SpecNegP on the way to SpecIP cannot license [NEG] since this phrase does not carry [NEG], only DP-internal *personne* 'nobody' does; see (30).

(30)   *No [NEG]-licensing by overt movement of the entire subject DP through SpecNegP*
        *[IP **[L'assistant de [personne][NEG]]** n'est
                [NegP <[l'assistant de [personne][NEG]]> Neg° [VP arrivé
                                <[l'assistant de [personne][NEG]>]]]
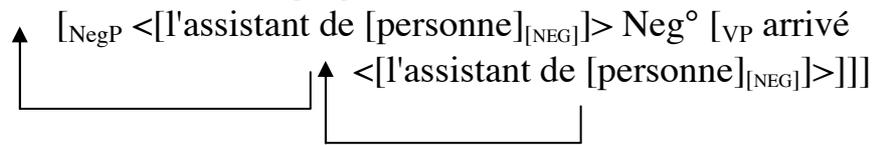
Second, if the DP-internal NEG-phrase itself undergoes covert movement to SpecNegP to make licensing of [NEG] possible, overt movement of the entire subject DP to SpecIP will be blocked (Relativized Minimality, Rizzi 1990).

(31)   *Covert movement of* personne *to SpecNegP blocks subject movement to SpecIP*
        *[IP **[L'assistant de [personne][NEG]]** n'est
                [NegP <[personne][NEG]> Neg° [VP arrivé
                                <[l'assistant de [personne][NEG]]>]]]
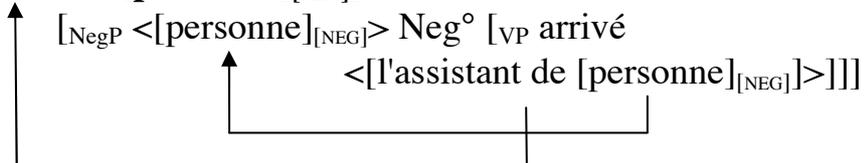
Likewise, the distribution of DPs that contain a possessive *wh*-phrase differs from the one of simple *wh*-phrases. In contrast to a simple object *wh*-phrase, which optionally undergoes overt *wh*-movement, (6) and (32)a/(33)a, an object DP that contains a *wh*-phrase may occur *in situ*, (32)b, but cannot occur in SpecCP, (33)b.

(32) Fr a. Tu   as   rencontré **qui**?
        b. Tu   as   rencontré **le frère de qui**?
            you have met   who/the brother of whom
            'Who/Whose brother have you met?'   (Moritz & Valois 1994: 701)

(33) Fr a. **Qui**   as-tu   rencontré?
        b. ***Le frère de qui**   as-tu   rencontré?
            who/the brother of whom   have-you met
            'Who/Whose brother have you met?' (Moritz & Valois 1994: 701)

These facts are expected under the above assumptions. Similar to *personne* in (26)/(28), licensing of *qui* is possible by covert movement to SpecCP if the DP occurs in object position, irrespective of whether the DP is simple or complex, (32); see the derivations in (34).

(34)   *[wh]-licensing by covert movement of* qui *to SpecCP*
         a. [CP <qui[wh]> C° [IP tu as [VP rencontré   **[qui[wh]]]]]**
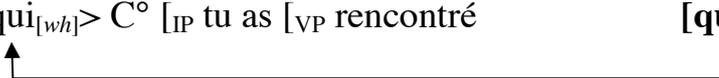
         b. [CP <qui[wh]> C° [IP tu as [VP rencontré **[le frère de [qui[wh]]]]]]**

Licensing of [*wh*] by overt movement to SpecCP, in contrast, is only possible with a simple *wh*-phrase, (33)a, but not with a DP-internal one, (33)b: Only *qui* 'who' but not the phrase *le frère de qui* 'the brother of whom' carries [*wh*] and thus permits checking in SpecCP; see (35) and (36).

(35)   *[wh]-licensing by overt movement of* qui *to SpecCP*
         [CP **qui[wh]** as-tu [IP <tu> <as> [VP rencontré <qui[wh]>]]]
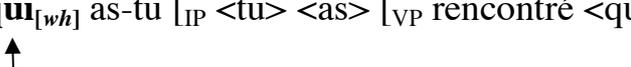
(36)   *No [wh]-licensing by overt movement of the entire object DP to SpecCP*
         *[CP **[le frère de [qui[wh]]]** as-tu [IP <tu> <as> [VP rencontré
                                                          <le frère de qui[wh]>]]]
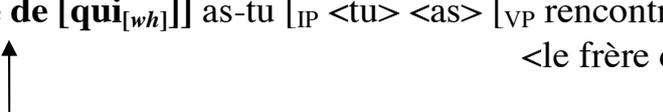
In contrast to a clause-initial object, a clause-initial subject may contain a possessive *wh*-phrase, as shown in (37). Given that overt *wh*-movement is optional in French, the subject can be located in SpecIP and licensing of [*wh*] may thus be carried out by extracting DP-internal *qui* and moving it to SpecCP covertly; see (38).[6]

(37)   Fr   **Le frère de qui**   est venu?
            the brother of whom   is   come
            'Whose brother has come?'

---

[6] However, note that overt extraction of the *wh*-element is not possible out of a subject DP, (i), although it is possible out of an object DP, (ii).

(i)   Fr a. *De qui   est-t-il venu **le frère** t_{wh}?
             b. *De qui   **le frère** t_{wh} est-t-il venu?
                 of who   the brother   is-he   come
                 'Whose brother has come?'

(ii)   Fr   ?**De qui**   a-t-il   rencontré **le frère** t_{wh}?
                 of who   has-he met   the brother
                 'Whose brother has he met?'

(38) *[wh]-licensing by covert movement of* qui *to SpecCP*

  [CP <qui[*wh*]> C° [IP **le frère de [qui][*wh*]**] est [VP venu

                              <le frère de qui>]]]

The contrast between NEG-phrases and *wh*-phrases as to subject-internal occurrence (viz. NEG-phrases cannot occur inside a subject, (27)b, whereas *wh*-phrases can, (37)) thus follows from differences in the licensing position of [*wh*] and [NEG] – above (in SpecCP) vs. below (in SpecNegP) the canonical subject position (SpecIP); see the syntactic tree in (25) above. More precisely, licensing of a DP-internal *wh-* or NEG-phrase is only possible in French if the entire DP occurs in a position below the licensing position for [*wh*] and [NEG], SpecCP and SpecNegP, respectively. In this case, covert movement of the *wh-* or NEG-phrase alone is possible. In contrast, licensing cannot be carried out by movement of the entire DP to or through SpecCP or SpecNegP as this would require the complex DP to carry the relevant feature itself.

3.2 Danish: Feature percolation from pre-nominal position vs. post-nominal position

In Danish, possessive phrases may appear in two different positions, either in pre-nominal specifier position as in (39)a or in post-nominal complement position as in (39)b.

(39) Da a. **barnets** far
          child-the's father
          'the child's father'
       b. faren **til barnet**
          father-the of child-the
          'the father of the child'

This section shows that post-nominal occurrence of *wh-* and NEG-phrases is much more restricted than pre-nominal occurrence. Recall from section 2 that both [*wh*] and [NEG] need to be licensed overtly in Danish. This is only possible if the *wh-* or NEG-phrase occurs in pre-nominal position. As illustrated below, post-nominal *wh-* and NEG-phrases are only acceptable if the DP may stay *in situ* because licensing need not be carried out overtly, either due to narrow scope (e.g. echo-questions and constituent negation, see (4) and (12) above) or due to occurrence of another *wh-* or NEG-phrase in the clause (e.g. multiple questions and double negation constructions, see (5) and (13) above).

For instance, (40) with a NEG-phrase in pre-nominal position is acceptable whereas (41) with a NEG-phrase in post-nominal position is ungrammatical.[7,8]

(40) Da a. Vi giver intet ultimatum, og vi truer **intet lands sikkerhed**.
  we give no ultimatum   and we threaten no country's security
  'We give no ultimatum and we don't threaten any country's security.'

---

[7] Since *in situ* occurrence of a NEG-phrase is ungrammatical, (11) and (i), movement of the complex object/subject to or through SpecNegP must have taken place in (40).

(i) Da *Vi har truet **intet lands sikkerhed**.
  we have threatened no country's security
  'We haven't threatened any country's security.'

However, note that movement of a complex NEG-phrase across a verb *in situ* is at least strongly marked, (ii). This might have to do with the fact that more complex NEG-phrases do not easily undergo non-string-vacuous NEG-shift as shown in (iii); see Rögnvaldsson (1987) and K. R. Christensen (2005).

(ii) Da ?*Vi har **intet lands sikkerhed** truet.

(iii) Da a. Jeg har **intet** hørt t_{NEG}.
    b. Jeg har **intet nyt** hørt t_{NEG}.
    c. *Jeg har **intet nyt i sagen** hørt t_{NEG}.
    d. *Jeg har **intet nyt i sagen om de stjålne malerier** hørt t_{NEG}.
    I have nothing new about affair-the of the stolen paintings heard
    'We haven't heard anything new about the affair of the stolen paintings.'
    (K. R. Christensen 2005: 65)

[8] Note that in contrast to (41) a complex DP with a non-negative phrase in post-nominal position is acceptable, (i). As no NEG-feature is involved in this case, NEG-shift does not take place and the DP occurs in the canonical object position following a main verb inside VP, (ii); compare also footnote 7.

(i) Da Vi truer **sikkerheden i mange lande**.
  we threaten security-the in many countries
  'We threaten the security in many countries.'

(ii) Da Vi har truet **sikkerheden i mange lande**.
  we have threatened security-the in many countries
  'We have threatened the security in many countries.'

    b. Efter disse beretninger fra det virkelige liv forekommer
after these tales from the real live   seems
ingen krimis handling spor usandsynlig.
no crime novel's story   at all implausible
'After these reports from the real live no crime novel's story seems implausible.'   (KorpusDK)

(41)   Da a. *Vi giver intet ultimatum, og vi truer   **sikkerheden i intet land**.
              we give no ultimatum   and we threaten security-the in no country
              'We give no ultimatum and we don't threaten the security in any country.'
            b. *Efter disse beretninger fra det virkelige liv forekommer
              after these tales from the real live   seems
              handlingen i ingen krimi spor   usandsynlig.
              story-the in no crime novel at all implausible
              'After these reports from the real live no crime novel's story seems implausible.'

Similar to DP-internal NEG-phrases, DP-internal *wh*-phrases are acceptable in pre-nominal position, (42), but not in post-nominal position, (43).

(42)   Da a. **Hvilke landes kulturprodukter**   gider vi at engagere os i
              which countries' cultural products   care we to engage   us in
              om ti år?
              in ten years
              'Which countries' cultural products will we bother to engage in in ten years?'   (http://www.cifs.dk)
            b. **Hvilket lands salgsteam**   har   solgt bedst?
              which country's sales team has   sold   best
              'Which country's sales team has sold best?'   (KorpusDK)

(43)   Da a. ***Kulturprodukter fra hvilke lande**   gider vi at engagere os
              cultural products from which countries care we to engage   us
              i   om ti år?
              in   in ten years
              'Which countries' cultural products will we bother to engage in in ten years?'
            b. ***Salgsteamet fra hvilket land**   har   solgt bedst?
              sales team-the from which country   has   sold   best
              'Which country's sales team has sold best?'

The sentences in (43) might be acceptable as echo-questions, which are not proper interrogative clauses, i.e. which do not involve licensing of [*wh*] (see section 2.1 above). Moreover, note that a *wh*-phrase may occur in post-nominal position in multiple questions, where it is licensed by the higher *wh*-phrase; see (5) above.

(44) Da (Inden de [= børn i vuggestuen] er ret gamle, ved de,)
('Before they [= children in day care] are very old they know')
hvem der er **forældre til hvilke børn** på stuen.
who who are parents of which children in room-the
'who are the parents of which children in the room.'
(http://www.uddannelse.ltk.dk)

Likewise, Svenonius (2002) claims that a NEG-phrase may occur in post-nominal position in Norwegian double negation constructions; compare (45) with (13).

(45) No a. *Artistene beholdt **rettighetene til ingen av låtene sine**.
artists-the retained rights-the to none of songs RFX
'The artists didn't retain the rights to any of their songs.'
b. **Ingen av artistene** beholdt **rettighetene til ingen av låtene sine**.
none of artists-the retained rights-the to none of songs RFX
'None of the artists retained the rights to none of their songs.'
(= 'Every artist retained the rights to some of their songs.')
(Svenonius 2002: 143)

The above data indicate that a post-nominal *wh*- or NEG-phrase is not impossible as such. Rather, the sentences in (41) and (43) are ungrammatical under sentential scope because this would require licensing of [*wh*] and [NEG] to take place overtly which cannot be carried out by movement of the entire DP to SpecCP, (46) [=(43)b], or SpecNegP, (47) [=(41)a], respectively: The complex DPs *salgsteamet fra hvilket land* 'the sales team from which country' and *sikkerheden i intet land* 'the security in no country' do not carry *wh*- and NEG-features, only the DP-internal PPs *fra hvilket land* 'from which country' and *i intet land* 'in no country' do so (see footnote 9 below).

(46)   *No* [wh]-*licensing by overt movement of a DP with post-nominal*
wh-*phrase to SpecCP*
*[CP **[salgsteamet [fra hvilket land]**[wh]**]** har
      [IP <salgsteamet [fra hvilket land][wh]> <har>
          [VP <salgsteamet [fra hvilket land][wh]>
            solgt bedst]]]
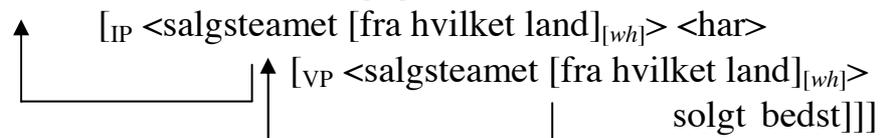
(47)   *No* [NEG]-*licensing by overt movement of a DP with post-nominal*
NEG-*phrase to SpecNegP*
*[CP vi truer...[NegP **[sikkerheden [i intet land]**[NEG]**]** Neg° ...[VP <truer>
         <sikkerheden [i intet land][NEG]>]]]
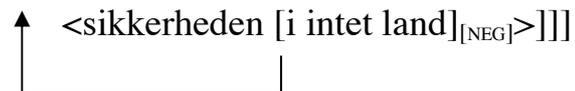
In contrast, occurrence of a *wh*-phrase or NEG-phrase in pre-nominal position is acceptable, as shown in (40) and (42) above. Thus, licensing of a pre-nominal *wh*- or NEG-phrase can obviously be carried out by overt movement of the entire DP to SpecCP or SpecNegP which presupposes that the entire DP is marked for [*wh*]/[NEG]: The phrase in Spec-head configuration must carry the respective feature itself for licensing to be possible. This is illustrated in (48) [= (42)b] and (49) [= (40)a].

(48)   *[*wh*]-licensing by overt movement of a DP with pre-nominal*
wh-*phrase to SpecCP*
[CP **[hvilket lands salgsteam]**[*wh*] har
      [IP <hvilket lands salgsteam[*wh*]> <har>
          [VP <hvilket lands salgsteam[*wh*]>
            solgt bedst]]]
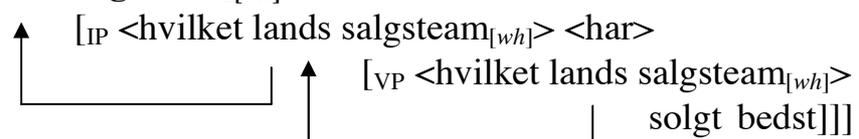
(49)   *[NEG]-licensing by overt movement of a DP with pre-nominal*
NEG-*phrase to SpecNegP*
[CP vi truer ... [NegP **[intet lands sikkerhed]**[NEG] Neg° ...[VP <truer>
         <intet lands sikkerhed[NEG]>]]]
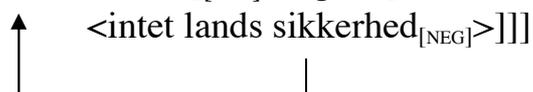
The contrast between DPs with pre-nominal *wh*- and NEG-phrases and ones with post-nominal *wh*- and NEG-phrases can be accounted for by differences in feature percolation. It is usually assumed that a phrase in post-nominal complement position as in (50) cannot induce feature percolation and pied-

piping whereas one in pre-nominal specifier position as in (51) can; see e.g. Webelhuth (1992) and Horvath (2005).[9]

(50)

*CP/NegP — DP **no** licensing — C'/Neg'
DP: *sikkerheden* PP$_{[wh]/[NEG]}$ — **X** ... **X** ... C°/Neg° $[wh]/[NEG]$ ... ... t$_{DP}$ ...
PP: P° *i* — DP *hvilket/intet land*

(51)

CP/NegP — DP$_{[wh]/[NEG]}$ — C'/Neg'
feature percolation — DP$_{[wh]/[NEG]}$ D' — **licensing** — C°/Neg° $[wh]/[NEG]$ ... ... t$_{DP}$ ...
DP$_{[wh]/[NEG]i}$ *hvilket/intet land*; D' : D° *s* — NP *sikkerhed* t$_i$

To sum up, *wh-* and NEG-phrases must apparently occupy a left-peripheral position within DP (i.e. SpecDP) to be able to take sentential scope in Danish, just as they have to move leftwards within the clause (to SpecCP and

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[9] There is one well-known exception to the prohibition against feature percolation and pied-piping from complement position: The complement of a preposition is able to – and in many languages must – pied-pipe PP (see Webelhuth 1992 and Horvath 2005). Preposition stranding as found in English and the Scandinavian languages is cross-linguistically rather rare. (Thus, the entire PP in (50) can be marked *[wh]*/[NEG], but percolation up to DP is not possible.)

(i)   Da a.   **Hvem**   har   du snakket   **med** t?
         b.   ??**Med hvem** har   du snakket   t?
             with whom have   you spoken
             'Who have you spoken to?'

(ii) Ge a.   ***Wem**   hast   du **mit** t gesprochen?
         b.   **Mit wem** hast   du t   gesprochen?
             with whom have   you   spoken
             'Who have you spoken to?'

SpecNegP). Only if the *wh-* or NEG-phrase occurs in pre-nominal position is feature percolation possible, permitting licensing of [*wh*] and [NEG] to be carried out by overt movement of the entire DP to SpecCP and SpecNegP, respectively. Feature percolation cannot be induced from post-nominal position, giving rise to distributional contrasts between DPs with pre-nominal *wh-* or NEG-phrase and ones with post-nominal *wh-* or NEG-phrase in Danish.

However, as the following section shows, feature percolation is apparently not generally restricted to pre-nominal phrases. Feature percolation would seem to be possible from post-nominal position in German and English, where DPs with pre-nominal *wh-* and NEG-phrases and DPs with post-nominal ones do not contrast in distribution.

3.3   German & English: Feature percolation from post-nominal position

As in Danish, *wh*-movement and NEG-shift must take place overtly in German; see section 2. However, in contrast to Danish, (40)-(43), *wh*-phrases and NEG-phrases may occur in a post-nominal PP in German, (52) and (53). In addition, possessive *wh*-phrases and NEG-phrases may emerge as post-nominal genitives, (54) and (55).[10]

(52)   Ge   a.   **Reiseführer von welchem Anbieter** kannst du   empfehlen?
                 travel-guides of which provider   can   you recommend
                 'Which provider's travel guides can you recommend?'

        b.   **Reiseführer von welchem Anbieter** sind Eurer Meinung nach
                 travel-guides of which provider   are in your opinion
                 die Besten?
                 the best
                 'Which provider's travel guides are the best in your opinion?'
                                                              (http://community.ferien.de)

(53)   Ge   a.   **Die Arbeit von keinem einzigen** fand ich   so,dass ich ihn
                 the work of no single one   found I   so that   I   him

---

[10] The hypothesis that DPs that contain a NEG-phrase undergo NEG-shift in overt syntax in German is supported by the fact that they must precede an adjective under a sentential negation reading; see also (15) above.

(i)   Ge   a.   ?*Martin ist zufrieden **mit dem Vater von keinem Kind/keines Kindes**.
          b.   Martin ist **mit dem Vater von keinem Kind/keines Kindes** zufrieden.
                   Martin is with the father of no child/no child's   pleased
                   'Martin isn't pleased with any child's father.'

ohne Bedenken längerfristig   nehmen wollen würde.
without qualms for longer periods   take   want would
'I didn't consider the work of any single person so good that I
would want to hire him without qualms for a longer period.'

(http://www.spin.de)

    b. **Die Arbeit von keinem Mensch** ist 7 Millionen wert!
the work of no human being   is 7 million   worth
'No human being's work is worth 7 million.'

(http://www.webnews.de)

(54) Ge a. **Die Nationalmannschaft welchen Landes**   nennt man auch
the national team which country's   calls one   also
"Squadra Azzura"?
Squadra Azzura
'Which country's national team is also called "Squadra Azzura"?'

(http://www.witze-fun.de)

    b. **Die Hauptstadt welchen Landes**   liegt auf einer Insel
the capital which country's   lies   on an island
im Atlantik?
in-the Atlantic ocean
'Which country's capital lies on an island in the Atlantic ocean?'

(http://www.reise-quiz.de)

(55) Ge a. Mit diesem Buch gewinnt man **das Interesse keines Kindes** …
with this book   gains   one   the interest no child's
'One doesn't gain any child's interest with this book ...'

(http://catalog.ebay.at)

    b. und **der EU-Beitritt keines Landes** wird so kontrovers   und
and the EU entry no country's   is   so controversially and
umfassend   diskutiert wie der Beitritt der Türkei.
comprehensively discussed   like the entry the Turkey's
'and no country's EU entry is discussed so controversially and
comprehensively as the entry of Turkey.'   (http://www.gesis.org)

Given that licensing of [*wh*] and [NEG] must be carried out overtly in German
and that licensing under Spec-head configuration requires that the phrase in
specifier position carries the relevant feature itself, feature percolation would
seem to be possible from post-nominal position in this language whereas it is

not in French and Danish (see sections 3.1 and 3.2).[11] As illustrated in (56) [= (54)b] and (57) [= (53)a], the entire DP with post-nominal *wh-* or NEG-phrase has moved to or through SpecCP and SpecNegP, respectively, where licensing takes place.

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[11] However, note that a post-nominal *wh-*phrase does not seem to be able to induce feature percolation and pied-piping in embedded questions. Instead, the post-nominal PP moves to SpecCP on its own. This option is also available in main questions. (On further differences between main questions and embedded questions see footnote 1 above.)

(i) Ge a. *Er fragt, **Reiseführer welchen Anbieters** du **t** empfiehlst.
      b. *Er fragt, **Reiseführer von welchem Anbieter** du **t** empfiehlst.
      c. Er fragt, **von welchem Anbieter** du **Reiseführer t** empfiehlst.
         he asks of which provider you travel-guides recommend
         'He asks which provider's travel guides you can recommend.'
      d. **Von welchem Anbieter** kannst du **Reiseführer t** empfehlen?
         of which provider can you travel-guides recommend
         'Which provider's travel guides can you recommend?'

(ii) Ge a. *Ich frage mich, **die Hauptstadt welchen Landes** **t** auf einer Insel liegt.
      b. * Ich frage mich, **die Hauptstadt von welchem Land t** auf einer Insel liegt.
      c. ?Ich frage mich, **von welchem Land die Hauptstadt t** auf einer Insel liegt.
         I wonder of which country the capital on an island lies
         'I wonder which country's capital lies on an island.'
      d. ?**Von welchem Land** liegt **die Hauptstadt t** auf einer Insel?
         of which country lies the capital on an island
         'Which country's capital lies on an island?'

Licensing of [NEG], in contrast, is not dependent on the main clause/embedded clause distinction: A NEG-phrase may occur in post-nominal position in an embedded clause.

(iii) Ge a. weil man mit diesem Buch **das Interesse keines Kindes** gewinnt.
       b. weil man mit diesem Buch **das Interesse von keinem Kind** gewinnt.
         because one with this book the interest no child's/of no child gains
         'because one cannot gain any child's interest with this book.'

(iv) Ge a. weil **der Vater keines Kindes** gekommen ist.
       b. weil **der Vater von keinem Kind** gekommen ist.
         because the father no child's/of no child come is
         'because no child's father has come.'

(56)   *[wh]-licensing by overt movement of a DP with post-nominal*
         wh-*phrase to SpecCP*
         [$_{CP}$ **[die Hauptstadt welchen Landes]**$_{[wh]}$ liegt
                [$_{IP}$ <die Hauptstadt welchen Landes$_{[wh]}$> <liegt>
                        [$_{VP}$ <die Hauptstadt welchen Landes$_{[wh]}$>
                                <liegt> auf einer Insel]]]
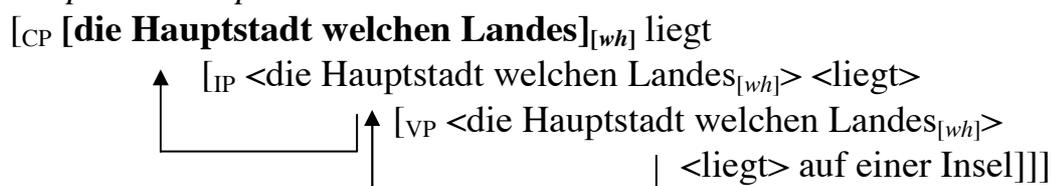
(57)   *[NEG]-licensing by overt movement of a DP with post-nominal*
         NEG-*phrase to SpecNegP*
         [$_{CP}$ **[die Arbeit von keinem einzigen]**$_{[NEG]}$ fand [$_{IP}$ ich <fand>
                [$_{NegP}$ <die Arbeit von keinem einzigen$_{[NEG]}$> Neg° ...
                        [$_{VP}$ <fand> <die Arbeit von keinem einzigen$_{[NEG]}$>
                                so, dass ...]]]]
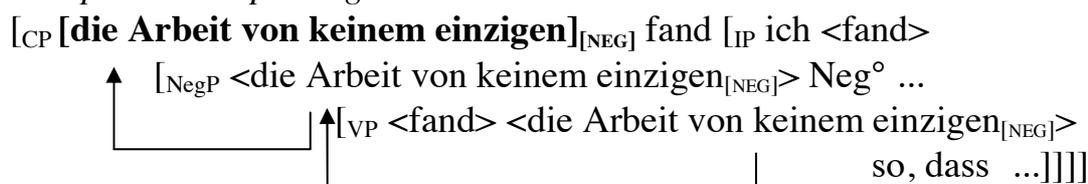
Note that though it sounds quite archaic, possessives may also emerge as pre-nominal genitive DPs in German. Feature percolation is clearly possible from pre-nominal position, too.

(58) Ge   **des Kaisers** neue Kleider
            the emperor's new clothes
            'the emperor's new clothes'

(59) Ge a. **Wessen Ehefrau/Wessen Bruders Ehefrau** hast du   getroffen?
            whose wife/whose brother's wife   *have you   met*
            'Whose wife/whose brother's wife have you met?'
       b. **Keines Kindes Vater** hätte das   jemals   getan.
            no child's father   had   this   ever   done
            'No child's father had ever done this.'

Similar to German, feature percolation seems to be possible from both pre-nominal and post-nominal position in English. Though pre-nominal occurrence of a *wh-* or NEG-phrase might be preferred, (60) and (62), occurrence in post-nominal position is also acceptable, (61) and (63).

(60) En a. **Which team's cap** would you like to wear into the Hall of Fame?
       b. **Which team's players** will benefit the most from their schedule?
                                                                  (COCA)

(61) En a. **The president of which country** did Queen Elisabeth encourage
to take a risk and pursue his dreams?

     b. **The president of which country** famously took to the pitch in an
effort to persuade the referee to disallow a French goal during
their 1982 Group match in Spain?   (http://news.bbc.co.uk)

(62) En a. The threats we face today as Americans respect **no nation's
borders**.

     b. **No individual's life** can be sustained by role-playing, …   (COCA)

(63) En a. Emily Benton stood in **the shadow of no man**.   (COCA)

     b. Contrary to what Polk says, **the doors of none of these rooms**
had been "blasted apart".   (http://www.lankanewspapers.com)

Remember that NEG-shift need not take place overtly in English (see section
2.2). However, the fact that a subject DP may contain a NEG-phrase in post-
nominal position as in (63)b suggests that feature percolation is possible from
that position in English: Licensing of [NEG] must take place by moving the
subject DP through SpecNegP on its way to SpecIP.

    Moreover, note that DPs with a post-nominal *wh*-phrase would seem to have
a flavor of quiz questions in German and English. However, negative polarity
items such as *jemals* 'ever' and *einen Finger rühren* 'lift a finger' in (64) or *ever*
and *bother* in (65) may appear in these questions, indicating that they take
sentential scope and [*wh*]-licensing takes place.

(64) Ge   **Die Sekretärin welches Managers**   hat   jemals
           the secretary which manager's   *has*   *ever*
           einen Finger   gerührt?
           a finger   *lifted*
           'Which manager's secretary has ever lifted a finger?'

(65) En   **The students of which subjects** ever bothered to do their
           homework?

To sum up, the distribution of complex DPs with post-nominal *wh*- or NEG-
phrase does not differ from that of simple *wh*- or NEG-phrases in German and
English. This suggests that English and German contrast with French and
Danish in that feature percolation is possible from post-nominal position in the
former languages, but not in latter ones. DP-internal *wh*- and NEG-phrases in
post-nominal position can apparently be licensed by overt movement of the
entire DP to or through SpecCP and SpecNegP in German and English, which

presupposes that the constituent in specifier position carries the relevant feature itself. In contrast, this is not the case in French and Danish, where DPs with post-nominal *wh-* or NEG-phrase are excluded if licensing would have to be carried out by overt movement of the entire DP.

4   Feature percolation from pre- and post-nominal position

The previous sections have shown that there is cross-linguistic variation as to the ability of post-nominal *wh*-phrases and NEG-phrases to induce feature percolation and pied-piping. This seems to be possible in German and English but not in French and Danish (see Figure 3). In contrast, feature percolation and pied-piping is generally permitted with possessive *wh*-phrases and NEG-phrases in pre-nominal position. (Note that there are no post-nominal possessive *wh*-phrases and NEG-phrases in French; see footnote 5.)

Figure 3: Variation as to feature percolation

feature percolation from	Da	Fr	Ge	En
pre-nominal position	+	%	+	+
post-nominal position	-	-	+	+

In section 3.2, the distributional contrast between DPs with pre-nominal *wh-* or NEG-phrase and ones with post-nominal *wh-* or NEG-phrase in Danish was accounted for by the common assumption that feature percolation is possible from specifier position but not from complement position (e.g. Webelhuth 1992 and Horvath 2005; see also (50) and (51) above). The observed cross-linguistic variation as to feature percolation from post-nominal position might be accounted for in two ways. Either there are differences in the structural position from which feature percolation and pied-piping can be induced; i.e. only phrases in specifier position can induce feature percolation in French and Danish while phrases in specifier and complement position may induce feature percolation in German and English (Figure 4). Or it might be assumed that feature percolation is generally restricted to phrases in specifier position and that there are differences in the structural position of post-nominal phrases; i.e. post-nominal phrases occupy a complement position in French and Danish but a specifier position in German and English; see Figure 5.

Figure 4: Cross-linguistic variation as to feature percolation from complement position

feature percolation from	Da	Fr	Ge	En
specifier position	+	%	+	+
complement position	-	-	+	+

Figure 5: Cross-linguistic variation as to the structural position of post-nominal phrases

structural position of	Da	Fr	Ge	En
pre-nominal phrases	spec	%	spec	spec
post-nominal phrases	compl	compl	spec	spec

In Engels (2009b, 2010), I pursued the latter hypothesis and assumed that DPs with post-nominal *wh-* or NEG-phrase differ in structure, adapting den Dikken's (1998) small clause analysis of possessive constructions. However, scope facts reported in the Appendix would seem to support the former hypothesis, i.e. that there is cross-linguistic variation as to the structural positions from which feature percolation can be induced. As discussed in the Appendix, complex DPs with a quantified phrase in pre-nominal position and complex DPs with a quantified phrase in post-nominal position differ in reading, but crucially these readings are identical across languages. Under the assumption that scope is encoded in syntactic structure, these data point to the conclusion that there should be no cross-linguistic variation as to the structure of the complex DPs. The observed cross-linguistic contrasts as to feature percolation from post-nominal position would thus seem to result from differences in whether or not feature percolation can be induced from complement position.

5   Conclusion

Danish, German, English and French differ in the distribution of simple *wh-* and NEG-phrases and DPs that contain possessive *wh-* and NEG-phrases in pre- or post-nominal position. Assuming that *wh-* and NEG-phrases carry features ([*wh*] and [NEG], respectively) that need to be licensed in Spec-head configuration, these asymmetries were accounted for by differences in the licensing requirements as well as differences in the feature percolation possibilities.

As shown in section 2, while overt *wh*-movement is obligatory in Danish, German and English, it is optional in French. Moreover, overt NEG-shift is obligatory in Danish and German but only takes place covertly in English and

French. The distribution of simple *wh-* and NEG-phrases is thus predicted to vary cross-linguistically.

Moreover, the distribution of complex DPs that contain a possessive *wh-* or NEG-phrase might differ from that of simple *wh-* and NEG-phrases. It was argued in section 3 that this results from the fact that DP-internal *wh-* and NEG-phrases are subject to the same licensing requirements as simple ones but that licensing might not be carried out in certain cases. Licensing in Spec-head configuration requires that the phrase in specifier position carries the relevant feature itself. In case of covert licensing the DP-internal *wh-* or NEG-phrase may undergo movement to the respective specifier position on its own. However, licensing of [*wh*] and [NEG] may only be carried out by overt movement of the entire DP to or through SpecCP or SpecNegP if feature percolation is possible. If feature percolation is excluded, licensing cannot take place and asymmetries in the distribution of simple *wh-* and NEG-phrases and complex DPs with embedded *wh-* and NEG-phrases arise.

Feature percolation is generally possible from pre-nominal position: DPs with pre-nominal *wh-* and NEG-phrases show the same distribution as simple *wh-* and NEG-phrases. In contrast, post-nominal phrases vary cross-linguistically as to the ability to induce feature percolation. They are apparently able to do so in German and English but not in Danish and French. As discussed in section 4 (and the Appendix), this cross-linguistic contrast would seem to result from differences in the structural positions from which feature percolation can be induced.

Appendix: Reading of complex DPs with quantified phrases in pre- and post-nominal position

Scopal facts point to the conclusion that the structures of complex DPs with pre-nominal and post-nominal possessives do not vary cross-linguistically. In all the languages under discussion, a post-nominal quantified possessor phrase is ambiguous between a collective reading and a distributive reading, whereas a pre-nominal quantified DP only permits the distributive reading.[12]

(66)   En a. fathers of many children   ambiguous
           b. many children's fathers   distributive only

---

[12] Note that other complex DPs with a non-possessive post-nominal phrase do not display this ambiguity. For instance, (i) may only receive a collective reading ('there is a linguistics class in which every student hates chocolate'):

(i)   En   Every student in one of the linguistics classes hates chocolate.

The collective and distributive readings are illustrated in (67). Under the collective reading the DP *fathers of many children* refers to men that have three or more children (*many* takes narrow scope), whereas under a distributive reading each of the many children may possibly have a different father (*many* takes wide scope).

(67) a. *collective reading*   b. *distributive reading*

Examples of the collective and distributive readings of DPs with post-nominal quantifier in French, Danish, German and English are given in (68)-(72).

(68) Fr a. (Les familles nombreuses (plus de 3 enfants) n'ont pas forcément la vie dure; ...)
('The large families (more than 3 children) don't necessarily have a hard life; ...')
souvent **ces mères de beaucoup d'enfants** sont admirées.
often   these mothers of many of children   are   admired
'these mothers of many children are often admired.'
(http://forum.doctissimo.fr)
b. ... parmi **les parents de beaucoup de mes camarades**, la mère
among the parents of many of my friends   the mother
vote Eltsine ou Ziouganov, mais le père   Jirinovski.
votes Eltsine or Ziouganov, but   the father   Jirinovski.
'... among many of my friends parents, the mother votes Eltsine or Zioganov but the father Jirinovski.'
(http://www.3itraductions.fr)

(69) Da a. Han   var   **far til mange børn**,   men kun to   havde han
he   was   father of many children but   only two had   he
fået   med   sin kone Hera.
had   with   his wife Hera
'He was the father of many children, but he only had two with his wife Hera.'   (http://www.aigis.dk)

b. Hvis jeg var fotograf, ville jeg tage **billeder**
if I was photographer would I take pictures
af mange forskellige mennesker.
of many different people
'If I was a photographer, I would take pictures of many different people.'   (Korpus.DK)

(70) Ge a. **Väter von vielen Kindern** sind überdurchschnittlich oft
fathers of many children are above-average often
übergewichtig.
overweight
'An above average number of fathers with many children are overweight.'   (http://www.wissenschaft.de)
     b. **Väter von vielen Kindern** fielen, …
fathers of many children were.killed-in-war
'Fathers of many children were killed in the war, ...'
(http://de.answers.yahoo.com)

(71) Ge a. Sie waren stolze Heerführer und **Väter vieler Kinder**.
they were proud military leaders and fathers of many children
'They were proud military leaders and fathers of many children.'
(http://www.digitalartforum.de)
     b. **Die Väter vieler Kinder** waren gefallen ...
the fathers many children's were killed-in-war
'The fathers of many children were killed in the war ...'
(http://www.ejh.de)

(72) En a. The husband of a wife who produces many children is a real man, and people always speak highly of **the fathers of many children**.
(books.google.com)
     b. On Christmas Eve of the year he was born there was a large explosion in one of the mines, killing the **fathers of many children** ...   (http://www.guardian.co.uk)

In contrast, a pre-nominal quantified DP is restricted to a distributive reading, as illustrated by the examples in (73)-(75).

(73) Da a. #**Mange børns fædre**   er   ofte overvægtige.
              many children's fathers are   often overweight
              'The fathers of many children are often overweight.'
       b. Han har   ødelagt   **mange menneskers liv** …
              he   has   ruined   many people's lives
              'He has ruined the lives of many people.'   (KorpusDK)

(74) Ge a. #**Vieler Kinder Väter**   sind   häufig   übergewichtig.
              many children's fathers are   often overweight
              'The fathers of many children are often overweight.'
       b. **Vieler Kinder Väter**   sind   gefallen.
              many children's fathers are   killed-in-war
              'The fathers of many children were killed in war.'

(75) En a. #**Many children's fathers** are often overweight.
       b. **So many children's mothers** absolutely have to work, because
          otherwise they cannot live, …   (http://www.independent.co.uk)

Under the assumption that semantic scope is reflected by c-command in syntactic structure, the fact that the readings of pre- and post-nominal quantified DPs are identical across languages suggests that there is no cross-linguistic contrast in the structure of complex DPs.

    Because of theta-role assignment it is expected that DPs with a post-nominal possessive in complement position represent the basic structure; see (76).

(76)

```
        DP
       /  \
          D'
         /  \
       D°    NP
            /  \
                N'
               /  \
             N°    FP
           fathers  \
                     F'
                    /  \
                  F°    DP
                  of    /\
                    many children
```
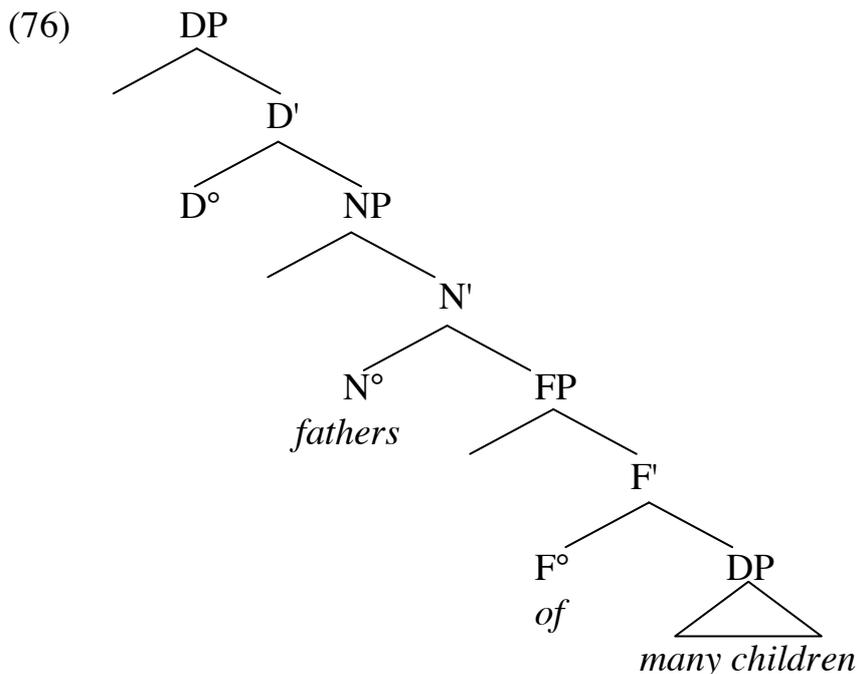
As shown in (77), the pre-nominal structure can be derived from (76) by moving the quantified possessor DP to SpecDP (and possibly moving F° to D° where the complex head is spelled out as *-s*).

(77)

```
                        DP
              ┌──────────┴──────────┐
            DPᵢ                     D'
           ╱  ╲              ┌───────┴───────┐
        many              (F°ⱼ+)D°           NP
       children              s              ╱  ╲
                                    fathers (tⱼ) tᵢ
```
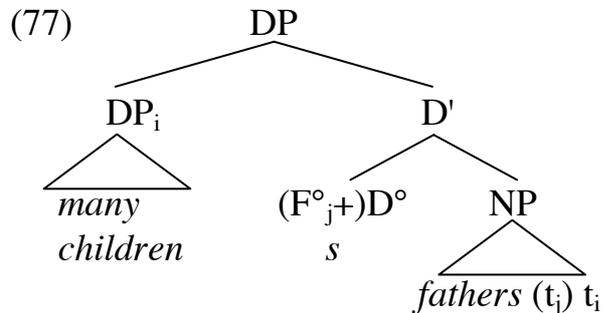
As regards interpretation, the unambiguity of DPs with a pre-nominal quantified possessive shown in (73)-(75) indicates that only the higher copy but not the lower copy of the quantified phrase in (77) counts for scope: Only the distributive reading, where *many* takes wide scope, is accessible in this construction. DPs with a post-nominal quantified possessive, in contrast, are ambiguous between a collective reading and a distributive reading (see the examples in (68)-(72) above). This may be accounted for by the assumption that optional covert movement of the quantified possessor to SpecDP is possible. *Many children* in (76) would then be expected to be able to take narrow scope (*in situ* occurrence) or wide scope (after covert movement).

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Adjectives and clausal complementation *

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Abstract

In this paper I show that Swedish has a type of relative clause that doesn't modify nominal expressions, contrary to most descriptions/definitions of relative clauses. Instead this type of relative clause modifies evaluative predicates. The relative clause has similarities to both control clauses and attributive relative clauses.

I point out some issues that theoretical accounts of these relative clauses must take into consideration, and also how current generative analyses fail to meet these considerations. A promising route in such a generative framework seems to be one where the head of the relative clause and the relative clause itself are independently merged in the structure; the head as subject in the matrix clause and the relative clause as an adjunct/complement to the predicate it modifies. What makes this relative clause different from NP modifying relative clauses is the relation between the gap and the head.

1   Introduction

Relative clauses are in general considered to be modifiers of nominal expressions, (1). This is a crosslinguistic observation that scholars from various theoretical frameworks agree on (Alexiadou et al. 2000, 2-4; Croft 2001, 322; Falk 2001; Dixon 2010, 314).[1] Swedish is no exception, (2).

(1)   a.   The girl who was here is Mary's friend.

       b.   I know a man who works on the docks.

---

[1]The semantics of modification is obviously very important in relation to relative clauses. However, this paper is concerned with the syntactic aspects of modification and I will use the term in a quite non-technical sense, similar to statements such as 'adverbs modifies verbs and adjectives, and adjectives modify nouns'.

(2) a. Flickan som var här är Marias vän.
the girl who was here is Mary's friend
'The girl who was here is Mary's friend.'

b. Jag känner en man som jobbar i   hamnen.
I   know   a man who works in the docks
'I know a man who works on the docks.'

However, Swedish has one type of construction in which a predicate, an evaluative adjective, is modified by what appears to be a relative clause:

(3) a. Flickan är dum   *som går dit*.
the girl is stupid that goes there
'The girl is stupid to go there.'

b. Lars var snäll *som hjäpte mig*.
Lars was kind that helped me
'Lars was kind to help me.'

The exact status of the clauses in italics in (3) is not clear, even if they are considered by Teleman et al. (1999, vol.4:486) to be extraposed attributive relative clauses. In contrast to other relative clauses, the subordinate clause in (3) shares syntactic and semantic properties with both control clauses and relative clauses.

The purpose of this paper is on the one hand a close examination of these clauses, and on the other a discussion of what theoretical implications they have for linguistic theory. The outline of the paper is as follows. The second section is an examination of some general properties of these clauses and their semantics. It is shown that they indeed modify predicates, not NPs/DPs. The third section compares the clause to control clauses and I argue that classifying the clause as a control clause is very problematic. The fourth section compares the clause to relative clauses. I show that classifying it as a relative clause is problematic, too, but probably the best option. However, it is not the kind of relative clause that Teleman et al. (1999) claim it is.[2]

---

[2]Teleman et al. (1999, vol.4:486) say "a special variant of the attributive clause is the extraposed relative subordinate clause with a function similar to an adverbial that indicates cause."(my translation).

The classification as such is not the ultimate aim of the paper. The classification is rather a reflection of the approach that should be used in accounting for the missing argument, the so called gap, in the clause. If the italicized clauses are control clauses, we expect that the missing argument can be accounted for in parallel to other control clauses. This account is for obvious reasons theory dependent and may involve PRO, case positions and theta role assignment in the minimalist program, or functional/anaphoric control in LFG. If the clauses are relative clauses, we expect that the missing argument can be accounted for by means of the machinery a theory uses for accounting for gaps in relative clauses.

The reason for restricting the options to control and relative clauses is that these are the only types of subordinate clauses in Swedish that can have implicit arguments.[3] The fifth section discusses various linguistic theories in relation to this type of relative clause and what problems they have in accounting for predicate modifying relative clauses. The sixth section contains some concluding remarks.

2   The semantics

In this section I will show that the italicized clauses (from now *predicate modifying relative clauses*, PMRCs) in (3) really modify predicates and not NPs. Also, I will show some general characteristics of the PMRC.

First, the interpretation of the PMRC is that it restricts the predicate, not the subject NP in (3), repeated here:

3   a.   Flickan är dum   *som går dit*.
   the girl is stupid that goes there

---

[3]I don't make a distinction between control clauses and external case marking (ECM) clauses, and I don't consider so called small clauses, as in (i).

i   Lisa gick   hem full.
  Lisa walked home drunk
  'Lisa walked home drunk.'

'The girl is stupid to go there.'

b.   Lars var snäll *som hjäpte mig*.
      Lars was kind that helped me
      'Lars was kind to help me.'

In (3a) it is possible to interpret the relative clause as an attributive extraposed relative clause (RC, from now) with the interpretation that the one who is stupid is the girl, and the RC helps to restrict the reference of the NP. However, this interpretation is not the salient one. In (3b) this NP restrictive interpretation is even harder to get since the NP is a proper name and proper names usually don't require restriction. Proper names uniquely identify a referent by default. It is also possible to use a subject NP that doesn't allow attributive RC modification at all. In (4) the first person pronoun resists RC modification, showing that the PMRC does not modify the antecedent to the gap, in other words it is not attributive. Another type of phrase that doesn't allow RC modification is wh-words. In (4c) it's impossible to interpret the RC as a modifier of the subject as shown in (4d)

(4)   a.   Jag är dum   som aldrig lär   mig.
            I   am stupid that never learn refl

            'I am stupid never to learn.'

      b.   * Jag som aldrig lär   mig är dum.
            I   that never learn refl is stupid

            'I who never learn is stupid.'

      c.   Vem är dum   som aldrig lär   sig?
            who is stupid that never learn refl

            'Who is stupid never to learn.'

      d.   * Vem som aldrig lär   sig är dum?
            who that never learn refl is stupid

            'Who who never learns is stupid.'

In the predicate modifying interpretation the meaning of the sentences corresponds to the English translations with a non-finite clause. As shown by Stowell (1991), Kertz (2006) and Oshima (2009), among others the nonfinite clause is part/modifier of the adjective phrase. In Swedish the PMRC restricts

the predicate; in (3a) *flickan* 'the girl' is stupid only in relation to the event of 'going there'; in (3b) *Lars* is kind only in relation to 'helping me'. This restriction of the predicate gives the PMRC an interpretation which is similar to a causative or even conditional interpretation; the predication only holds under certain conditions. This is why Teleman et al. (1999, vol.4:486) claim the PMRC is similar to an adverbial that has causative interpretation.

The fact that the PMRC modifies the predicate shows in what the sentences in (3) assert. In (3a) it isn't contradictory to say:

(5)   Flickan är dum   *som går dit*,   men hon är inte dum   i
        the girl is stupid that goes there but she is not stupid in
        allmänhet.
        general
        'The girl is stupid to go there, but she isn't stupid in general'

If the RC is interpreted as modifying the NP, (5) is indeed a contradiction:

(6)   Flickan *som går dit*   är dum   men hon är inte dum   i
        the girl that goes there is stupid but she is not stupid in
        allmänhet.
        general
        'The girl who goes there is stupid, but she isn't stupid in general'

What RCs and PMRCs have in common is restrictive semantics. Attributive RCs restrict arguments and PMRCs restrict predicates. As we will see below, it is possible to extend the PMRC's domain of restriction from adjectival predicates to nominal predicates.

The PMRC is restricted to modifying evaluative predicates. Evaluative adjectives (EAs hereafter) have been recognized as a semantic category for a long time (Bolinger, 1961; Lees, 1960; Stowell, 1991; Kertz, 2006, 2010). Even though EAs seem to belong to a homogenous semantic class, not all adjectives in this class show the same syntactic behaviour. There are EAs that do not allow modification of PMRCs, for example *intelligent* 'intelligent' and *begåvad* 'gifted'. Instead, they behave like non-EAs such as *lång* 'long'.

(7)   a.   Johan är smart som går   till tandläkaren regelbundet.
            John is clever that goes to the dentist   regularly

'John is clever to go to the dentist regularly.'

b.   * Johan är intelligent som går   till tandläkaren regelbundet.
John   is intelligent that goes to   the dentist   regularly
'John is intelligent to go to the dentist regularly.'

c.   * Lisa är lång som når upp till taket.
Lisa is tall   that reaches to   the ceiling
'Lisa is tall to reach the ceiling.'

In (7a), *smart* 'clever', is an EA that allows modification by a clause and *intelligent* in (7b) is an EA that doesn't.[4]

As mentioned above, it's possible to use PMRCs with predicative nouns. Some EAs have corresponding nouns, and when these nouns are used predicatively, they can be modified by a PMRC:

(8)   a.   Han var en idiot som slog ihjäl katten.
he   was an idiot that killed   the cat
'He was an idiot to kill the cat.'

      b.   Jag är en dumbom som inte betalar räkningarna.
I   am a fool   that not pay   the bills
'I'm a fool not to pay my bills.'

We get the same interpretation here as in (3). It is only in relation to killing the cat that someone is an idiot, not in general. If these nouns are used referentially the interpretation is that of an RC and the wellformedness is marginal:

(9)   ?? Jag känner en idiot som slog ihjäl katten.
I   know   an idiot that killed   the cat
'I know an idiot who killed the cat.'

In this section, I have shown that the PMRC really is a modifier of predicates rather than of nouns. What remains to show is that it indeed is a RC and not

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[4]One difference between EAs that allow modification and those that don't seems to be the adjective's ability to function as both a stage and an individual level predicate. Adjectives that readily get a stage level interpretation allow modification. I will not deal with the differences between different EAs in this paper. Nor will I try to work out a definition for them. I will simply use those that are 'canonically' evaluative. Teleman et al. (1999, vol.2:175) provide a list of evaluative adjectives.

a control clause. The major argument against a relative clause classification is the fact that PMRCs don't modify nouns, in many descriptions a defining criterion for RCs. In the following sections the properties of the PMRC will be investigated in detail and compared to Swedish control clauses and relative clauses. As mentioned in the introduction the purpose is to determine the most probable approach to accounting for the relation between the subject in the main clause and and the gap in the PMRC. I will start by comparing PMRCs to control clauses.

3 Control

The fact that the PMRC doesn't modify the subject NP would in many descriptions (Platzack, 2000; Teleman et al., 1999; Dixon, 2010) disqualify it as an RC.[5] The only viable option if this clause isn't a type of RC is to treat as a type of control clause. In this section the PMRC will be compared to control clauses regarding both syntax and semantics. There are several similarities between the two types of clauses that could warrant a control classification of PMRCs. But, as I will show, there are a few facts that make such a classification very troublesome. First we will look at some indirect similarities that involve paraphrases. Second, we will look at the missing subject and then we will look at what I have called tense dependency. Finally we will look at some obvious differences between control clauses and PMRCs.

3.1 Indirect similarities

There are two indirect reasons to classify the PMRC as a control clause: One is the fact that the paraphrases of (3), (10a) and (10b), contain nonfinite control clauses.

> 3   a.   Flickan är dum *som går dit*.
>   the girl is stupid that goes there
>   'The girl is stupid to go there.'

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[5] I will get back to the criteria for RCs in section 4.

b.   Lars var snäll *som hjäpte mig*.
Lars was kind that helped me
'Lars was kind to help me.'

(10)   a.   Det var snällt (av Lars) att hjälpa mig.
it was kind (of Lars) to help me
'It was kind (of Lars) to help me.'

b.   Att gå dit var dumt (av flickan).
to go there was stupid (of the girl)
'To go there was stupid (of the girl).'

The other indirect reason is that PMRCs have the same interpretation as the nonfinite clauses that modify EAs in English:

(11)   a.   John was stupid *to kill the cat*.

b.   Mary was kind *to help me*.

The italicized clauses in (39) are analyzed as control clauses (see e.g. Kertz, 2010, and references therein). However, these two reason to treat the PMRC as a control clause are only indirect and bear on parallels to other constructions, rather than on the actual behaviour of the PMRC.

3.2 The subject gap

If we turn to direct similarities between PMRCs and control clauses, there are two facts that speak in favour of a control clause analysis. The first is the fact that both PMRC and control clauses are the only types of clauses in Swedish where the gap is restricted to subjects (i.e. missing subjects). The second is the fact that there is some kind of tense dependency between the main clause and the embedded clause in both PMRC and control clauses. This dependency is not found between relative clauses and main clauses. We start by looking at the gapped position. As illustrated in (12), only subject gaps are allowed in control clauses in Swedish.

(12)   a.   Maria ville träffa Johan.
Mary wanted meet John
'Mary wanted to meet John.'

b. Maria övertalade Johan att träffa henne.
   Mary persuaded John to meet her
   'Mary persuaded John to meet her.'

c. * Maria har velat Johan träffa – .
   Mary has wanted John meet –
   'Mary wanted that John should see her'.

d. * Maria övertalade Johan att träffa –.
   Mary persuaded John meet –
   'Mary wanted that John should see her'.

Irrespective of whether we have subject control, as in (12a), or object control, (12b), only the subject in the non-finite clause can be gapped. It's impossible to interpret a missing object as coreferential with a matrix subject, or object, as in (12c) and (12d). This is indeed the same pattern we find in the PMRC:[6]

(13) a. Flickan var snäll som hjälpte Lars. SUBJECT
   the girl was kind that helped Lars.
   'The girl was kind to help Lars.'

b. * Flickan var snäll som Lars hjälpte. OBJECT
   the girl was kind that Lars helped.
   'The girl was kind for Lars to help.'

c. * Flickan var snäll som Lars gav boken. IND. OBJ.
   the girl was kind that Lars gave the book
   'The girl was kind for Lars to give the book.'

d. * Flickan var snäll som Lars pratade med. OBJECT OF PREP.
   the girl was kind that Lars talked to
   'The girl was kind for Lars to talk to.'

There is one important difference between control clauses and PMRC regarding the subject gap. In PMRCs there is a semantic restriction on the missing subject. There is no such restriction in control clauses. According to Teleman et al. (1999, vol.4:505) the semantic role of the subject in the PMRC must be

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[6]Some of these examples are wellformed if the RC is interpreted as an extraposed attributive relative clause. I will return to this in section 4.

an agent. In sentence (14), the PMRC has a missing subject, but the sentence is still ill-formed, since the missing argument is not agentive.

(14)   * Demonstranten var dum   som arresterades.
          the protester   was stupid that was arrested

However, the requirement is not strictly that the gapped subject be an agent (contra the claim in Teleman et al. 1999). It's enough that the subject has some vague type of control or influence over the event described in the PMRC, or that it is an experiencer as in (15a). Passives formed with *bli* 'become', which imply that the subject has control over the described event, are well-formed. Compare (14) with (15b). Other paraphrases that allow for the subject to have some influence on the actions are also well-formed. For example, the verb *låta* 'let' indicates that the subject has some kind of influence on an event, even though it is not an agent, and when this verb is used the sentence is well-formed (15d). It is possible, too, for the missing argument in the PMRC to have the semantic role of causer, which also involves control or influence, as in (15e) and (15f).

(15)   a.   Pojken var tokig som var förälskad i   henne
                 the boy was crazy that was in love   with her
                 'The boy was crazy to be in love with her.'

        b.   Demonstranten var dum   som blev   arresterad.
                 the protester   was stupid that became arrested
                 'The protester was stupid to get arrested.'

        c.   Pojken var tokig som blev förälskad i   henne.
                 the boy is   crazy that gets in love   with her
                 'The boy is crazy to fall in love with her.'

        d.   Demonstranten var dum   som lät sig arresteras.
                 the protester   was stupid that let refl arrested
                 'The protester was stupid to let herself/himself be arrested.'

        e.   Demonstranten var dum   som fick sin   kompis
                 the protester   was stupid that had his/her friend
                 arresterad.
                 arrested
                 'The protester was stupid to have his/her friend arrested.'

  f. Du var dum som hade honom att stämma mig.
     You were stupid that had him to sue   me
     'You were stupid to have him sue me.'

The semantic requirement that the subject be in some kind of control of the action described in the clause indicating cause is probably induced by the EA. The same semantic restriction holds when the sentences are paraphrased with a causal finite clause with *eftersom* 'since':

(16) a. * Demonstranten var dum eftersom hon arresterades.
     the protester was stupid since she was arrested
     'The protester was stupid since she was arrested.'

    b. * Pojken var tokig eftersom han var älskad av henne
     the boy was crazy since he was loved by her
     'The boy was crazy since he was loved by her.'

The sentences in (16) show that the semantic restriction is not connected to the PMRC, but to the EA.

3.3 Tense dependency

Another similarity between control clauses and PMRCs is tense dependency. Since control clauses in Swedish are non-finite, their tense interpretation is dependent on a tensed verb in a matrix clause.[7]

(17) a. Jag övertalade Lisa att diska.
     I persuaded Lisa to do the dishes
     'I persuaded Lisa to do the dishes.'

    b. Jag ska övertala Lisa att diska.
     I will persuade Lisa to do the dishes
     'I will persuade Lisa to do the dishes.'

In (17) the interpretation of the nonfinite clause is that it takes place after the event in the main clause, irrespective of when that event took place, or will

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[7]I will not discuss participles, which are non-finite too. They have too different a distribution from infinitival clauses and PMRC to be relevant.

take place. Whether the event in the embedded clause takes place before or after the actual speech event is not determined when the matrix verb is in the past tense. In PMRC constructions there is tense dependency, too.

(18) a. Pojken är dum som går dit.
the boy is stupid that goes there
'The boy is stupid to go there.'

b. Pojken var dum som gick dit.
the boy was stupid that went there
'The boy is stupid to go there.'

c. * Pojken var dum som går dit.
the boy was stupid that goes there
'The boy was stupid to go there.'

d. ? Pojken är dum som gick dit.
the boy is stupid that went there
'The boy is stupid to go there.'

e. ? Pojken är dum som ska gå dit.
the boy is stupid that will go there
'The boy is stupid to go there.'

f. Det var dumt av pojken att gå dit.
It was stupid of the boy to go there
'It was stupid of the boy to go there.'

g. Att gå dit var dumt av pojken.
to go there was stupid of the boy
'To go there was stupid of the boy.'

The tense dependency holds between the PMRC and its matrix clause. Unless the tenses in the matrix clause and the PMRC are the same, the sentences are ill-formed, (18c), but given that the event in the PMRC is quite recent it is possible to have present tense in the matrix clause, (18d). Also if the event in the PMRC is intended to take place, different tenses are possible, (18g). There is a logical requirement that the event, or the intention of carrying out the event, in the PMRC overlaps with the state of the adjective. Therefore the state that the adjectives refers to cannot have ended when the event in the

PMRC (intends to) takes place, as in (18c). Since the paraphrases in (18f) and (18g) have nonfinite control clauses there is tense dependency in these too.

There are two options regarding the tense dependency in the PMRC. Either the tense in the PMRC is 'independent' or it is 'parastic' on the tense in the matrix clause. 'Parasitic' means that the tense morphology is but a marker without any independent tense semantics. Multiple marking of verbal morphology is also called 'multiple exponence' by Sells (2004). This kind of parasitic verb morphology is well described in Swedish (Anward, 1988; Hedlund, 1992; Wiklund, 2001, 2007; Sells, 2004). The question is if the tense marking in the PMRC is parasitic on the tense in the matrix clause. If the tense marking on the verb in the PMRC is parasitic, it would be a very strong argument for treating the PMRC as a control clause, since the verb on some level of representation would lack tense, just as the non-finite verb in control clauses. So let us look at the multiple exponence of verb-verb agreement that we find in Swedish.

In (19) the two sentences are identical syntactically and semantically and the parasitic supine in (19b) is only a 'surface' form.

(19) a. Flickan skulle ha kunnat   göra   det.
          the girl would have be.able(sup) do(inf.) it
          'The girl would have been able to do it to do it.'

      b. Flickan skulle ha kunnat   gjort   det.
          the girl would have be.able(sup) done(sup.) it
          'The girl would have been able to do it.'

The supine is not the only form that can be parasitic in Swedish. We find the same parasitic pattern in imperatives, (20), fronted VPs, (21), and possibly even passives (22).[8]

(20) a. Sluta   skrika!
          stop(imp.) shout(inf.)
          'Stop shouting!'

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[8]It's unclear whether the passive form 'behövs' *need* in (22b) is parasitic or a real passive form. More research is needed on this topic.

    b.   Sluta   skrik!
         stop(imp.) shout(imp.)
         'Stop shouting!'

(21)   a.   Dansar   offentligt gör   hon inte.
         dances(pres.) in public does(pres.) she not
         'She will not DANCE in public.'

      b.   * Dansa   offentligt gör   hon inte.
         dance(inf.) in public does she on the other hand not
         'She will not DANCE in public.'

      c.   Dansade   offentligt gjorde   hon inte.
         danced(past) in public did(past) she not
         'She would not DANCE in public.'

      d.   * Dansa   offentligt gjorde   hon inte.
         dance(inf.) in public did(past) she not
         'She would not DANCE in public.'

(22)   a.   Det behöver köpas   dricka till festen.
         it   needs   bought(pass) drinks for the party
         'Drinks need to be bought for the party.'

      b.   Det behövs   köpas   dricka till festen.
         it   need(pass) bought(pass) drinks for the party
         'Drinks need to be bought for the party.'

There is no semantic difference between the pairs in (19) to (22). Where there is alternations between the base form and a parasitic form, the parasitic form is characteristic of spoken and informal registers. The fact that there's parasitic tense marking in Swedish in other clause types may be an indication that the tense dependency we find between the PMRC and its matrix clause is of the same kind. However, there are restrictions on parasitic tense marking. As Wiklund (2001) points out, the domain for parasitic tense is the clause and tense only spreads between lexical verbs and auxiliaries, never between two lexical verbs.[9] PMRCs violate both these constraints. The tense dependency

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[9]The exception is so called pseudocoordination where two lexical verbs are coordinated. The first verb is usually a verb of posture and the coordination has aspectual meaning:

is between two lexical verbs, and the verbs are in two different clauses. If the matrix clause is embedded in a context which makes it nonfinite the PMRC must still be finite. An indication that the tense marking in the PMRC is not parasitic on tense in the matrix clause:

(23) a. Hon ansåg   honom vara   dum som gick dit
         she considered him   stupid that went there

b. Hon anser   honom vara   dum som går   dit
    she considers him   stupid that goes there

c. * Hon ansåg   honom vara   dum som gå   dit
      she considered him   stupid that go   there

d. * Hon anser   honom vara   dum som gå   dit
      she considers him   stupid that go   there

Also, in all other cases of parasitic verb morphology, the parasitic form is not obligatory. There is variation between the infinitival form and the inflected parasitic form.[10] From sentences (23c) and (23c) it is clear that there is no such variation of the verb forms in PMRCs. The conclusion is that the tense dependency we find between the tense in the matrix clause and the PMRC is not of the parasitic kind and both clauses contain independent tense marking. The fact that PMRCs have tense makes them very different from control clauses which must be nonfinite in Swedish.

To conclude the sections on similarities between PMRC and control clauses. It seems that the two strongest arguments for classifying PMRCs as control clauses are: 1. the requirement that the missing argument be a subject, and 2. the requirement that the main clause and the PMRC have the same tense, i.e. tense dependency. In the next section we shall look at the differences we find between these two clause types.

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i   Lisa satt och läste /sitter och läser.
    Lisa sat and read /sits   and reads

    'Lisa is reading/was reading.'

In psedocoordination the tense on the verbs must be the same. Since the conjunction *och* 'and' is obligatory I will not make any comparisons to this construction.

[10]Fronted VPs are an exception where tense on both verbs is obligatory for most speakers of Swedish.

3.4 Differences

There are several differences between PMRCs and control clauses. In addition to the difference regarding the semantic role of the subject gap and tense, described in the previous sections, there are distributional differences between the clause types.

Control clauses can be fronted, (24a), whereas PMRCs cannot, (24b).

(24) a. Att gå på bio   övertalade jag honom.
to   go to movie persuaded I   him
'To go to the movies, I persuaded him to do.'

b. * Som går   dit,   är han dum.
that goes there, is he   stupid
'To go there, he is stupid.'

PMRCs only follow evaluative predicates, as mentioned in section 2. Control clauses, in contrast, follow any predicate that subcategorizes for infinitival clauses. The important thing is that control clauses and PMRCs are in complementary distribution. We never find infinitival clauses after evaluative adjectives, (25a) and (25b) and we never find PMRC after predicates that select for control clauses (25c) and (25d). This is an unexpected distribution if PMRC were a kind of control clause.

(25) a. * Lisa är dum   att gå dit.
Lisa is stupid to go there

b. * Pojken är snäll att hjälpa till.
the boy is kind to help   out

c. * Lisa önskade som diskar.
Lisa wished   that does the dishes

d. * Lisa övertalade Johan som diskar.
Lisa persuaded John   that does the dishes

To sum up the differences between control clauses and PMRCs, there are all in all four clear differences between the two. Control clauses are nonfinite, have no semantic restriction on their subject gap, can be fronted and are not restricted by the semantics of their selecting predicate. PMRCs are finite,

have a semantic restriction on their subject gap and cannot be fronted and are restricted by the semantics of their selecting predicates; they must modify evaluative predicates.

3.5   Control or not?

How the properties of control clauses are accounted for depends on the theoretical framework one chooses to adopt. If PMRC are categorized as control clauses the following facts are accounted for, presuming that the chosen theoretical framework has an account of the properties of control.

- The missing argument must be a subject, since that's the only argument that can be missing in control clauses in Swedish.

What remains unaccounted for if the clause is categorized as a control clause, are the following facts:

- the requirement that the gapped subject have a semantic role that involves control, or is anything but theme.

- the impossibility of fronting and the complementary distribution of other control clauses.

- the requirement that the PMRC be tensed, past or present, but not nonfinite.

Since all control clauses in Swedish are nonfinite, infinitival or participial, categorizing the finite PMRC as a control clause will have consequences for any account of control. This tense difference is on its own enough to disqualify PMRCs as an instance of control, I would say. The problem that follows if PMRCs are classified as control clauses is that the lack of tense/finiteness is often a necessary condition in theoretical analyses of control clauses (Chomsky, 1981; Bresnan, 1982; Falk, 2001). Having dismissed a categorization of the PMRC as a type of control clause, we now turn to its similarities and differences compared to relative clauses.

4 Relative clauses

Even though the PMRC looks like an RC, it differs in one important way: it isn't a modifier of the gapped noun phrase. Dixon (2010, 314) lists four characteristics of relative clause constructions. The main points of these characteristics are given in (26):

(26)   a. The construction involves two clauses making up one sentence which consists of a single unit of intonation.

       b. The underlying structures of these two clauses must share an argument (called the common argument (CA)). The CA is understood to function as an argument in the main clause (MC) and as an argument in the RC .

       c. The RC functions as a syntactic modifier[11] of the the CA in the MC. At the semantic level it will normally provide information about the CA which assists in focussing–or restricting–the reference of the CA (restrictive RC), or provide further information about the CA (non-restrictive RC).

       d. The RC must have the basic structure of the clause, involving a predicate and the core arguments required by that predicate.

Compared to control clauses there is actually only one of Dixon's criteria that distinguishes RCs from control clauses, and that is (26c). This is exactly the criterion that PMRCs fail to meet. That RCs modify nouns is taken for granted in both descriptive (Nikolaeva, 2006) and theoretical work (Platzack, 2000; Dalrymple, 2001; Falk, 2001) or as Alexiadou et al. (2000, 2) put it: "The best studied case of [noncanonical complementation] is the relative clause construction, in which *the clause is embedded inside a nominal expression which it modifies.*"(my emphasis).

Since PMRCs don't modify nominal expressions they clearly fail to meet the modification criterion. However, in this section I will show that even

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[11]It's not clear what Dixon means by 'syntactic modifier' since most of his criteria for RCs are semantically based.

though they fail to do that, their similarities to RCs are too many to be a coincidence.

First, I will compare PMRCs to restrictive and non-restrictive RCs. After that we will look at some syntactic similarities and dissimilarities, and finally there will be a comparison of some semantic parameters.

Semantically there is a difference between restrictive and non-restrictive RCs, and some would say that there are syntactic differences as well (Kayne, 1994; Platzack, 2000). Restrictive RCs are necessary modification in the sense that they delimit the set of possible referents of elements referred to by the common argument, and non-restrictive RCs gives extra information about an independently established referent (Dixon, 2010; Teleman et al., 1999, vol.4:486). In Swedish, non-restrictive relatives are possible to modify with the phrase *för övrigt* 'by the way' (see Platzack, 2000), as in (27a). From (27b) it is clear that PMRCs are not non-restrictive relative clauses, since they are impossible to modify with *för övrigt*.

(27) a. En man var här igår   som, för övrigt, kände Lisa.
          A man was here y-day, that, by the way knew Lisa.

      b. * Pojken är dum   som, för övrigt, går dit.
          the boy is stupid that, by the way goes there.

Swedish and other Scandinavian languages are famous for their possibilities to extract out of relative clauses, (Andersson, 1974; Allwood, 1976; Engdahl, 1980, 1982, 1997; Taraldsen, 1982, a.o). One of the restrictions on extractions is that the relative clause is restrictive (compare (28) and (30)) (Teleman et al., 1999, vol 4:500). Taraldsen (1982) claims that extraposition of the relative clause is obligatory for extraction to take place, and sometimes it is even string vacuous. In (28) the RC has moved to a position to the left of the adverbial *igår* 'yesterday' and in (29) the RC is, according to Taraldsen (1982), in the same extraposed position.[12] Given the right context, extraposition out of the PMRC is possible, (31) and (32); a further indication that

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[12]Taraldsen (1982) uses sentences that involve phrasal verbs and stacked relatives, not the kind of sentences in (28)-(32).

PMRCs are not non-restricted relative clauses.[13]

(28)   Såna blommor stod   en man på torget   i går   som sålde
        those flowers   stood a   man at the square y-day that sold
        'A man who sold flowers like that was in the square y-day.'

(29)   Såna blommor känner jag en man som säljer.
        those flowers   know I   a   man who sells
        'Flowers like that, I know a man who sells them'

(30)   * Såna blommor stod   en man på torget   i går   som för övrigt
        those flowers   stood a   man at the square y-day that by the way
        sålde
        sold
        'A man who sold flowers like that was at the square y-day, by the
        way.'

(31)   Har du hört att Nilsson knappt säljer någon mjölk nuförtiden?
        'Have you heard that Nilson sells hardly any milk nowadays?'

        ? Ja,   och den sista kon som gav   mjölk var han väldigt dum
        Yes, and the last cow that gave milk   was he   very   stupid
        som sålde.
        that sold
        'Yes, and he was very stupid to sell the last cow that gave any milk.'

(32)   Jag vet inte hur jag ska orka springa. Jag har inte tränat på veckor.
        'I don't know how I will be able to run. I haven't exercised in weeks'.

        ? Stockholm maraton var   du ju   vansinnig som anmälde dig
        Stockholm marathon were you part. insane   that registered refl
        till då.
        for then
        'Then you were insane to register for STHLM marathon.'

The conclusion is that if PMRCs are RCs, they are of the restricted kind.
The PMRCs show other characteristics in common with RCs. First, both are

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[13]Extractions out of relative clauses are very sensitive to context and lexical semantics
which makes it difficult to come up with fully wellformed examples, see Engdahl (1997, a.o.)

introduced by the subjunction *som*. Second, both types of clauses are finite. Third, as mentioned in section 3, PMRCs cannot be fronted, (33a), and neither can RCs, (33b).

(33) a. * Som går dit, är han dum.
          'To go there, he is stupid'.

      b. * Som jag känner, kommer en flicka idag.
          'That I know, a girl comes today'

However, there are differences between the two types of clauses as well. In contrast to control clauses, there are no restriction on what arguments can be left out in Swedish RCs. In Swedish an NP with any syntactic function in the matrix clause can be relativized, and the missing argument in the RC can have any syntactic function (Teleman et al., 1999, vol.4:485):

(34) a. Flickan som sjunger. SUBJECT
          the girl who sings

      b. En bok   som Lisa läste. OBJECT
          a   book that Lisa read

      c. Läraren   som Lisa gav en bok. INDIRECT OBJECT
          the teacher that Lisa gave a   book

      d. Hyllan   som boken   står   i. PREP. OBJ.
          the shelf that the book stands in
          'The shelf that the book is on.'

This is not possible with PMRCs. As shown before, there is a strict requirement that the missing argument be the subject. Since any argument can be relativized in RCs, there is no semantic requirement that the missing argument be in control of the event described in the RC. In section 3, example (16), it was shown that this requirement was induced by the evaluative predicate, not the PMRC itself, and it holds in other subordinate clauses too.

A further difference between PMRCs and RCs concerns extraposition. Swedish relative clauses can optionally be extraposed, as in (35).[14] The

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[14]According to Teleman et al. (1999, vol.3: ch 21), the conditions under which extraposed relative clauses are possible are not very well researched and I will not pursue this topic here.

PMRC is different. It can only get a predicate modifying interpretation when it is adjacent to the adjective. In (35) the meaning of the two sentences are the same, and the position of the attributive relative clause does not make a difference. When there is an EA, the position of the RC is important. If the clause is adjacent to the antecedent of the gap, the interpretation is that of a (non-) restrictive RC, (35c). It is only in the extraposed position that it is possible to get the predicate modifying interpretation discussed in section 2.

(35)   a.   Nu   är mannen som säljer dammsugare   här igen.
            now is the man that sells   vacuum cleaners here again
            'Now is the man who sells vacuum cleaners here again.'

       b.   Nu   är mannen här igen   som säljer dammsugare.
            now is the man here again that sells   vacuum cleaners
            'Now is the man here again who sells vacuum cleaners.'

       c.   Mannen som säljer dammsugare   är tokig.
            the man that sells   vacuum cleaners is stupid
            'The man who sells vacuum cleaners is stupid.'

This difference in position is crucial for for the different interpretations that RCs and PMRCs get. In fact, it is somewhat confusing to call the PMRC extraposed as Teleman et al. (1999) do, since it is not extraposed from the element it modifies. It modifies the evaluative predicate, which it is adjacent to. However, it is possible to extrapose the PMRC, with maintained predicate modifying interpretation:[15]

(36)   Lisa var dum   igår   som gick dit.
       Lisa was stupid y-day that went there
       'Lisa was stupid yesterday to go there.'

Another similarity between PMRCs and RCs is the distribution. Wherever an RC can occur we can have a PMRC. The only difference seems to be what they restrict, RCs restrict referential expressions and PMRCs restrict evaluative predicates.

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[15]I'm grateful to Christer Platzack for providing this example.

4.1 Relative clause or not?

Categorizing the clause following an EA as an RC, accounts for the following facts:

- The missing argument in a tensed clause

- the use of the relative subjunction *som*

- The restricting interpretation of the clause.

- The requirement of extraposition and that a non-extraposed clause gives a different interpretation and may even induce illformedness.

What remains unaccounted for if the clause is a RC, are the following facts:

- The requirement of missing subject and the fact that it must have some control over the event in the PMRC.

Even though PMRCs differ in these respects from RCs, I think the data on the whole this favours an RC-analysis of PMRCs. But instead of modifying referential expressions, such as NPs, they modify predicates, or at least predicative evaluative adjectives and nouns. The next section examines the phrase structure of the adjective phrase and the PMRC.

5 Phrase structure

The PMRC cannot be fronted:

(37) a. * Som går dit, är han dum.
              'To go there, he is stupid'.
       b. * Som inte betalade räkningarna är jag dum.
              'Not to pay the bills, I am stupid.'

This indicates that the PMRC is internal to the adjective phrase. The fact that fronting of the EA together with the PMRC supports such a structure:

(38) Fronting

    a.   Dum   som slog hunden var han.
            stupid that hit   the dog was he

    b.   En idiot som slog hunden var han.
            an idiot that hit   the dog was he

    c.   Dum   var han som slog hunden.
            Stupid was he   that hit   the dog

    d.   En idiot var han som slog hunden.
            An idiot was he   that hit   the dog

The fact that the adjective can be fronted on its own is probably a case of predicate fronting, as in (39)

(39)   Springer gör han.
          runs   does he
          'Running is what he's doing.'

(40)   a. * Hur dum   som slår hunden är Johan?
            how stupid that hits the dog is John

      b. ? Hur dum   är Johan som slår hunden?
            how stupid is John   that hits the dog

Wh-movement seems to favour a structure where the PMRC isn't part of the AP, but the status of the sentences is questionable.

(41) Exclamations

    a. ? Vad dum   som inte betalade räkningarna jag var!
          What stupid that not paid   the bills   I   was

    b.   Vad   dum jag var som inte betalade räkningarna!
          What stupid I   was that not paid   the bills
          'How stupid I was not to pay the bills'.

    c. ? Vilken idiot   som inte betalade räkningarna jag var!
          What an idiot that not paid   the bills   I   was

    d.   Vilken idiot   jag var som inte betalade räkningarna!
          What an idiot I   was that not paid   the bills

Again, the PMRC-clause doesn't seem to form a constituent with the EA or EN. However, end-weight may play a role here as well as in the case with wh-movement.

(42)   Pro-forms

   a.   Johan var dum   som slog hunden och det var Lisa med.
        John   was stupid that hit   the dog and that was Lisa too.
        'John was stupid to hit the dog and so was Lisa'.

   b.   * Johan var dum   som slog hunden och det var Lisa med
        John   was stupid that hit   the dog and that was Lisa too
        som slog katten.
        that hit   the cat

   c.   Johan var en idiot som slog hunden och det var Lisa med.
        John   was an idiot that hit   the dog and so   was L   too

   d.   *? Johan var en idiot som slog hunden och det var Lisa med
        John   was an idiot that hit   the dog and that was Lisa too
        som slog katten.
        that hit   the cat

Proforms indicate that the PMRC is part of AP. It is not clear whether it is a part of the predicative noun, though.[16] One possible structure of the construction is:

(43)
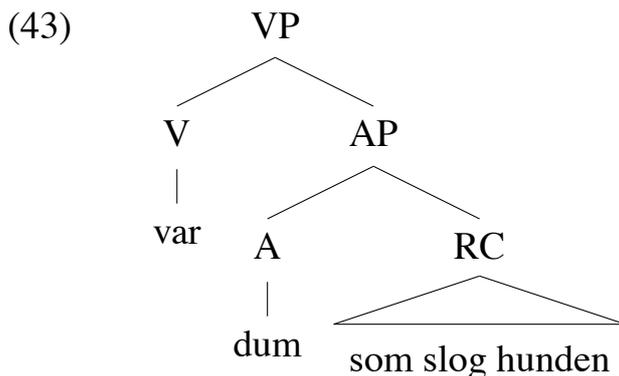
Also, the fact that the PMRC cannot occur without the adjective indicates that it is part of the AP. Whether it is an adjunct or an argument is difficult to say. The fact that only EAs can have PMRCs indicates that it is an argument, but the adverbial modification indicates adjunct status.

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[16]Even though it is important, I will not be concerned with the structure of the predicative DP in this paper.

6   Theoretical considerations

This section briefly points out some of the problems that a theoretical analysis of PMRCs must account for. The perspective is from a generative framework (Kayne, 1994; Chomsky, 2001). There are two key issues that are in need of explanation. The first is how the gap in the PMRC can be related to the subject of the PMRC's matrix clause, without inducing a noun modifying semantics. The second is how to account for the predicate modifying interpretation.

The subject gap in the PMRC: Since the PMRC doesn't modify the common argument, or head, any head internal analysis (Kayne, 1994; Platzack, 2000) of it will give the wrong semantics. An analysis along these lines will also have to involve substantive movement of the head, from an PMRC internal position to the subject position of the matrix clause. As has been pointed out previously (Borsley, 1997, among others), the noun and the determiner does not form a constituent in head internal analyses of RCs. In his analysis of Swedish RCs, Platzack (2000) assumes the following structure:

(44)

```
                    DP
                  /    \
                 D      NP
                       /   \
                      N     CP
                      |    /   \
                  flickan DP    C'
                          |    /  \
                         Op_i  som t_i gick dit
```
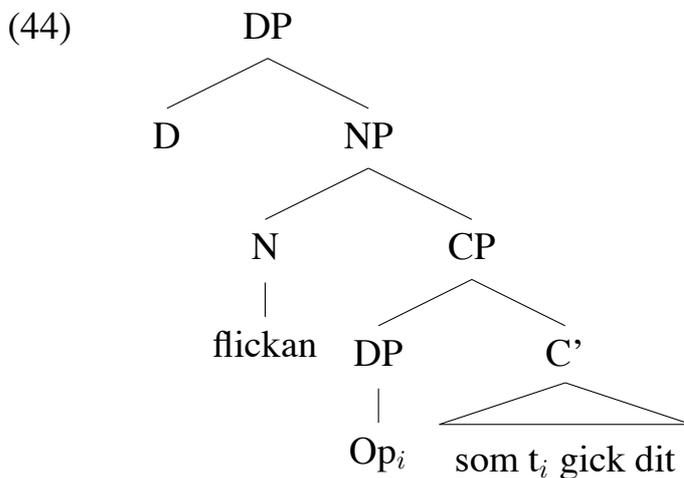
If (44) was the structure in the PMRC, the subject *flickan* is made up of D^0 and N^0, which isn't a constituent. In an analysis involving remnant movement this is avoided by first moving the CP and then moving the DP. Apart from the apparent ad hoc solution that this kind of movement operation involves, it still gets the semantics wrong. Such an approach to accounting for the subject gap predicts that the PMRC modifies the subject DP and not the evaluative

predicate.

Platzack (2000, 285-288) provides a different analysis for extraposed relative clauses. He recognizes the problem with moving the subject/head when it isn't a constituent. For extraposed RCs he proposes that the head is externally merged in the subject position and the gap in the extraposed RC is filled by an operator:[17]

(45) $[_{DP} [_{D^0} \text{ som}_i] [_{NP} [_{N^0} \text{ t}_i] [_{CP} \text{Op}_j [_{C^0} \text{ t}_i] [_{vP} \text{ t}_j \text{ går dit}]]]]$

Applied to PMRCs, this kind of analysis, without modification, would predict that the PMRC modifies the subject rather than the evaluative adjective. Just as Kayne's raising analysis in (44).

The predicate modifying interpretation: A related issue is how the PMRC can modify a predicate. It seems that the PMRC is embedded under the predicate it modifies, and not just extraposed to the end of the matrix clause. The consequence of this is that it is not possible to apply the same analysis to PMRCs and RCs, extraposed or not. The most obvious way to account for the predicate modifying interpretation is to assume that the PMRC is selected by the evaluative predicate, or perhaps optionally introduced just like an adverbial. As pointed out above, this relation to the predicate makes it very difficult to account for the subject gap. Neither the operator analysis nor the raising analysis gives the right semantics.

The most fruitful way to go about this problem is presumably to tease out the semantic properties of the operator in the operator analysis. The PMRC is merged with the predicate it modifies, just like most other modifiers, except for example extraposed relative clauses. The PMRC and RCs are not very different syntactically, the difference lies in the type of operator that they have. Exactly what this difference is, is a topic of ongoing research.

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[17]The structure in (45) is a simplified version of Platzack's (37).

7 Conclusion

In this paper I have shown that despite the fact that PMRCs don't modify nominal expressions, contrary to most descriptions/definitions of relative clauses, they are a type of relative clause. They modify evaluative predicates. They have similarities to control clauses, but also differences. The fact that control clauses are non-finite in Swedish and PMRCs finite, makes any attempt to give them a unified account very complicated and it has far reaching consequences for current theoretical analyses of control. It was shown that tense in the PMRC is an independent tense that isn't parasitic on its matrix clause. Had it been, a control analysis would probably be the best option. Instead the PMRC show many similarities to relative clauses and it seems that it is a subclass of relative clauses. It has more restrictions on it than RCs, but none of these restrictions violates any RC restriction. The crucial difference to RCs, though, being that PMRCs restrict predicates, not nouns.

I have pointed out some issues that a theoretical account of PMRCs must take into consideration, and also how current generative RC analyses fail to meet these considerations. The most promising route in such a framework seems to be one where the head of the PMRC (the common argument in Dixon's terms (2010)) and the PMRC itself are independently merged in the structure; the head as subject in the matrix clause and the PMRC as an adjunct/complement to the predicate it modifies. What makes PMRCs different from RCs is the relation between the gap and the head. The exact nature of this relation is the topic of ongoing research and hopefully the results will shed light on both predicate modification and the relation between gaps and their long distance dependencies to arguments.

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Information Structure, Syntax and

Intonational Properties of

Multiple *Wh*-Questions[*]

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Abstract

I discuss the issues on multiple *wh*-questions from the perspective of information structure. I argue, on the basis of the literature (Kiss 1993), that in the multiple *wh*-question that has a pair-list answer reading the *wh*-phrase interpreted as specific always moves to the position higher than the *wh*-phrase interpreted as focus and takes wide scope over the latter as a distributive universal quantifier, with the Superiority Effect not arising in the unmarked case. I also argue that in the multiple *wh*-question that has a single-answer reading *wh*-phrases move and function as a focus operator in pairs. I argue that the information-structural effects differ between the multiple *wh*-question that has a pair-list answer reading and the one that has a single-answer reading, thus the way of deriving them in narrow syntax differs too, with spelled-out positions of *wh*-phrases solely determined in the phonological component. I suggest that spelled-out positions of *wh*-phrases are determined by the intonational properties of individual languages, from which the Superiority Effect is derived too, and that the Superiority Effect is not problematic any longer in the current framework (Chomsky 2008).

1. Introduction

It is well-known that in multiple *wh*-questions one *wh*-phrase moves to sentence-initial position and additional *wh*-phrases remain in situ in, e.g. English (1), whereas all *wh*-phrases remain in situ in, e.g. Japanese (2). It is widely claimed that only a pair-list answer PA reading is obtainable in the former, whereas both a PA and a single-answer SA reading can be obtained in the latter. Specifically, (1) can have only a PA like 'he gave a ring to Mary, a flower to Lucy, …', whereas (2) can have both a PA like 'John bought a ring, Bob a flower, …' and a SA like 'John bought a ring'.

(1)   What did John give to whom?

(2)   Dare-ga   nani-o   kat-ta-no?   [Jap.]
        who-NOM what-ACC buy-PAST-Q
        'Who bought what?'

It is also widely claimed that in, e.g. English, multiple *wh*-questions are subject to the Superiority Effect SE (Pesetsky 2000). The *wh*-phrase base-generated in the highest position among *wh*-phrases can be raised to sentence-initial position in the unmarked case, whereas the *wh*-phrase base-generated in a lower position cannot be raised across the one base-generated in the highest position. Specifically, *who*, which is base-generated in the highest position among *wh*-phrases, can be raised to sentence-initial position (3), whereas *what*, which is base-generated in a position lower than *who*, cannot move across *who*. In some cases, however, the SE can be avoided, and the *wh*-phrase base-generated in a lower position can move to sentence-initial position across the one base-generated in the highest position: either a *wh*-subject *which student* (5a) or a *wh*-object *which book* (5b) can move

to sentence-initial position.

(3) a. Who bought what?

 b. [$_{CP}$ who C [$_{TP}$ ~~who~~ … [$_{v*P}$ ~~who~~ bought [$_{VP}$ … what]]]]

(4) a. *What did who buy?

 b. [$_{CP}$ what did [$_{TP}$ who … [$_{v*P}$ ~~who~~ buy [$_{VP}$ … ~~what~~]]]]

(5) a. Which student read which book?

 b. Which book did which student read?

The fact that multiple *wh*-questions are subject to the SE is problematic in the current phase system (Chomsky 2008), which I discuss in the next section.

In this paper I discuss the issues on multiple *wh*-questions from the perspective of information structure. I argue that the information-structural effects differ between the multiple *wh*-question that has a PA reading and the one that has a SA reading, thus the way of deriving them in narrow syntax NS differs too, with spelled-out positions of *wh*-phrases solely determined in the phonological component PHON. I suggest that spelled-out positions of *wh*-phrases are determined by the intonational properties of individual languages, from which the SE is also derived, and that the SE is no longer problematic in the currently assumed framework (Chomsky 2008). This paper is organized as follows. In section 2 I discuss the problems of multiple *wh*-questions that arise in the current framework (Chomsky 2008, Rizzi 1997). In section 3 I discuss the information-structural properties of multiple *wh*-questions. On the basis of the literature (Kiss 1993), I argue that in the multiple *wh*-question that has a PA reading the *wh*-phrase interpreted as specific always moves to the position

higher than the *wh*-phrase interpreted as focus and takes wide scope over the latter as a universal quantifier, with the SE not arising in the unmarked case.[1] I also argue that in the multiple *wh*-question that has a SA reading *wh*-phrases move and function as a focus operator in pairs. I argue that the derivation of the multiple *wh*-question that has a PA reading proceeds in one uniform way for all languages, and the derivation of the multiple *wh*-question that has a SA reading proceeds in another uniform way for all languages, with spelled-out positions of *wh*-phrases solely determined in PHON. In section 4 I propose the ways of deriving multiple *wh*-questions. In section 5 I suggest that spelled-out positions of *wh*-phrases are determined by the intonational properties of individual languages. I also suggest that the SE is caused by the inappropriate intonational pattern that could arise in the case of monosyllabic *wh*-phrases that are interpreted as specific and spelled out in situ. In section 6 I briefly conclude this paper, suggesting that the SE is not problematic any longer in the current framework. Throughout this paper I presuppose that the reader is familiar with the current framework (Chomsky 2008, Rizzi 1997).

2.   The problems of multiple *wh*-questions

Languages differ in whether and how many *wh*-phrases move in multiple *wh*-questions. All *wh*-phrases move to sentence-initial position in the Slavic languages (6). One *wh*-phrase moves to sentence-initial position, with the other *wh*-phrase(s) remaining in situ, in, e.g. English (7). All *wh*-phrases remain in situ in, e.g. Japanese (8).[2] Languages like French have the option between the English type and the Japanese type: only one *wh*-phrase moves in some cases

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[1] The definition of specificity is given in section 3.1.

[2] The surface appearance does not differ between Japanese and Bulgarian. However, Japanese is an SOV language, whereas Bulgarian is an SVO language, which indicates that the *wh*-phrases are raised in (6) but remain in situ in (8).

(9a); all *wh*-phrases can remain in situ in others (9b).[3]

(6)   Koj kakvo e kupil?   [Bul.]
        who what is bought
        'Who bought what?'

(7)   What did John give to whom?   (=1)

(8)   Dare-ga   nani-o   kat-ta-no?   (=2)
        who-NOM what-ACC buy-PAST-Q
        'Who bought what?'

(9)   a. Qu' a-t-il donné à qui?   [Fre.]
           what has-he given to who
           'What did he give to whom?'

        b. Il a donné quoi à qui?
           he has given what to whom
           'What did he give to whom?'

Scandinavian languages belong to the English type (7). One *wh*-phrase moves to sentence-initial position, with the other *wh*-phrase(s) remaining in situ; the *wh*-phrase base-generated in the highest position among *wh*-phrases can be raised to sentence-initial position in the unmarked case (10a). The *wh*-phrase base-generated in a lower position cannot be raised across the one base-generated in the highest position (10b). The SE can be avoided in some cases, and the *wh*-phrase base-generated in a lower position can move to sentence-initial position across the one base-generated in the highest position (11a-b).

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[3] See Bošković (2002) for a classification of the Slavic languages into the language types illustrated by (7-9).

(10) a. Vem åt vad?   [Swe.]
          who ate what
          'who ate what?'

      b. *Vad åt vem?
          what ate who
          'what did who eat?'

(11) a. Vilken person åt vilken mat?   [Swe.]
          which person ate which food
          'which person ate which food?'

      b. Vilken mat åt vilken person?
          which food ate which person
          'which food did which person eat?'

In the current phase theory (Chomsky 2000, 2001, 2004, 2008) it is assumed that the computation of human language proceeds uniformly in NS and the semantic component SEM for all languages (Chomsky 2004). This assumption is supported by the cartographic system (Rizzi 1997, Cinque 1999), in which the position where a category is located in NS corresponds to, and must correspond to, the interpretation that the category receives in SEM in all languages. Thus, a category that is located in, e.g. [Spec,Foc(us)P], in NS is, and must be, interpreted as focus in SEM in all languages. Also conversely, a category that is interpreted as focus in SEM is, and must be, located in [Spec,FocP] in NS in all languages.

Multiple *wh*-questions provide at least two problems for this currently assumed theoretical framework. First, a category is interpreted in the moved position, being raised by (the [Edge] feature of) a feature in a functional head. It is not necessary to assume any uninterpretable features as the trigger of movement. A feature in a functional head can freely choose a category that it 'wants to' raise. Thus, the fact that multiple *wh*-questions are subject to the SE

(10b) is problematic, as Chomsky (2008:152) notes, since (the [Edge] feature of) a feature in C could freely seek and raise either the *wh*-subject *vem* or the *wh*-object *vad* to its Spec, contrary to fact.[4]

Second, a sentential element that receives the same interpretation in SEM should be located in the corresponding structural position in NS in all languages, despite the difference in the surface appearance. In *wh*-movement a *wh*-phrase moves to [Spec,CP] in Swedish (12a), whereas it remains in situ in Japanese (13a). As long as the interpretation as a constituent *wh*-question does not differ between these languages, a *wh*-phrase should move to the operator position in NS in both Swedish and Japanese on the assumption of the uniformity of NS and SEM. The surface difference should be attributed to which copy of the *wh*-phrases is spelled out in PHON, either the copy in [Spec,CP] (12b) or the copy in situ (13b) (cf. Groat and O'Neil 1996).[5]

(12)   a.   Vad åt   du?   [Swe.]
             what ate you
             'What did you eat?'

       b.   [$_{CP}$ vad … [$_{TP}$ … [$_{v*P}$ … [$_{VP}$ … ~~vad~~]]]] (<vad,~~vad~~>)

(13)   a.   Kimi-wa   nani-o   tabe-ta-no?   [Jap.]
             you-TOP what-ACC eat-PAST-Q
             'What did you eat?'

       b.   [$_{CP}$ ~~nani-o~~ … [$_{TP}$ … [$_{v*P}$ … [$_{VP}$ nani-o …]]]] (<~~nani-o~~,nani-o>)

In the same way, all *wh*-phrases in multiple *wh*-questions should move to the

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[4] Strictly speaking, the problem lies in the possibility that (the [Edge] feature in) v* can raise a *wh*-object to its Spec, which further paves the way to the possibility that either the *wh*-object or a *wh*-subject can be raised by (the [Edge] feature in) C. See Chomsky (2008) for the detailed argument.

[5] From now on, I omit all the details of the sentential elements other than the relevant ones.

operator position to take scope as a *wh*-operator in all languages, as long as the interpretation, e.g. a PA reading, does not differ among languages. The surface difference should be attributed to which copy in *wh*-chains is spelled out in PHON, either the highest copy in both *wh*-chains (14a), the highest copy in one *wh*-chain and the copy in situ in the other *wh*-chain (14b), or the copy in situ in both *wh*-chains (14c) (cf. Bošković and Nunes 2007).

(14)　　a.　[$_{CP}$ koj kakvo … [$_{TP}$ … [$_{v*P}$ ~~koj~~ … [$_{VP}$ … ~~kakvo~~]]]]　　　　(=6)
　　　　　　　wh-chains: <koj,~~koj~~>, <kakvo,~~kakvo~~>

　　　　b.　[$_{CP}$ vem ~~vad~~ … [$_{TP}$ … [$_{v*P}$ ~~vem~~ … [$_{VP}$ … vad]]]]　　　　(=10a)
　　　　　　　wh-chains: <vem,~~vem~~>, <~~vad~~,vad>

　　　　c.　[$_{CP}$ ~~dare-ga~~ ~~nani-o~~ … [$_{TP}$ … [$_{v*P}$ dare-ga [$_{VP}$ nani-o …]]]]　　　(=2)
　　　　　　　wh-chains: <~~dare-ga~~,dare-ga>, <~~nani-o~~,nani-o>

3.　Information structure of multiple *wh*-questions

3.1.　The multiple *wh*-question that has a pair-list answer reading

Kiss (1993) claims that in multiple *wh*-questions the specific reading is triggered for either one of the *wh*-phrases. Specificity is defined as follows: '[a]n operator is specific if it quantifies over a set which the speaker and listener can partition exhaustively in an identical way' (Kiss 1993:92-93). Without any contexts, *vem* 'who' in a single *wh*-question (15a) is understood as non-specific in the unmarked case. *Vem* in a multiple *wh*-question (15b), on the other hand, has a more specific reading than *vad* 'what', as 'it applies to a countable set of discrete entities, which can be … easily identified with a contextually or situationally given set' (Kiss 1993:87).

(15) a. Vem åt den?   [Swe.]
        who ate it
        'Who ate it?'

      b. Vem åt vad?   (=10a)
        who ate what
        'Who ate what?'

The Hungarian multiple *wh*-question belongs to the Bulgarian type (6), in which all *wh*-phrases move. The cases below are interpreted with a PA reading. Kiss states that a set of persons is known in (16a), in which *kinek* 'who' moves to the position higher than *mit* 'what'. The question is targeted to the direct object, which carries the focus of the sentence: (16a) means, 'for each person, what did János bring for him?'. A set of things, on the other hand, is given in (16b), in which *mit* 'what' moves to the position higher than *kinek* 'who'. The question is targeted to the indirect object, which carries the focus of a sentence: (16b) means, 'for each thing, who did János bring it for?' (Kiss 1993:86).[6]

(16) a. Kinek   mit   hozott János?   [Hun.]
        who-DAT what-ACC brought János
        'What did János bring for whom?'

      b. Mit   kinek   hozott János?
        what-ACC who-DAT brought János
        'For whom did János bring what?'

Kiss argues that the position in which the highest *wh*-phrase (i.e. *kinek* 'who' (17a)) is located in Hungarian corresponds to the one in which a universal

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[6] See also Surányi (2007), who states for the Hungarian multiple *wh*-question that the *wh*-phrase in a higher position is interpreted as a topic, whereas the one in a lower position is interpreted as focus.

quantifier (i.e. *mindenkinek* 'everybody' (17b)) is located. According to Kiss, a *wh*-operator interpreted as specific that is located in a higher position functions as a distributive universal quantifier (Kiss 1993:107).

(17)   a.   János kinek   mit   hozott?[7]   [Hun.]
            János who-DAT what-ACC brought
            'What did János bring for whom?'
            ('For each person, what did János bring for him?')

       b.   János mindenkinek egy könyvet hozott.
            János everbody-DAT a book-ACC brought
            'John brought everybody a book.'
            ('For everybody, it was a book that János brought.')

Kiss' data and arguments indicate i) that the multiple *wh*-question that has a PA reading contains one *wh*-phrase that is interpreted as specific and the other *wh*-phrase that is interpreted as focus, ii) that the former moves to the position higher than the latter to take wide scope over the latter as a distributive universal quantifier, and iii) that the SE does not arise in the unmarked case.[8]

The same situation is observed in the Japanese multiple *wh*-question (8), in which all *wh*-phrases remain in situ. The Nominative Case marker *-ga* can be, but the topic marker *-wa* cannot be, attached to a *wh*-phrase in a single *wh*-question in the unmarked case (18a).[9] In the Japanese multiple *wh*-question both PA and SA readings are available, as we saw in (2). To force a PA reading, *-wa* is attached to one of the *wh*-phrases (18b-c). Regardless of whether it is a *wh*-subject or a *wh*-object, the *wh*-phrase to which *-wa* is attached is interpreted as specific, whereas the one to which it is not attached is interpreted as focus.

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[7] The subject *János* is raised for topicalization here.
[8] See Diesing (2003), who states that the SE does not arise in Yiddish either.
[9] See the literature, e.g. Lambrecht (1994), which claim that the Japanese *-ga* is a focus marker.

The SE does not arise, and the *wh*-phrase to which *-wa* is attached appears in the position higher than the one to which it is not attached.

(18)   a. Dare ^{OK}-ga/*-wa kore-o kat-ta-no?   [Jap.]
          who   NOM/TOP this-ACC buy-PAST-Q
          'Who bought this?'

        b. Dare-wa nani-o   kat-ta-no?
           who-TOP what-ACC buy-PAST-Q
           'For each person, what was it that he bought?'
           (*dare* 'who' – specific; *nani* 'what' – focus)

        c. Nani-wa dare-ga kat-ta-no?
           what-TOP who-NOM buy-PAST-Q
           'For each thing, who bought it?'
           (*nani* 'what' – specific; *dare* 'who' – focus)

In the multiple *wh*-question of languages like Swedish and English, in which one *wh*-phrase appears in sentence-initial position with the other remaining in situ, the *wh*-subject that appears in sentence-initial position tends to be interpreted as specific as we saw in (15b), which I repeat below. Following Kiss (1993), the multiple *wh*-question like (19b), in which the SE is avoided, is interpreted as 'for each person, which food did he eat?': the in situ *wh*-subject *vilken person* is interpreted as specific and the *wh*-object in sentence-initial position *vilken mat* is interpreted as focus.[10] These data show that in this type of languages *wh*-phrases can be spelled out either in sentence-initial position or in situ, regardless of the interpretation they receive.[11]

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[10] According to the traditional literature (e.g. Pesetsky 1987), the SE is avoided when an in-situ *wh*-phrase is D(iscourse)-linked. The concept of D-linking is not so different from that of specificity, as they both apply to sentential elements that are presupposed/given in a context.

[11] In the cases like (5a-b) and (11a-b) it might be difficult to identify which *wh*-phrase, either a *wh*-subject or a *wh*-object, is interpreted as specific, as they are both modified by *which*. I

(19) a. Vem åt vad?   (=15b)
          who ate what
          'who ate what?'

      b. Vilken mat åt vilken person?   (=11b)
          which food ate which person
          'which food did which person eat?'

The Finnish multiple *wh*-question belongs to the Swedish-English type introduced above. In the multiple *wh*-question (20a), which has only a PA reading like 'Pekka stands on Merja's toes, Minna stands on Antti's toes, ...', a suffix *-kin*, which triggers a distributive reading of *wh*-phrases (Hakulinen and Karlsson 1979, Vilkuna 1989), is attached to one of the *wh*-phrases. When *-kin* is attached to a *wh*-subject, it remains in situ, which results in the avoidance of the SE (20b). These facts show that the *wh*-phrase to which *-kin* is attached is interpreted as specific, and the one to which *-kin* is not attached is interpreted as focus.[12] Finnish differs from the other languages presented above in that the *wh*-phrase interpreted as specific is always spelled out in a lower position than the one interpreted as focus.

(20) a. Kuka   seisoo kenen-kin varpailla?   [Fin.]
          who-NOM stands whose-*kin* toes.on
          'Who stands on whose toes?'

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leave this issue for future research.

[12] The literature on Finnish have claimed that *-kin* is a focus particle. However, since *-kin* triggers a distributive reading in multiple *wh*-questions and the *wh*-phrase to which it is attached functions as a distributive universal quantifier, the *wh*-phrase to which *-kin* is attached in fact does not carry focus in multiple *wh*-questions. This is clear from the English translation of (20b) by Huhmarniemi and Vainikka. This claim is supported by the fact that *-kin* cannot appear with a *wh*-phrase in a single *wh*-question in any order:

i) (*mitä-kin) Pekka   osti (*mitä-kin).   [Fin.]
    what-PAR-*kin* Pekka-NOM bought what-PAR-*kin*
    (Huhmarniemi and Vainikka 2011:5,(12))

b. Mitä   kuka-kin   osti?
what-PAR who-NOM-kin bought
'What did each of whom buy?'
(Huhmarniemi and Vainikka 2011:2-3,(3a),(5))

All of the data above show i) that the information structure of the multiple *wh*-question that has a PA reading does not differ among languages in that it contains the *wh*-phrase interpreted as specific and the one interpreted as focus, ii) that it is uniformly derived for all languages in the way that the *wh*-phrase interpreted as specific moves to the position higher than the *wh*-phrase interpreted as focus to take wide scope over the latter as a distributive universal quantifier, and iii) that spelled-out positions of *wh*-phrases are solely determined in PHON. Specifically, in Hungarian either the *wh*-subject *kinek* 'who' or the *wh*-object *mit* 'what' that is interpreted as specific moves higher than the other that is interpreted as focus; the *wh*-phrases are always spelled out in a higher position regardless of whether they are interpreted as specific or focus (21a-b). In Japanese either the *wh*-subject *dare* 'who' or the *wh*-object *nani* 'what' that is interpreted as specific moves higher than the other *wh*-phrase interpreted as focus; the *wh*-phrase interpreted as specific is always spelled out in a higher position, and the one interpreted as focus is spelled out in situ (22a-b). In languages like Swedish and English the *wh*-phrase interpreted as specific (i.e. *vem* (23a) and *vilken person* (23b)) moves higher than the one interpreted as focus (i.e. *vad* (23a) and *vilken mat* (23b)); in some cases (23a) the former is spelled out in a higher position, and the latter is spelled out in situ; in others (23b) the former is spelled out in situ, and the latter is spelled out in a higher position. In Finnish the *wh*-phrase interpreted as specific moves higher than the one interpreted as focus; the former (i.e. *kenen-kin* ... (20a)/*kuka-kin* (20b)) is always spelled out in a lower position, and the latter (i.e. *kuka* (20a)/*mitä* (20b)) is spelled out in a higher position (24a-b).

(21)　a.　[CP kinek [CP mit … [TP … [v*P … [VP … ~~kinek mit~~]]]]]　　　(=16a)

　　　b.　[CP mit [CP kinek … [TP … [v*P … [VP … ~~kinek mit~~]]]]]　　　(=16b)

(22)　a.　[CP dare-wa [CP ~~nani-o~~ … [TP … [v*P ~~dare-wa~~ … [VP … nani-o]]]]]　(=18b)

　　　b.　[CP nani-wa [CP ~~dare-ga~~ … [TP … [v*P dare-ga … [VP … ~~nani-wa~~]]]]]　(=18c)

(23)　a.　[CP vem [CP ~~vad~~ … [TP … [v*P ~~vem~~ … [VP …vad]]]]]　　　(=19a)

　　　b.　[CP ~~vilken person~~ [CP vilken mat … [TP …

　　　　　[v*P …[VP …vilken person … ~~vilken mat~~]]]]]　　　(=19b)

(24)　a.　[CP ~~kenen-kin~~ ... [CP kuka … [TP … [v*P ~~kuka~~ … [VP … kenen-kin ...]]]]](=20a)

　　　b.　[CP ~~kuka-kin~~ [CP mitä … [TP … [v*P kuka-kin … [VP … ~~mitä~~]]]]]　(=20b)

3.2.　The multiple *wh*-question that has a single-answer reading

I turn to the multiple *wh*-question that has a SA reading. In Japanese the topic marker *-wa*, which forces a PA reading, cannot appear to get a SA reading. Compare (25a-b) with (18b-c).

(25)　a.　Dare-ga/#-wa　nani-o　　kat-ta-no?　　　　　　　　[Jap.]
　　　　　who-NOM/-TOP what-ACC buy-PAST-Q
　　　　　'Who bought something, and what was it?'

　　　b.　Nani-o/#-wa　　dare-ga　kat-ta-no?
　　　　　what-ACC/-TOP who-NOM buy-PAST-Q
　　　　　'What did someone buy, and who was that person?'

In Finnish, to get a SA reading, the suffix *-kin*, which triggers a distributive reading of *wh*-phrases, cannot appear and *wh*-phrases must appear in

a bare form. Below, a SA reading like 'Pekka stands on Merja's toes' can be obtained when the suffix *-kin* is not attached to the *wh*-phrase that appears in a lower position *kenen*.

(26)　　Kuka　　seisoo kenen(*-kin) varpailla?　　　　　　　　　　[Fin.]
　　　　who-NOM stands whose　-kin　toes.on
　　　　'Who stands on whose toes?'
　　　　(Huhmarniemi and Vainikka 2011:1-2,(2-3a))

Kiss (1993:99) observes for Hungarian that (17a) repeated in (27a) cannot have a SA reading: it cannot be interpreted as 'for which person did János bring something, and what was it'. (27b) is the construction in which a SA reading like 'John killed Bob' is obtainable. A main verb *öl* precedes an aspect marker *meg*, which indicates that the verb moves across that particle. *Ki* 'who' moves across the main verb. *Kit* 'whom' remains in situ and follows the aspect marker.[13] According to Kiss, a SA reading can be obtained when *wh*-phrases apply to the same set in a given context. Specifically in (27b), there is a set of persons, (John, Bob, Mary, Lucy, …), and both the filler of a *wh*-subject and that of a *wh*-object are chosen from that set.

(27)　　a.　János kinek　　mit　　　hozott?　　　　　　　　　　　(=17a)
　　　　　　János who-DAT what-ACC brought
　　　　　　'What did János bring for whom?'
　　　　　　('For each person, what did János bring for him?')

　　　　b.　A regény végén ki　　öl meg　kit?　　　　　　　　　　[Hun.]
　　　　　　the novel's end who kills PERF whom
　　　　　　'Who kills whom at the end of the novel?

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[13] It is difficult to see if a verb always moves in the multiple *wh*-queston that has a SA reading. Surányi (2007) simply states that a SA reading is obtained when one *wh*-phrase moves and the other remain(s) in situ.

Kiss' argument indicates that in the multiple *wh*-question that has a SA reading *wh*-phrases make a pair and function as an operator in pairs. It indicates for the Japanese multiple *wh*-question like (25) that there is a set that contains the pairs made by a person and an item, e.g. ((John, apples), (Bob, oranges), …), and *wh*-phrases apply to one of them in pairs. However, the set to which *wh*-phrases apply is not necessarily given in a context. Imagine that someone came into a luxury shop and stole a valuable necklace yesterday. A policeman came to the shop and asks a clerk:

(28)   a. Kino-wa   dare-ga nan-ji-ni   koko-e ki-mashi-ta-ka? [Jap.]
         yesterday-TOP who-NOM what-time-at here-to come-HON-PAST-Q[14]
         'Yesterday, who came here at what time?'

       b. Kimura-san-ga   2-ji-ni ki-mashi-ta.
          Kimura-HON-NOM 2-time-at come-HON-PAST
          'Mr. Kimura came at 2:00.'

       c. ((Kimura, 2:00), (Sato, 3:00), …)

In the context above the policeman who asks (28a) does not need to have the list of the information on who came to the shop at what time (28c) in advance. In that sense (28b) can fully be appropriate as an answer that presents a new information consisting of a pair made by a person and the time at which he came.[15] Therefore, I argue that in the multiple *wh*-question that has a SA reading *wh*-phrases carry a focus and function as a focus operator in pairs.

From all of the data and arguments above, I claim i) that the information structure of the multiple *wh*-question that has a SA reading differs from that of

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[14] 'HON' indicates an honorific morpheme.

[15] Note also that the topic marker *-wa* is attached to *kino* 'yesterday' in sentence-initial position in (28a). This indicates that neither a *wh*-subject *dare* 'who' nor a *wh*-time adverbial *nan-ji* 'what time' is given a topic status.

the multiple *wh*-question that has a PA reading in that *wh*-phrases carry a focus in pairs in the former, ii) that it is uniformly derived for all languages in the way that the two *wh*-phrases move and function as a focus operator in pairs, and iii) that spelled-out positions of *wh*-phrases are solely determined in PHON. Specifically, in Japanese the *wh*-subject *dare* 'who' and the *wh*-object *nani* 'what' make a pair and move to the operator position in pairs; they are both spelled out in situ in some cases (29a); in others (29b) the *wh*-subject is spelled out in situ and the *wh*-object is spelled out in sentence-initial position. In Finnish the *wh*-subject *kuka* 'who' and the *wh*-object with a bare form *kenen* … 'whose …' make a pair and move to the operator position together; the former is spelled out in sentence-initial position and the latter is spelled out in situ (30). In Hungarian the *wh*-subject *ki* 'who' and the *wh*-object *kit* 'whom' make a pair and move to the operator position in pairs; the former is spelled out in sentence-initial position and the latter is spelled out in situ (31).[16]

(29)   a.   [$_{CP}$ ~~dare-ga~~+~~nani-o~~ [$_{TP}$ … [$_{v*P}$ dare-ga… [$_{VP}$ … nani-o]]]]   (=25a)
        b.   [$_{CP}$ ~~dare-ga~~+nani-o [$_{TP}$ … [$_{v*P}$ dare-ga… [$_{VP}$ … ~~nani-o~~]]]]   (=25b)

(30)   [$_{CP}$ kuka+~~kenen~~ ... [$_{TP}$ … [$_{v*P}$ ~~kuka~~ … [$_{VP}$ … kenen ...]]]]]   (=26)

(31)   [$_{CP}$ ki+~~kit~~ [$_{TP}$ … [$_{v*P}$ ~~ki~~ … [$_{VP}$ … kit]]]]]   (=27b)

    Briefly summarizing, in the multiple *wh*-question that has a PA reading

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[16] No restriction on the linear order of *wh*-phrases should arise, since they simply make a pair. Thus, a *wh*-object should freely be spelled out in sentence-initial position and a *wh*-subject in situ. This is attested by Japanese as illustrated by (25b), but not by Finnish; see below. Bošković (2002) suggests that the Japanese case is derived by scrambling. I turn to the issue on how spelled-out positions of *wh*-phrases can be determined in section 6.
i)   *Mitä   kuka   osti?   [Fin.]
      what-PAR who-NOM bought
      'What who bought'
      (Huhmarniemi and Vainikka 2011:2-3,(4))

the *wh*-phrase interpreted as specific always moves to the position higher than the *wh*-phrase interpreted as focus in NS, and the former takes wide scope over the latter as a universal quantifier. In the multiple *wh*-question that has a SA reading *wh*-phrases make a pair, and move and function as a focus operator in pairs. The derivation of the multiple *wh*-question that has a PA reading proceeds in one uniform way for all languages, and the derivation of the multiple *wh*-question that has a SA reading proceeds in another uniform way for all languages. Spelled-out positions of *wh*-phrases are solely determined in PHON.

4.   Syntax of multiple *wh*-questions

In this section I propose the ways of deriving multiple *wh*-questions. In the multiple *wh*-question that has a PA reading the *wh*-phrase interpreted as specific always moves to the position higher than the one interpreted as focus and takes scope over the latter. In the current phase system a category is interpreted in the position raised by (the [Edge] feature of) a feature in a functional head. I propose that in the multiple *wh*-question that has a PA reading C has [Spe(cific)] and [Foc(us)], and those features raise a *wh*-phrase respectively. On the basis of Chomsky (2008) (and also Miyagawa 2010), who proposes that [Agree] (i.e. φ-features) inherited from C to T raises a *wh*-subject in [Spec,v*P] to [Spec,TP] and [Edge] in C raises it to [Spec,CP] 'in a parallel way', I provide the way of deriving (10a) as illustrated in (32). The *wh*-subject in [Spec,v*P] is raised by [Agree] inherited from C to T and its two copies make an A-chain, i.e. $\langle vem_2, vem_3 \rangle$.[17] The *wh*-subject in [Spec,v*P] is also directly raised by [Spe] in C, and the raised *wh*-phrase vem_1 functions as the distributive universal quantifier operator that ranges over the A-chain. The *wh*-object is raised by [Edge] in v* after Case-agreement (or due to [wh] of the *wh*-object, cf.

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[17] The in-situ *wh*-subject vem_3 will also make an A-chain by itself, which I leave aside here.

Chomsky 2008), and its copies make an A-chain, i.e. <vad_2,vad_3>. The *wh*-object in (the outer) [Spec,v*P] is successively raised by [Foc] in C, and the raised *wh*-phrase *vad$_1$* functions as the focus *wh*-operator that ranges over the A-chain.

The derivation of (11b), in which the SE is avoided, proceeds in the same way, as illustrated in (33).[18] The *wh*-subject in [Spec,v*P] is raised by [Agree] inherited from C to T and its two copies make an A-chain, i.e. <vilken person$_2$,vilken person$_3$>. The *wh*-subject in [Spec,v*P] is also directly raised by [Spe] in C, and the raised *wh*-phrase *vilken person$_1$* functions as the distributive universal quantifier operator that ranges over the A-chain. The *wh*-object is raised to [Spec,v*P], and its copies make an A-chain, i.e. <vilken mat$_2$,vilken mat$_3$>. The *wh*-object in (the outer) [Spec,v*P] is successively raised by [Foc] in C, and the raised *wh*-phrase *vilken mat$_1$* functions as the focus *wh*-operator that ranges over the A-chain.

In both of the cases above [Spe] always raises a *wh*-phrase to a higher position than [Foc] does. They differ in spelled-out positions of *wh*-phrases, which are solely determined in PHON. In (32) the *wh*-object *vad$_3$* is spelled out in situ after the Spell-Out S-O of v*P, and the *wh*-subject in (the outer) [Spec,CP] *vem$_1$* is spelled out after the S-O of CP. In (33) the *wh*-subject in (the inner) [Spec,v*P] *vilken person$_3$* and the *wh*-object in (the inner) [Spec,CP] *vilken mat$_1$* are spelled out after the S-O of CP.[19]

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[18] See footnote 11. Here I tentatively assume that the *wh*-subject *vilken person* is interpreted as specific, and the *wh*-object *vilken mat* as focus.

[19] Christer Platzack (p.c.) points out that (32a) also has the interpretation that *vem* can be interpreted as focus, and *vad* as specific. In that case it is [Foc] that raises *vem*, and [Spe] that raises *vad*. *Vad* moves higher than *vem* and functions as the distributive universal quantifier operator. *Vem*, which is raised in the position lower than *vad*, functions as the focus *wh*-operator. The in-situ *wh*-object *vad$_3$* and the *wh*-subject in (the inner) [Spec,CP] *vem$_1$* are spelled out respectively.

(32)   a.   Vem åt vad?   (=10a)
             'Who ate what?'
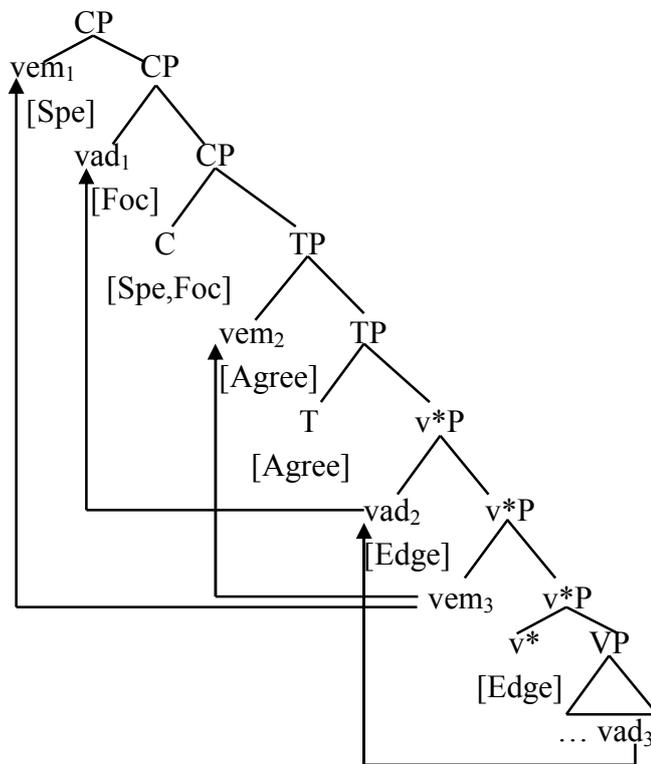
    b.   <vem₂,vem₃> – A-chain
          vem₁ – distributive universal quantifier operator that ranges over the
                 A-chain <vem₂,vem₃>
          <vad₂,vad₃> – A-chain
          vad₁ – focus *wh*-operator that ranges over the A-chain <vad₂,vad₃>

(33)   a.   Vilken mat åt vilken person?   (=11b)
                'Which food did which person eat?'
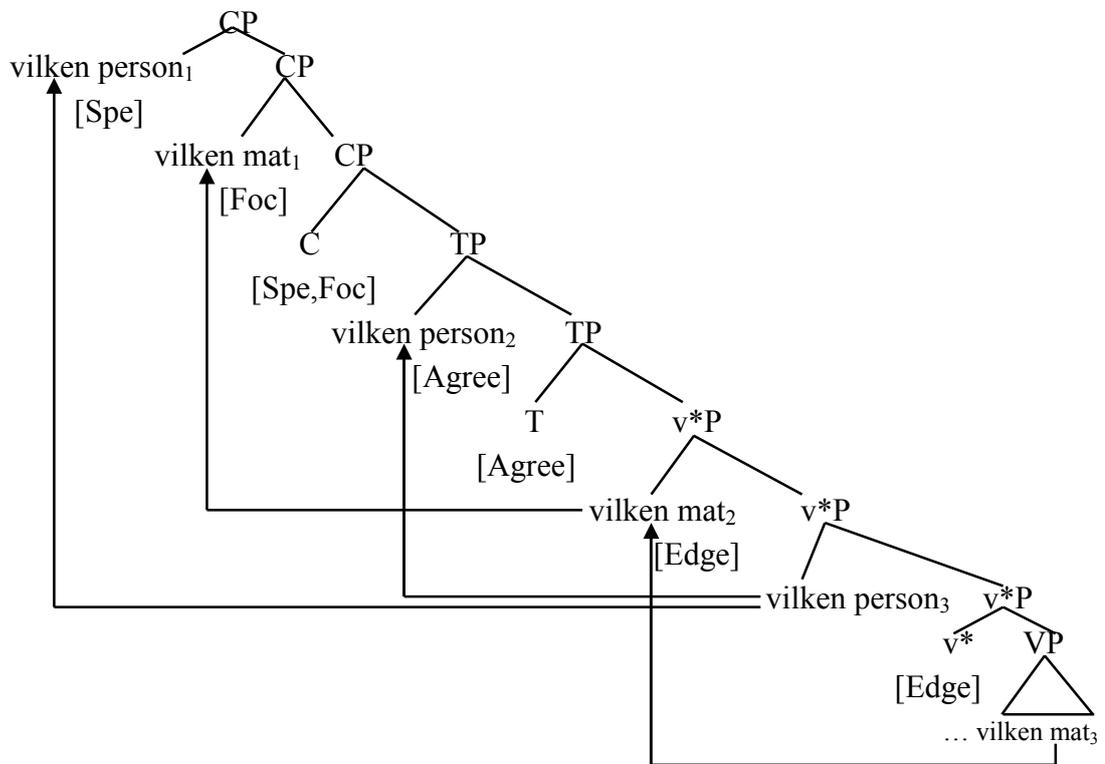
    b.   <vilken person$_2$,vilken person$_3$> – A-chain
        vilken person$_1$ – distributive universal quantifier operator that ranges
                over the A-chain <vilken person$_2$,vilken person$_3$>
        <vilken mat$_2$,vilken mat$_3$> – A-chain
        vilken mat$_1$ – focus *wh*-operator that ranges over the A-chain
                < vilken mat$_2$,vilken mat$_3$>

     In the case of the multiple *wh*-question that has a SA reading *wh*-phrases make a pair and they carry a focus in pairs. I assume that C has only [Foc] in this case.[20] Assuming sideward movement (Nunes 2004, Hornstein 2001), I

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[20] Christer Platzack (p.c.) points out that this assumption could be a 'look ahead' case, with the assumption on the multiple *wh*-question that has a PA reading taken into account. In the current 'phase' framework (Chomsky 2000, 2001, 2004, 2008) the phasal heads, v* and C, are freely assigned the discourse-related feature(s) in the course of a derivation due to the interface requirement. Since the interpretation differs between the multiple *wh*-question that has a PA reading and the one that has a SA reading, it is not surprising if C is assigned [Spe] and [Foc] in the former, whereas it is assigned only [Foc] in the latter.

provide the way of deriving (8) as illustrated in (34). The in-situ *wh*-object is raised to [Spec,v*P] and its two copies make an A-chain, i.e. <nani-o_2,nani-o_3>. The *wh*-subject in [Spec,v*P] is raised by [Agree] inherited from C to T and its two copies make an A-chain, i.e. <dare-ga_2,dare-ga_3>. A copy is made for the *wh*-object in (the outer) [Spec,v*P] and the in-situ *wh*-subject respectively, and the two copies merge to each other, resulting in a *wh*-complex *dare-ga_1+nani-o_1*. The *wh*-complex is raised by [Foc] in C. The *wh*-subject in the raised *wh*-complex *dare-ga_1* functions as the focus *wh*-operator that ranges over the A-chain consisting of the two *wh*-subject copies, <dare-ga_2,dare-ga_3>. The *wh*-object in the raised *wh*-complex *nani-o_1* functions as the focus *wh*-operator that ranges over the A-chain consisting of the two *wh*-object copies, <nani-o_2,nani-o_3>. The in-situ *wh*-object *nani-o_3* is spelled out after the S-O of v*P. The in-situ *wh*-subject *dare-ga_3* is spelled out after the S-O of CP.[21]

(34) a. Dare-ga nani-o kat-ta-no?   (=8)
          'Who bought what?'

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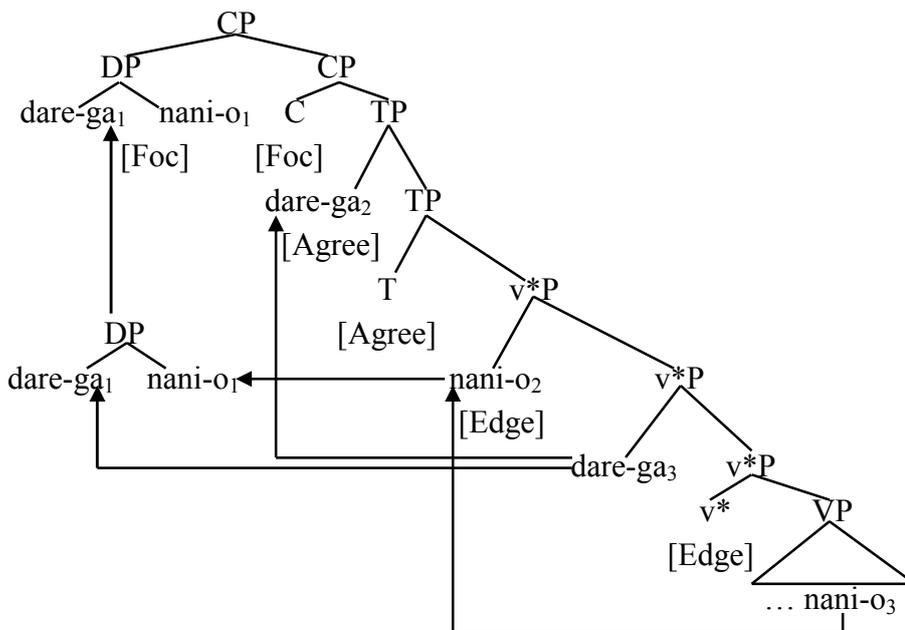
[21] When the Japanese multiple *wh*-question has a PA reading, the derivation proceeds as illustrated in (32).

b. $\langle$nani-o$_2$,nani-o$_3\rangle$ – A-chain
   $\langle$dare-ga$_2$,dare-ga$_3\rangle$ – A-chain
   nani-o$_1$ – focus *wh*-operator that ranges over the A-chain
   $\langle$nani-o$_2$,nani-o$_3\rangle$
   dare-ga$_1$ – focus *wh*-operator that ranges over the A-chain
   $\langle$dare-ga$_2$,dare-ga$_3\rangle$

5. Intonational properties of multiple *wh*-questions

We have argued that spelled-out positions of *wh*-phrases are solely determined in PHON in both the multiple *wh*-question that has a PA reading and the one that has a SA reading. A question remains: what factors in PHON can determine spelled-out positions of *wh*-phrases in individual languages? Specifically, in, e.g. the multiple *wh*-question that has a PA reading, what factors in PHON can detemine that both the *wh*-phrase interpreted as specific and the one interpreted as focus are always spelled out in higher positions in Hungarian (21a-b), and so on?

The literature have discussed the intonational properties of individual languages. Szendrői (2003) presents Hungarian data and shows that a sentence accent that expresses the focus of a sentence is strictly located on the constituent that immediately precedes a finite verb, except when the verb itself receives a focus accent. A single *wh*-question (35a) asks a missing information of an object. In the answer (35b) the object *egy könyvet* 'a book', which is located in the position right before a finite verb *vett* 'bought', carries the focus of a sentence, with the sentence accent coming on it. (Partially) due to this intonational property, Surányi (2007) argues that the *wh*-phrase located right before a main verb, e.g. *mit* 'what' in (27a), carries the focus of a sentence in multiple *wh*-questions.

(35)   a. Mit   vett   a barátod?   [Hun.]
           what-ACC bought the friend-yours
           'What did your friend buy?'

       b. (A barátom) egy KÖNYVET vett.
          friend-my   a   book-ACC bought
          'My friend bought a BOOK.'
          (Szendrői 2003:38,(3a-b))

German belongs to the English type, in which one *wh*-phrase appears in sentence-initial position with the other appearing in situ or in a lower position.[22] The SE does not arise in the German multiple *wh*-question in the unmarked case, as illustrated in (36a-b). According to Büring (1997), a topic must precede a focused constituent in German. The former is realized by a rising intonation and the latter by a falling intonation. This statement indicates for multiple *wh*-questions that when *wer* 'who' appears in sentence-initial position, it is interpreted as specific and *was* 'what' in a sentence-medial position is interpreted as focus (36a). When *was* 'what' appears in sentence-initial position, on the other hand, it is interpreted as specific and *wer* 'who' in a sentence-medial position is interpreted as focus (36b). The *wh*-phrase interpreted as specific (i.e. *wer* (36a)/*was* (36b)) is realized by a rising intonation. The pitch peak comes on the main syllable of the *wh*-phrase interpreted as focus (i.e. *was* (36a)/*wer* (36b)), from which pitch falls.[23]

(36)   a. ↗Wer hat was↘ gelesen?   [Ger.]
          who has what   read
          'Who read what?

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    b.   ↗Was hat wer↘ gelesen?
         what has who   read
         'Who read what?'

Ishihara (2002) reports the intonational properties of the *wh*-question in Japanese, a *wh*-in-situ language. In declarative sentences (37a) pitch slightly rises before each of the sentential elements, though the pitch level on each constituent gradually lowers due to downdrift. In *wh*-queston (37b) pitch peak comes on the *wh*-phrase *nani* 'what', which receives a focus accent too. The pitch level on the sentential element that follows the *wh*-phrase (i.e. *kat-ta* 'buy-PAST') significantly lowers, accompanied by the deaccentuation of that element. The low pitch continues until the Q-morpheme *-no* appears, where pitch slightly rises again.[24]

(37)   a.   ↗Taro-ga↘   ↗nanika-o↘   ↗kat-ta↘.   [Jap.]
          Taro-NOM something-ACC buy-PAST
          'Taro bought something.'

    b.   ↗Taro-wa↘ ↗NANI-O↘   kat-ta-no↗?
        Taro-TOP what-ACC   buy-PAST-Q
        'What did Taro buy?'

On the basis of the data and statements above I suggest that the intonational properties of individual languages are closely involved in determining spelled-out positions of *wh*-phrases in multiple *wh*-questions.

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[24] See Comorovski (1996) for Romanian, a multiple *wh*-fronting language, in which pitch must fall right after the last *wh*-element, i.e. *ce* (i). See Boucher (2010) for French, in which more than 90% of the *wh*-in-situ constructions are realized by a falling intonation (ii).

i)   Cine ce↘ a uitat   să deschidă?   [Rom.]
     who what has forgotten to open
     'Who forgot to open what?'

ii)   Tu vas où↘?   [Fre.]
     you go where
      'Where do you go?'

Let us turn to the SE repeated below (38). Assuming the arguments made in this paper, the *wh*-subject that appears in situ *vem* could be interpreted as specific, and the *wh*-object in sentence-initial position *vad* as focus. it should be possible that the *wh*-subject *vem* is raised by [Spe] in C and moves to the position higher than the *wh*-object *vad*, which is raised by [Foc]; the former could be spelled out in situ and the latter in the moved position, contrary to fact:

(38)   a.   *Vad åt vem?   (=10b)

       b.   *[CP ~~vem~~   [CP vad   C   [TP … [v*P vem … [VP … ~~vad~~]]]]]
               [Spe]   [Foc]   [Spe,Foc]
             *<~~vem~~,vem> , <vad,~~vad~~>

A conjecture from the argument in this section is that the SE is also derived from some factors in PHON. Let us consider the SE in English. According to the literature (Bolinger 1965, Jackendoff 1972, Büring 1997), a topic is realized by a fall-rise intonation and a focused phrase is realized by a falling intonation in English. A subject *John* is a topic and an object *candies* carries the focus of an answer sentence (39a); the subject *John* carries the focus and the object *candies* is a topic in the answer sentence (39b). The topic phrases *John* (39a) and *candies* (39b) are realized by a fall-rise, and the focused phrases *candies* (39a) and *John* (39b) are realized by a fall, as illustrated by arrows. In multiple *wh*-questions the *wh*-phrase interpreted as specific (i.e. *who* (40a)/*which present* (40b)/*who* (40c)) should be realized by a fall-rise, and the one interpreted as focus (i.e. *what* (40a)/*who* (40b)/*what* (40c)) should be realized by a fall.[25]

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[25] '‖' indicates an intonational phrase boundary.

(39)   a.   What did John eat? – ↗John↘↗ ‖ ate CANDIES↘. ‖

      b.   Who ate candies? – JOHN↘ ‖ ate ↗candies↘↗. ‖

(40)   a.   ↗Who↘↗ ‖ ate what↘? ‖   (=19b)

      b.   Who↘ ‖ did you give ‖ ↗which present↘↗ to? ‖   (=19a)

      c.   *What↘ ‖ did ↗who↘↗ buy? ‖   (=37a)

Note that a fall-rise intonation on a topic/specific phrase aligns with the right/final boundary of an intonational phrase (cf. Nespor and Vogel 1986): ↗[John]↘↗ ‖ (39a); (ate) ↗[candies]↘↗ ‖ (39b); ↗[who]↘↗ ‖ (40a). The fall-rise on an in-situ *wh*-phrase (i.e. *which present* (40b) and *who* (40c)) does not align with the right boundary. However, it can be realized on more than one syllable in the case of *which*-phrases, whereas it must be realized on only one syllable in the case of monosyllabic *wh*-phrases. Then, the SE, I suggest, is derived from the inappropriate intonational pattern that could arise in the case of monosyllabic *wh*-phrases that are interpreted as specific and appear in situ: a fall-rise intonation would have to be realized on only one syllable that does not align with the right boundary of an intonational phrase; this situation is not compatible with the appropriate intonational patterns of English. More detailed studies of individual languages are required to identify the intonational factors that cause the SE as well as those which actually determine spelled-out positions of *wh*-phrases. I leave these studies for future research.[26]

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[26] On the basis of Ishihara's (2002) data, Richards (2010) proposes a universal constraint that a *wh*-phrase must not be separated from a complementizer by phonological phrases. According to him, a language takes either one of the strategies: i) one prosodic domain that contains C and a *wh*-phrase is made, with all phonological boundaries removed between them, e.g. Japanese; ii) a *wh*-phrase is raised to shorten the distance from it to C, with phonological

6.   Conclusion

In this paper I have argued that in the multiple *wh*-question that has a PA reading the *wh*-phrase interpreted as specific always moves to the position higher than the *wh*-phrase interpreted as focus and takes wide scope over the latter as a universal quantifier, with the SE not arising in the unmarked case. I also argued that in the multiple *wh*-question that has a SA reading *wh*-phrases move and function as a focus operator in pairs. I argued that the information-structural effects differ between the multiple *wh*-question that has a PA reading and the one that has a SA reading, thus the way of deriving them in NS differs too, with spelled-out positions of *wh*-phrases solely determined in PHON. I suggested that spelled-out positions of *wh*-phrases are determined by the intonational properties of individual languages, and that the SE is caused by the inappropriate intonational pattern that could arise in the case of monosyllabic *wh*-phrases that are interpreted as specific and appear in situ.

The data and arguments presented here show that the SE is not caused by any problems in NS operations. The derivation of the multiple *wh*-question that has a PA reading proceeds in one uniform way for all languages, and the derivation of the multiple *wh*-question that has a SA reading proceeds in another uniform way for all languages. The cause of the SE is attributed to an inappropriate intonational pattern that could arise in PHON, not to any NS operations. Thus, I suggest that the SE is not problematic any longer in the currently assumed framework (Chomsky 2008).

boundaries left as they are, e.g. English. With this constraint, it could be argued here that in C-initial languages like English *wh*-phrases are spelled out in a higher position, whereas in C-final languages like Japanese they are spelled out in situ. Though this argument could apply to 'rigid' multiple *wh*-fronting languages like Bulgarian, many exceptional cases arise for multiple *wh*-questions in general: for instance, one *wh*-phrase is spelled out in sentence-initial position and the rest in situ in, e.g. English. As we have seen so far, different languages have different options for spell-out positions of *wh*-phrases in multiple *wh*-questions.

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