Basic Swedish

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This paper\(^1\) falls into two parts. In the first part, I give a fairly detailed description of the formal properties of Swedish main and subordinate clauses. In the second part, I demonstrate that these formal properties can easily be described by a generalized phrase structure grammar (Gazdar 1981). In particular, I argue that not only transformations, but also conditions on rules and representations, can be dispensed with, i.e. that it is possible to formulate (simple) phrase structure rules that generate precisely the permitted cases of unbounded dependencies in Swedish.

1.1 Main clauses

Consider first the following Swedish sentences:

(1) a. Han köper alltid småfranska
   he buys always rolls
   (He always buys rolls)

   b. Småfranska köper han alltid
      rolls buys he always
      (Rolls, he always buys)

   c. Alltid köper han småfranska
      always buys he rolls

These sentences all consist of four constituents: a subject pronoun (han), a finite verb (köper), a sentence adverbial (alltid), and an object (småfranska), and meet the following string condition:

(2) \( \text{XP} \ V_{\text{finite}} \ (NP) \ (ADVP) \ (NP) \)

(2) is a simple description of the structure of declarative main clauses.

The XP, where XP stands for a projection of N, A, V (including S), P or ADV, in the sense of X theory (Chomsky 1970, Jackendoff 1977), is the so-called foundation of a main clause (Dierichsen 1946). Unless the foundation is the subject of the main clause, it must be interpreted as the filler of one or more gaps in the sentence in which it appears. There is, in principle, no upper bound on the domain over which such a filler-gap dependency can extend.

Declarative main clauses in Swedish exhibit an almost exceptionless verb-second order. Only a small class of sentence adverbials (including bara (only), kanske (maybe), nästan (almost) and rent av (even)) can appear between the foundation and the verb. However, if the first verb of a main clause is an auxiliary verb, rather than a main verb, only kanske can occur in second position.
(3)  

a. Han kanske köper småfranska  
(He maybe buys rolls)  
b. Han kanske har köpt småfranska  
(He maybe has bought rolls)  
c. Han har kanske köpt småfranska  
(He has maybe bought rolls)  
d. Jag bara glömde det  
(I only forgot it)  
e. Jag bara har glömt det  
(I only have forgotten it)  
f. Jag har bara glömt det  
(I have only forgotten it)  

*Kanske is exceptional in other respects, too. Thus, sentence adverbials can occur between *kanske and the first verb of a main clause, and *kanske can form a sentence together with a subordinate clause:

(4)  

a. Vi kanske åtminstone ska släcka  
(We maybe at least should turn off the light)  
b. Kanske att inte han vill göra det, men det finns väl någon annan  
(Maybe that he won't do it, but there may be someone else)  

It is conceivable that this curious behavior of *kanske can be attributed to the fact that *kanske, like maybe and peut-être, is a reanalyzed modal + infinitive combination (*kan ske (can happen)).

The verb in second position is always finite, i.e. inflected for tense (past or present).  
A finite clause can lack an explicit subject only in a few well-defined cases, which I will discuss later on. In all other cases, there must be a subject present. If this subject does not appear in foundation position, it appears in the first NP position of (2). This position is one of the two distinctive "coding properties" (Keenan 1976) of Swedish subjects. The other distinctive coding property is the nominative form of pronominal subjects. An outline of the pronominal system of Swedish is displayed below.
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By means of these distinctive coding properties, we can uniquely identify the subject in cases like the following:

(5)

a. Erik känner henne
   (Erik knows her)

b. Henne känner Erik
   her knows Erik
   (Her, Erik knows)

c. Hon känner Erik
   (She knows Erik)

d. Erik känner hon
   Erik knows she
   (Erik, she knows)

e. Maja har träffat Erik
   (Maja has met Erik)

f. Erik har Maja träffat
   Erik has Maja met
   (Erik, Maja has met)

In (5a) and (5b), the accusative form identifies henne as object. In (5c) and (5d), the nominative form identifies hon as subject. In (5e) and (5f), finally, the word order identifies Maja as subject. The position of Erik in (5e) is an unambiguous object position, and the position of Maja in (5f) is an unambiguous subject position.
Where neither case nor position uniquely identifies the subject, the first NP in the main clause, i.e. the NP in foundation position, if there is one, and the first postverbal NP, if there is no NP foundation, is normally interpreted as subject.

(6)  a. Erik känner Maja
     (Erik knows Maja)

     b. Maja känner Erik
     (Maja knows Erik)

     c. I Spanien köpte Erik silver
     in Spain bought Erik Silver
     (In Spain, Erik bought silver)

If there are semantic factors which support another interpretation than the normal one, the first postverbal NP can be interpreted as subject, even though there is an NP in foundation position and no coding property rules out subject interpretation of that NP.

(7)  a. Sådana saker gillar Erik
     such things likes Erik
     (Such thing, Erik likes)

     b. Höken hade mycket skarpa ögon,
     (The hawk had very sharp eyes.)
     men den lilla musen såg den inte
     but the little mouse saw it not
     (but the little mouse, it didn’t see)

The ADVP position in (2) is the unmarked main clause position for sentence adverbials, i.e. adverbials which express cognitive attitude, emotive attitude or rhetorical value. The second NP is an object position. An NP is interpreted as an object if it is not governed by a preposition and is not a subject. A non-oblique NP (i.e. an NP which is not governed by a preposition) is unambiguously an object in the following two cases: (i) the NP is an accusative pronoun or a reflexive pronoun; and (ii) the NP follows a non-finite verb, a participle, or a predicative adjective. The accusative pronoun oss in (8a) and the reflexive pronoun sig in (8b) are thus interpreted as objects, as are vatten in (8c), vin in (8d) and sin bror in (8e).

(8)  a. Erik såg oss
     (Erik saw us)

     b. Svensson rakade sig
     (Svensson shaved himself)

     c. Jag ska dricka vatten
     (I will drink water)

     d. Drick vin istället!
     (Drink wine instead)

     e. Hon är lik sin bror
     she is similar her brother
     (She resembles her brother)
The second NP position after a finite verb is, on the other hand, not entirely distinctive. Subjects can occur in that position, provided that the NP in the first postverbal position is an accusative or a reflexive pronoun, i.e. an unambiguous object:

(9)  a. Den morgonen rakade sig Svensson inte
   that morning shaved himself Svensson not
   (That morning, Svensson didn’t shave himself)

   b. På flygplatsen mötte oss en guide
      at the airport met us a guide
      (At the airport, a guide met us)

The sentence form in (2) can thus be interpreted in terms of subject and object in the following ways (S stands for subject and O for object)

(10)  XP  \text{V}_{\text{finite}}  (\text{NP})  (\text{NP})

   a. S  -  O
   b. O  \text{S}  -
   c. S  \text{O}
   d. O  S

The SO interpretations are unmarked and the OS interpretations are marked. The former interpretations obtain in the absence of contrary evidence, while the latter require positive evidence, syntactic or semantic evidence in the case of interpretation b., strictly syntactic evidence in the case of interpretation d.

Let us now look at the contrasts between declarative main clauses, x-interrogative main clauses (main clauses with an initial question word constituent), plain interrogative main clauses (so-called yes-no question clauses), and imperative main clauses. These clause types are exemplified in (11) – (14).

(11)  a. Erik köpte silver
       (Erik bought silver)

       b. Silver köpte han
          silver bought he
          (Silver, he bought)

       c. Där möter oss en guide
          there meets us a guide
          (There, a guide will meet us)

       d. Han rakade sig inte
          he shaved himself not
          (He didn’t shave himself)

(12)  a. Vem köpte silver?
       (Who bought silver?)

       b. Vad köpte han?
          what bought he
          (What did he buy?)
c. Var mäter oss guiden?  
   (Where meets us the guide)
   (Where will the guide meet us?)

d. Vem rakade sig inte?  
   (Who shaved himself not)
   (Who did not shave himself?)

(13) a. Köpte Erik silver?  
   (Bought Erik silver)
   (Did Erik buy silver?)

b. Mätter oss en guide där?  
   (Meets us a guide there)
   (Will a guide meet us there?)

c. Rakade han sig inte?  
   (Shaved he himself not)
   (Didn’t he shave himself?)

(14) a. Köp silver!  
   (Buy silver!)

b. Möt oss där!  
   (Meet us there!)

c. Raka dig inte!  
   (Shave yourself not)
   (Don’t shave yourself!)

X-interrogative main clauses have the same form as declarative main clauses, except that the foundation must be an interrogative phrase, an XPQ. A minimal interrogative phrase is either an interrogative pronoun directly dominated by NP (vem (who), vilken/vilket/vilka (which), vad (what)), PP (var (where), var (to where), när (when)), ADVP (hur (how)), AP (hur, vad, hurdan (what kind)) or VP (vad), or an interrogative determiner (vilken/vilket/vilka and hurdan in noun phrases, hur in adjective phrases and adverb phrases) followed by an appropriate head.

Swedish also allows for complex XPQs. Three important types of complex XPQs are described and exemplified in (15) (the italicized phrases are minimal interrogative phrases).

(15) a. PP [ P NP ]
   (To whom did you give the book?)
   (In which shelf (is the knife))

   Till vem (gav du boken?)
   I vilken låda (ligger kniven?)

b. NP [ NPgenitive N ]
   (Whose house (is that?))
   (Which linguists' theories (do you want to teach?))

   Vemns hus (är det där?)
   Vilka lingvists teorier (vill du lära ut?)
c. NP [ AP N ]
   Hur dan båt (har du?)
   (What kind of boat (do you have?))
   Hur stort (är ert hus?)
   (How big (is your house?))
   Hur stora förpackningar (för ni?)
   (How big packages (do you have in stock?))

The NP's in (15b) and (15c) can be embedded in (15a): I vem's hus (bodde du?) (In whose house (did you stay?),) I hur stora förpackningar (säljer ni dem?) (In how big packages (do you sell them?),) and the NP in (15c) can be embedded in (15b): Hur många lingvisters hem (har du besökt?) (How many linguists' homes (have you been to?).)

In Swedish, there is also an interesting x-interrogative construction with the following properties: (i) XP0 is invariably the most unmarked interrogative pronoun vad; (ii) The questioned constituent is an NP; (iii) This NP is embedded under the preposition för (for); and (iv) för NP occurs in the normal position of the NP:

(16)  a. Han köpte en bok där
       (He bought a book there)
   b. Vilken bok köpte han där?
       (Which book did he buy there?)
   c. Vad köpte han för (en) bok där?
       what bought he for (a) book there
       (What book did he buy there?)
   d. Han sov i en soffa
       (He slept in a sofa)
   e. Vilken soffa sov han i?
       (Which sofa did he sleep in?)
   f. Vad sov han i för (en) soffa?
       what slept he in for (a) sofa
       (What sofa did he sleep in?)
   g. Han bodde hos någon
       (He stayed with someone)
   h. Vem bodde han hos?
       (Who did he stay with?)
   i. Vad bodde han hos för någon?
       what stayed he with for someone
       (Who did he stay with?)

Let us call this construction the vad-interrogative construction.

Since Swedish also permits sentences like those in (17), it is possible to say that the structure of the för-phrases in (16) is NP [ e pp för NP], rather than just pp[för NP].
(17) a. Vad för (en) bok köpte han där?
what for (a) book did he buy there
(What book did he buy there)

b. Vad för (en) soffa sov han i?
what for (a) sofa did he sleep in
(What sofa did he sleep in)

Plain interrogative main clauses and imperative main clauses cannot contain foundations. (18a) and (18b) are not interrogative clauses and (18c) and (18d) are ungrammatical.

(18) a. Silver köpte han (*?)
(Silver, he bought)

b. Där mötte oss en guide (*?)
(There, a guide met us)

c. *Silver köp!
(Silver buy)

d. *Där möt oss!
(There meet us)

Imperative main clauses differ from plain interrogative main clauses in two respects: imperative clauses have a verb in the imperative as head and they are subjectless. Imperative clauses with subjects do exist, but they have a very special force. The production of such a clause counts an act of encouragement, whereby the speaker encourages the hearer to do something that the speaker assumes the hearer wants to do. So while the sentences in (19) can be used as advice, commands, instructions and suggestions, the sentences in (20) can only be used to encourage the hearer.

(19) a. Skala apelsinerna!
(Peel the oranges!)

b. Prata med Sven!
(Talk to Sven!)

c. Hämta en öl!
(Bring a beer!)

(20) a. Skala du apelsinerna!
peel you the oranges
(Go ahead and peel the oranges)

b. Prata du med Sven!
talk you with Sven
(Go ahead and talk with Sven)

c. Hämta du en öl
bring you a beer
(Go ahead and bring a beer)

This makes it justified to say that "normal" imperative clauses are subjectless and to treat the clauses in (20) as examples of a distinct construction.
1.2 Subordinate clauses

The subordinate clause (subclause) counterpart of the main clause in (1a), repeated in (21a), is given in (21b). There is no foundation position in declarative subclauses, so (1b), repeated in (21c), has no subclause counterpart.

(21) a. Han köper alltid småfranska
     b. *Hon sa) att han alltid köper småfranska
        (She said) that he always buys rolls
     c. Småfranska köper han alltid
     d. *Hon sa att småfranska han alltid köper
        (She said) that he always buys

The subclause in (21b) obeys the following condition:

(22) $ \text{COMP} \text{ NP (ADVP)}^* \text{ finite (NP) Y }$

The COMP position is the position of the complementizer att (that). There are at least three complementizers in Swedish: att (that), om (if), and som (relative that, approximately). (See Andersson 1975 for justification of this claim). The first NP position is the subject position and the second NP position is the direct object position. The ADVP is the sentence adverbial position. Subject, sentence adverbial, finite verb and object can only occur in the order specified in (22) in subordinate clauses.

There are also finite subordinate clauses without complementizers and finite subordinate clauses which have neither complementizers nor subjects. These types of subordinate clauses alternate with att-clauses and, in the first case, som-clauses:

(23) a. Jag trodde han var trött
     b. Jag trodde att han var trött
        (I thought (that) he was tired)
     c. Jag trodde att den teorin var vederlagd
        (I thought that that theory was refuted)
     d. Den teorin trodde jag var vederlagd
        (That theory, I thought was refuted)

(24) a. Här är boken som jag köpte
     b. Här är boken jag köpte
        (Here is the book (that) I bought)

In cases like (23d), the subject of the subordinate clause constitutes the foundation of a higher clause. Thus, we also get sentences like (25).

(25) Den teorin vet alla att jag tycker är bra
      (That theory, everybody knows that I think is good)

Moreover, subjectless and complementizerless clauses can only occur as objects of a limited class of verbs, mostly verbs of saying and believing.

Another type of subjectless subordinate clauses is infinitive clauses:
(26)  a. Att cykla är roligt
    (To bike is fun)

    b. Jag tycker om att cykla
    (I like to bike)

    c. Jag avskyr att inte kunna göra något
    I hate that not be able do something
    (I hate not to be able to do something)

A verb in the infinitive can combine with sentence adverbials and the complementizer att, but not with subjects. The simplest analysis of infinitive complements is, as far as I can see, the following one: infinitive complements have the same form as declarative subclauses, except that verbs in the infinitive do not combine with subjects. The form of infinitive complements is then

(27)  \[
\text{COMP (ADVP)* V infinitive Y}
\]

There are certain verbs which can only take infinitive complements with att.

(28)  a. Jag gillar \{ att \} sjunga
    (I like \{ to \} sing)
    \{ \emptyset \}

There are also certain verbs, notably modal verbs and perceptual verbs, which can not take infinitive complements with att.

(29)  Jag måste \{ \emptyset \} bli klar med det här
    (I must \{ to \} finish this)
    \{ att \}

(30)  Jag hörde henne \{ \emptyset \} sjunga
    (I heard her \{ to \} sing)
    \{ att \}

Finally, there are verbs which take both types of infinitive complements:

(31)  Jag försökte \{ att \} hindra honom
    (I tried \{ to \} stop him)
    \{ \emptyset \}

A finite subordinate clause can also have om (if) as complementizer. Om-clauses have two basic uses: as indirect interrogative clauses and as conditional clauses. There is also a construction where an om-clause is embedded under som (as). Examples of om-clauses are given in (32).

(32)  a. Jag undrar om han kommer
    (I wonder if he comes)
b. Det är osäkert om det blirregn
(Rit is uncertain if it will rain)

c. Det vore bra om han kom
(It would be good if he came)

d. Om han inte har kommit nu, så åker jag hem
(If he has not arrived yet, I will go home)

e. Jag åker hem, om han inte har kommit nu
(I will go home, if he has not arrived yet)

f. Det låter som om en skruv var lösg
(It sounds as if a bolt was loose)

In addition to att-clauses, infinitive clauses and om-clauses, there are also subordinate clauses with the complementizer *som* (analogous to the English *that* of relative clauses). *Som* occurs in indirect x-interrogative clauses, in relative clauses, in exclamative clauses and in comparative clauses, together with or alternating with an interrogative phrase, and in cleft sentences.

The general form of indirect x-interrogative clauses is (33).

\[(33) \text{XPQ} \left\{ \begin{array}{c}
\text{*som} \\
\text{NP} \\
\end{array} \right\} (\text{ADVP})^* \quad \text{V} \quad \text{Y} \]

Some examples are given in (34). As can be seen from (34a) and (34b), a subject NPQ must be followed by *som*.

(34) a. Jag vet inte vem som äger den
(I know not who that owns it)

b. *Jag vet inte vem äger den
(I don’t know who owns it)

c. Han undrade vem som vi träffade i stan
(He asked who that we met in town)

d. Han undrade vem vi träffade i stan
(He asked who we met in town)

e. Vi försökte ta reda på i vilka säckar som det fanns paket
(We tried to find out in which sacks there were gifts)

f. Vi försökte ta reda på i vilka säckar det fanns paket
(We tried to find out in which sacks there were gifts)

A relative clause can be introduced by an XPQ or by *som*, but not by XPQ *som*:

(35) En sanning \left\{ \begin{array}{c}
\text{som} \\
\text{vilken} \\
\end{array} \right\} \text{man bara sett glimtar av}
(A truth \left\{ \begin{array}{c}
\text{that} \\
\text{which} \\
\end{array} \right\} you only saw glimpses of)

\left\{ \begin{array}{c}
\text{vilken som} \\
\end{array} \right\}
If the subject of the relative clause has been relativized, *som* or *XPQ* must be present:

(36) Vi talade om upplevelser *som/vilka *Ø trotsar all beskrivning
(We talked about experiences that/which/Ø defy all description)

(37) Vi talade om människor *som/vilka/Ø svi inte längre umgås med
(We talked about people that/which/Ø we no longer see)

Adsentential relative clauses must have an initial *XPQ*, which always contains the neutre singular pronoun *vilket*:

(38) Det blev regn, vilket var synd
     { jag kunde ha förutsagt }
(It started to rain, which was a pity/I could have predicted)

I should also point out that relative clauses do not accept the full range of interrogative noun phrases. Only *vilken/vilket/vilka* (which) and *vars N* (whose N) can occur there. The latter type of interrogative noun phrase occurs only in relative clauses.

Another clause type which may contain *XPQ* and *som* is exclamative clauses. An embedded exclamative clause has the following form:

(39) \[ \{ XPQ \} \{ \begin{array}{l} \text{(som)} \text{ NP} \end{array} \} (ADVP)^{\text{a}} \text{ V finite } Y \]

The XP in the foundation position is an AP, an ADVP or an NP. Some common types are listed and exemplified in (40).

(40) a. AP \[ \{ vad \} \{ A \} \{ \begin{array}{l} \text{sd} \text{ } \text{so} \end{array} \} \]
     Såg du vad/så lång han var?
     (Did you see what/so tall (= how tall) he was)

b. ADVP \[ \{ vad \} \{ ADV \} \{ \begin{array}{l} \text{sd} \text{ } \text{so} \end{array} \} \]
     Såg du vad/så fort han sprang?
     (Did you see what/so fast (= how fast) he ran)

c. NP \[ \{ vilken/vilket/vilka \} \{ en sådan/ett sådan/sådana \} \{ \begin{array}{l} \text{N} \text{ } \text{which} \text{ } \text{such} \end{array} \} \]
     Såg du vilken bil (som) han hade?
     (Did you see which car (= what a car) he had)
     Såg du en sådan bil (som) han hade?
     (Did you see such a car he had)

d. NP \[ \text{AP} \{ vad \} \{ A \} \{ \begin{array}{l} \text{sd} \text{ } \text{so} \end{array} \} \{ \begin{array}{l} \text{N} \end{array} \} \{ \begin{array}{l} \text{which} \text{ } \text{A N} \end{array} \} \]
     Såg du vad/så tungt lass hon bar?
     (Did you see what/so (= what a) heavy load she carried)

The interrogative phrases with *vad* in (40) are possible only in exclamative clauses. There is also a *vad*-exclamative construction, exemplified in (41).
(41) a. Såg du vad han sprang?
   (Did you see what he ran (= how fast he ran))
   
b. Såg du vad han var lång?
   (Did you see what he was tall (= how tall he was))

There are no distinct exclamative main clauses in Swedish. Instead, independent subordinate clauses are used. Independent *at*-clauses express surprise or disgust, independent *om*-clauses and infinitive clauses express wishes, and independent exclamative clauses express something unexpected or extraordinary:
   
(42) a. Att du inte kan lära sig att hålla tyst!
   that you not can learn to shut up
   (Why can you never learn to shut up)
   
b. Om det ändå vore sommar!
   (If it only were summer)
   
c. Åh att få bada!
   (Oh, to be able to swim)
   
(43) a. Vad tungt lass hon bar!
   (What (a) heavy burden she carried)
   
b. Vad du är känslig!
   what you are sensitive
   (How sensitive you are)

*om* also occurs in comparative clauses. A comparative expression has the form *om* X (than X), where X is an NP, a PP, an AP, a clause remnant or a clause. Examples of *om* NP and *om* followed by a clause remnant are given in (44).

(44) a. Den här katten är större än vår katt
   (This cat is bigger than our cat)
   
   b. Per skriver fler artiklar på en månad än jag på ett år
   (Per writes more articles in a month than I (do) in a year)

A clause remnant, or "gapped clause" (Ross 1970), consists of one or two, at most three, constituents which are interpreted as if each constituent of the clause remnant was conjoined with or compared with a parallel constituent in a preceding clause. Clause remnants occur chiefly as non-initial conjuncts and in comparative and equative expressions.

Examples of *om* followed by a clause are given in (45).

(45) a. Han körde fortare än vad som som tillåtet
       *vad
       *∅

   (He drove faster than what that/that/what/∅ was permitted)
   
b. Hon springer fortare än vad som som
       *vad
       ∅

   (She runs faster than what that/that/what/∅ he does)
The form of a comparative clause is thus:

\[(46) \quad \text{(vad) \{ \text{som} \{ (ADVP)\} \ V_{\text{finite}} \ Y \}} \text{ NP} \]

Thus, in Swedish there are a vad-comparative construction, a som-comparative construction and a plain comparative construction. The failure of vad to co-occur with an S introduced by som is nothing particular to vad-comparatives, but is as general feature of vad-constructions:

(47) a. Jag vet inte vad (*som) han har för skonummer
   I don’t know what (that) he has for shoesize
   (I don’t know what size of shoes he has)
   
   b. Det var enormt vad (*som) han hade mycket böcker!
   it was fantastic what (that) he had many books
   (It was fantastic how many books he had)

However, if vad is just an instance of XPQ, it can precede an S introduced by som:

(48) Jag vet inte vad (som jag retar mig mest på)
   (I don’t know what (that) I am most disturbed by)

Finally, som occurs in cleft sentences. The structure of a cleft structure is (minimally) det är/var (it is/was) + a clause containing a foundation. The foundation is either the subject of the clause, as in (49a), in which case som obligatorily appears after the foundation, or a non-subject, as in (49b), in which case som is optional. As can be seen from (50a) and (50b), the foundation can also appear as the foundation of a higher clause.

(49) a. Det är Sune som har problem
   (It is Sune that has problems)
   
   b. Det var Sune (som) Gustav angrep
   (It was Sune (that) Gustav attacked)

(50) a. Sune är det som har problem
   (Sune is it that has problems (= (49a))
   
   b. Sune var det (som) Gustav angrep
   (Sune was it (that) Gustav attacked (= (49b))

2.1 Framework

As I indicated in the introduction to this paper, the descriptive framework adopted here is that of Generalized Phrase Structure Grammar (Gazdar 1981, Gazdar & Sag 1981). Thus, the rules presented in 2.2 and 2.3 will be context-free phrase structure rules, interpreted as node-admissibility conditions (McCawley 1968), and given in the following format:

(51) A [ B C ]

Rule (51) simply says that a node A which directly dominates a node B and a node C is admitted admitted by the grammar.

Following Gazdar & Sag (1981), I assume that rules can be introduced in two
ways, by means of direct statement, as in (51), and by means of metarules. A metarule is a statement that says that for each rule of a particular form in the grammar, there is also another rule in the grammar. Metarules will be given in the following format:

(52)  $A \{ Z \ B \ W \} \Rightarrow A \{ Z \ B \ C \ W \}$

Metarule (52), where $Z$ and $W$ are string variables, says that for each rule in the grammar which admits a node $A$ that directly dominates a node $B$, there is a rule in the grammar which admits a node $A$ that directly dominates a node $B$ directly followed by a node $C$. Since the variables used in metarules are not essential variables, it is always possible to replace a metarule by a set of direct statements.

I will also assume the description of unbounded dependencies proposed in Gazdar (1981). The idea is roughly that the grammar, in addition to the ordinary non-terminal nodes, also includes a set of derived nodes of the form $A/B$ (where $A$ and $B$ are ordinary nodes). Intuitively, $A/B$ designates an $A$ with a "missing" $B$. Rules for derived nodes are introduced by means of two kinds of metarules (Gazdar, lectures in Uppsala, November 1981). First, we have metarules which introduce rules for "incomplete" constituents. These are given in the following format:

(53)  $A \{ Z \ B \ W \} \Rightarrow A/B \{ Z \ B [e] \ W \}$

Secondly, there are metarules which introduce rules that "transfer" gaps to more deeply embedded constituents. These are given in the following format:

(54)  $A \{ Z \ B \ W \} \Rightarrow A/C \{ Z \ B/C \ W \}$

Furthermore, I will assume that there are at least four projections of $V$ in Swedish. The first projection, $VP$ ($V^1$), includes $V$ and its (oblique, non-oblique and predicator) objects. $VP$ ($V^2$) includes sentence adverbials as well, while $S$ ($V^3$) includes objects, sentence adverbials and a subject. $S$ ($V^4$), finally, includes objects, sentence adverbials, a subject, and a foundation.

Finally, I will adopt a complex symbol analysis of syntactic categories, along the lines proposed by Chomsky (1970), supplemented by the Head Feature Convention proposed by Gazdar & Sag (1981:133), whereby the features of a particular projection of $X$ are transferred to all less inclusive projections of that $X$.

2.2 Rules

The rules presented below account only for the most basic regularities of Swedish clauses. This is not due to any principled limitations of the descriptive framework, though. It would have been possible to present a much more complete grammar fragment, but that would have made the exposition much less transparent.

A $V^l$ is subcategorized along the following dimensions:

1) Size of the projection: $VP$ ($V^1$), $\overline{VP}$ ($V^2$), $S$ ($V^3$), or $\overline{S}$ ($V^4$)
2) Main or subordinate clause
3) Tense/mood: finite (present or past), imperative, infinitive, or supine
4) Clause type: unmarked, interrogative, exclamative, or relative (abbreviated $O$, $Q$, $E$, $R$)

61
These values are primarily reflected in what may constitute the foundation of a clause of a particular type. "Wh"-phrases are barred from unmarked clauses, and differ in shape in the other clause types.

interrogative foundation (XPQ)²:
  vem, ...
vilken NP, ...
vems NP
  hur AP
  ...

exclamative foundation (XPϕ):
  ...
vilken NP, ...
  ...
  vad AP
  vilken, ...
  ...
  vars NP

relative foundation (XPR):

5) Type of foundation (S only): vad or open (i.e. restricted only by clause type)
6) Complementizer: bare (i.e. no complementizer), som, om or att

V₁s are introduced in at least the following contexts:

(55) a. E [ __ ] independent clauses
    (E = expression; cf Banfield 1973)
b. X [ X __ ] complements
    (X = N, A, P or V)
c. VP [ V __ ] cleft sentences
    [vara]
d. NP [ __ NP __ ] relative clauses
e. AP [ __ AP __ ] comparative clauses

The kinds of V₁s that are introduced in these contexts are the following ones:

(56) E [ __ ]

a. S
   [main; finite; Ø; open; bare]
   (declarative main clauses, e.g. (1))
b. S
   [main; finite; Q; open; bare]
   (x-interrogative main clauses, e.g. (12))
c. S
   [main; finite; Q; vad; bare]
   (vad-interrogative main clauses, e.g. (16 c, f, i))
d. S
   [main; finite; Q; vad; bare]
   (plain interrogative main clauses, e.g. (13))
e. \( S \)
   [main; imperative; \( \emptyset \); bare]
   (marked imperative clauses, e.g. (20))

f. \( \text{VP} \)
   [main; imperative; \( \emptyset \); bare]
   (unmarked imperative clauses, e.g. (14))

g. \( S \)
   [sub; finite; \( E \); open; som]
   (independent exclamative subclauses, e.g. (43a))

h. \( S \)
   [sub; finite; \( E \); vad; som]
   (independent vad-exclamatives, e.g. (43b))

i. \( S \)
   [sub; finite; \( \emptyset \); att]
   (independent declarative subclauses, e.g. (42a))

j. \( S \)
   [sub; finite; \( Q \); om]
   (independent interrogative subclauses, e.g. (42b))

k. \( \text{VP} \)
   [sub, infinitive; \( \emptyset \); att]
   (independent infinitives, e.g. (42c))

(57) \( X^1 \) [\( X \ldots \_\) ]

a. \( S \)
   [sub; finite; \( E \); open; som]
   (exclamative subclauses, e.g. (40))

b. \( S \)
   [sub; finite; \( E \); vad; som]
   (vad-exclamative subclauses, e.g. (41))

c. \( S \)
   [sub; finite; \( Q \); open; som]
   (x-interrogative subclauses, e.g. (34))

d. \( S \)
   [sub; finite; \( Q \); vad; som]
   (vad-interrogative subclauses)

e. \( S \)
   [sub; finite; \( Q \); om]
   (plain interrogative subclauses, e.g. (32 a–c))

f. \( S \)
   [sub; finite; \( \emptyset \); att]
   (declarative subclauses, e.g. (23 a, b))
(58) \[ \text{vp} \{ V \_ \}\nn\text{[vara]}\nn\text{[sub; finite; } \emptyset; \text{ open; som]}\nn\text{(cleft sentences, e.g. (49))}\n\]

(59) \[ \text{np} \{ \ldots \text{np } \ldots \}\nn\text{[sub; finite; } \emptyset; \text{ open; bare]}\nn\text{[sub; finite; } \emptyset; \text{ som]}\nn\text{(relative clauses, e.g. (37))}\n\]

(60) \[ \text{ap} \{ \ldots \text{ap } \_ \_ \_ \ldots \}\nn\text{[sub; finite; } E; \text{ vad; } \{ \text{ bare } \} \}\nn\text{[sub; finite; } E; \text{ som]}\nn\text{(comparative clauses, e.g. (45))}\n\]

An alternative to introducing the full specifications of (56)–(60) would be to reduce these specifications and include a number of redundancy rules in the grammar.

The following phrase structure rules (or rule schemata to be more precise) introduce and expand the categories of (56)–(60). \( N^i, A^i \), etc. below stand for some projection of \( N, A \), etc., where \( i \geq 1 \).

(61) \[ \text{[x } x^i \text{ ]}\nn\text{[a]}\nn\text{[open]}\nn\text{(a is } \emptyset, Q, E, \text{ or } R)\n\]

\[ \text{[v } x^i \text{ ]}\nn\text{[a]}\nn\text{[open]}\nn\text{(a is } \emptyset, Q, E, \text{ or } R)\n\]
c. \[ S \rightarrow [vad S/vad] \]
\[ \rightarrow [vad] \]
\[ \rightarrow [bare] \]
\[ \rightarrow [a] \]
(a is Q or E)

d. \[ S \rightarrow [vad VP] \]
\[ \rightarrow [vad] \]
\[ \rightarrow [som] \]

By means of the Head Feature Convention, features of V^1 are transferred to V^i-1.

(62) a. \[ S \rightarrow [COMP S] \]
\[ \rightarrow [a] \]
\[ \rightarrow [bare] \]
(a is att, som, or om)

b. \[ V_P \rightarrow [COMP VP] \]
\[ \rightarrow [a] \]
\[ \rightarrow [bare] \]
(a is att, or som)

c. \[ S \rightarrow [N^i \overline{V_P}] \]
\[ \rightarrow [sub] \]
\[ \rightarrow [bare] \]

d. \[ \overline{V_P} \rightarrow [(ADVP)^* \overline{V_P} \rightarrow \{ ADVP \}^*] \]
\[ \rightarrow [sub] \]
\[ \rightarrow [bare] \]

There is one lacuna in (61) – (62): the rules do not generate subclauses where a foundation is followed by a bare S (instead of an S preceded by som). One way to account for such clauses, and bare relative Ss, would be to change the specification [som] in (56g), (57a), (57c), (58), and (59b) to \[ [bare som] \]. We would then have to complicate (61b) considerably, by saying that if S is [bare], then it must also be either [main] or [R]. A better solution is to introduce the bare Ss in question via the following metarule:

(63) \[ \chi^i [\ldots S \ldots] \Rightarrow \chi^i [\ldots S \ldots] \]
\[ \rightarrow [som] \]
\[ \rightarrow [bare] \]

Main Ss and \[ \overline{V_P} \]s are also best introduced via metarules. The most important ones are the following:

(64) a. \[ V_P [V \ldots] \Rightarrow \overline{V_P} [V (ADVP)^* \ldots \{ ADVP \}^*] \]
\[ \rightarrow [main] \]

b. \[ V_P [V N^i \ldots] \Rightarrow \overline{V_P} [V PRO (ADVP)^* \ldots \{ ADVP \}^*] \]
\[ \rightarrow [main] \]

c. \[ \overline{V_P} [V \ldots] \Rightarrow S [V (ADVP)^* N^i \ldots] \]
\[ \rightarrow [main] \]

65
The rule introduced in (64b) accounts for cases like (65a), where pronominal objects precede sentence adverbials, and the rule introduced in (64d) accounts for cases like (65b), where pronominal objects precede subjects. The sentence adverbial positions in the rules introduced in (64c) and (64d), finally, account for cases like (65c) and (65d), where sentence adverbials precede subjects.

(65) a. Jag såg honom inte
I saw him not
(I didn’t see him)

b. Då rakade sig Svensson inte
then shaved himself Svensson not
(Then Svensson didn’t shave himself)

c. Igår kom inte Svensson
Yesterday came not Svensson
(Yesterday, Svensson didn’t come)

d. Då rakade sig inte Svensson
then shaved himself not Svensson
(= (65b))

Some simplified VP rules are given in (66).

(66) a. $\text{VP} \{ V \ (N^i) \ (N^i) \}$

b. $\text{VP} \{ V \{ N^i \} \ (PP) \}$

c. $\text{VP} \{ V \{ N^i \} \ (PP) \} \ V^i \}$

d. $\text{VP} \{ V \ (N^i) \ A^i \}$

The values of $V^i$ in (66c) are those listed in (57).

Simplified $N^i$ rules are given in (67).

(67) a. $N^3 \{ \text{ART} \ (N^i) \}
[a] \ [a]
(a is $\emptyset$, Q or E)

b. $N^3 \{ N^i \ (N^i) \}
[a] \ [a]
 gen
(a is $\emptyset$, Q or R)

c. $N^3 \{ \text{PRO} \}
[a]
(a is $\emptyset$, Q or R)

d. $N^i \ (A^i)^* \ (N^i) \ (PP) \ (S/NP) \ (VP)$
e. \[ \text{NP} \{ \text{N} \ (\text{PP}) \} \ (P \ \{ \text{PP} \ \{ \text{Vi} \} \} ) \]

The values of \( V^i \) in (67d) are those listed in (59) and the values of \( V^i \) in (67c) are those listed in (57), except that \( N \) complements can not be \( [E] \) or \( [bare] \).

Simplified \( A^i \) rules are given in (68). \( A^i \) is inherently specified as \( [pos(itive)] \), \( [compar(ative)] \), or \( [super(lative)] \).

(68) a. \[ \text{A} \{ \text{ART} \ \overline{\text{AP}} \} \]
   \[ \{ a \} \]
   \( (a \) is \ pos, \ compar \ or \ super \)

b. \[ \overline{\text{AP}} \{ \text{(ADVP) AP} \} \]
   \[ \{ \text{pos} \} \]

c. \[ \overline{\text{AP}} \{ \text{(ADVP) (mycket)} \} \]
   \[ \{ mera \ \text{AP} \} \ (\text{\( \ddot{a}n \)} \ N^i \ S^i \ 
   \{ \text{E} \} \]

   \[ \{ \text{S/vad} \} \]

   \[ \text{AP} \]

   \[ \{ \text{compar} \} \]

   \[ \{ \text{mycket} \} \]

   \[ \{ mera \ \text{AP} \} \ (\text{\( \ddot{a}n \)} \ S/\text{AP} \ \text{S/AP} \)
   \[ \{ \text{VP} \} \]

   \[ \{ \text{mycket} \} \]

   \[ \{ mera \ \text{AP} \} \ (\text{\( \ddot{a}n \)} \ S/\text{AP} \ S/\text{AP} \)
   \[ \{ \text{VP} \} \]

   \[ \{ \text{compar} \} \]

   \[ \{ \text{mycket} \} \]

   \[ \{ mera \ \text{AP} \} \ (\text{\( \ddot{a}n \)} \ S/\text{AP} \ S/\text{AP} \)
   \[ \{ \text{VP} \} \]

The values of \( V^i \) in (68c) and (68d) are those listed in (60). The contrasts between \( S/\text{AP} \) and \( S \) and between \( S/\text{AP} \) and \( S/\text{vad} \) are meant to capture the contrast between comparative clauses with and without \( AP \) gaps:

(69) a. \( \text{Bordet är längre än (vad) rummet är} \)
   \( (\text{The table is longer than (what) the room is}) \)

   b. \( \text{Bordet är längre än (vad) rummet är brett} \)
   \( (\text{The table is longer than (what) the room is wide}) \)

In order to capture the impossibility of modifiers in standard \( AP \)s:

(70) \( \text{*Bordet är längre än (vad) rummet är vädligt brett} \)
   \( (\text{The table is longer than (what) the room is (very) wide}) \)

I have let comparative \( S \)'s carry a \( \text{vad} \) gap.

Finally, the grammar fragment includes two PP rules:

(71) a. \[ \text{PP} \{ \text{P} \ N^i \} \]

   b. \[ \text{PP} \{ \text{P} \ V^i \} \]
2.3. Unbounded dependencies

As I mentioned in 2.1., unbounded dependencies are effected by rules that introduce derived categories and by two kinds of metarules: metarules which introduce rules for incomplete constituents, of the general form (72),

\[(72) \quad x_i [\ldots y_i^{\ddagger} \ldots] \Rightarrow x_i/y_i [\ldots y_i^{\dagger} [\epsilon \ldots]]\]

and metarules which introduce rules that transfer a dependency to another constituent, of the general form (73).

\[(73) \quad x_i [\ldots y_i^{\ddagger} \ldots] \Rightarrow x_i/z_i [\ldots y_i^{\dagger} /z_i \ldots]\]

The idea that I will try to substantiate in this section is that we can account for the range of unbounded dependencies found in a particular language simply by fixing the values of \(x^i, y^i,\) and \(z^i\) in (72) and (73). In particular, I will propose an analysis of Swedish along these lines which nearly accounts for which types of unbounded dependencies are possible in Swedish. There are a few cases which are not covered by the analysis, but these can be taken care of by ordinary phrase structure rules that expand derived categories.

If this analysis can be generalized to other languages, then we can plausibly regard the rules (72) and (73) as universal rule schemata, from which we can derive the facts of particular languages by fixing the values of the categories involved (and adding a few rules that expand derived categories). The prospect of such an analysis is rather interesting, since it runs counter to the prevailing sentiment of generative grammarians that unbounded dependencies can not be captured by language-particular rules alone, but only by more or less universal rules constrained by more or less universal conditions on rules and/or representations.3

Before I proceed, I want to point out in more precise terms what scope my demonstration has. First of all, the rules that I present include no mechanism that binds gaps to their antecedents. Note though that it is not particularly hard to add such a mechanism to the rules that I will present. All we have to do is to stipulate that a rule that introduces a category \(B\) and a derived category \(A/B\) also puts an index on both occurrences of \(B\). We can then regard a phrase \(C/B\) which dominates a \(B\) gap as a predicate, one argument of which is the indexed \(B\). Note that we can restrict the grammar so that it assigns only as many indices as the number of gaps that a phrase can contain. If a language allows only one gap per \(X^i\), the only index to be assigned will be 1. If a language allows two gaps, 1 and 2 will be assigned, and so on. Given this mechanism, we can allow that \(X^i\) of (73) may be a derived category itself. If the number of dependencies exceeds the number of indices, then we get a derived category where two dependencies have the same index. However, such a case would be ruled out on semantic grounds, since it would amount to a case where a single argument position is bound by two distinct phrases. Parasitic gaps (Engdahl 1982a), on the other hand, which can be introduced by rules of the general form (74),

\[(74) \quad x_i/y_j [\ldots z_i/y_j \ldots w_i/y_j \ldots]\]

(j is an index of the type I am discussing)

are not excluded, since one phrase can perfectly well bind two distinct argument positions.4
Secondly, I will not discuss possible reasons why some languages are more restrictive than others. It seems to me, though, that the generalization proposed in Andersson (1982), which is elevated to the status of a (potential) law in (75), is a step in the right direction.

(75) Andersson’s Law:
The more central a construction involving an unbounded dependency is to a language, the less restrictions are there on the scope of the unbounded dependency.

The centrality of a construction would be determined by such factors as how characteristic for the language in question the construction is, how frequent it is, how severe pragmatic restrictions there are on its use, etc. A kind of corollary to (75) is that a language may tolerate perceptually complex structures, if such structures have a high “use value” in the language. Since the ability to perform a complex task increases with practice, we would expect speakers of such a language to have less problems with such structures than would speakers of other languages.

Finally, I will not discuss how the rules I propose interact with pragmatic conditions on utterances, but only point to the obvious fact that just as a pointless use of a grammatically impeccable utterance may render the utterance unacceptable, a highly motivated use of an utterance of dubious grammatical status may render that utterance acceptable.

Let us now look at what kinds of incomplete constituents we find in Swedish. The following generalizations seem to hold for Swedish:

A. \( V^1, N^1, A^1 \) and PP can have missing \( N^1 \) and PP objects

(76) a. Henne känner jag __
    (Her, I know __)
 b. För henne kan du visa den __
    (To her, you can show it __)
 c. Mig är han skyldig __ pengar
    me is he “owly” __ money
    (Me, he owes __ money)
 d. Om fötterna är jag varm __
    in the feet I am warm __
    (My feet are warm)
 e. Om Matisse har jag köpt en bok __
    (About Matisse, I have bought a book __)
 f. Matisse har jag köpt en bok om __
    (Matisse, I have bought a book about __)
 g. Det vill jag inte prata om __
    (That, I don’t want to talk about __)

B. Only \( V^1 \) and PP can have missing \( V^1 \) objects

(77) a. Att han skulle bli sjuk trodde jag aldrig __
    (That he would be ill, I never thought __)
 b. *Att vi lever är vi glada __
    (That we are alive, we are glad __)
c. *Att han tänkte avgå hörde jag ett obekräftat rykte _
   (That he was planning to resign, I heard an unconfirmed rumor _) .

d. Att det gick så bra var jag väldigt nöjd med _
   (That it worked so well, I was very pleased with _)

To the cases covered by the generalizations A and B we should also add the fact
that a VP may have an A¹ gap. Trott var han (Tired, he was _). We then get the
following possible values of X¹ and Y¹ in (72):

(78) a. Y is P, and X¹ is N¹, A¹ or V¹
    b. Y is N, and X¹ is A¹, P¹ or V¹
    c. Y is V, and X¹ is P¹ or V¹
    d. Y is A, and X¹ is V¹

C. Only V¹ can have a missing modifier

(79) a. Förmödlig kommer han _ på måndag
    (Probably, he will _ arrive next monday)
    b. När vi sa det, blev han arg _
    (When we said that, he got mad _)
    c. *Otroligt var den _ lång
    (Incredibly, it was _ long)
    d. *Än jag är, är han längre _
    (Than I am, he is longer _)
    e. *Svart såg vi en _ svan igår
    (Black we saw en _ swan yesterday)
    f. *Som var svart såg vi en svan _ igår
    (That was black, we saw a swan _ yesterday)

Generalization C is covered by the following metarule:

(80) \( \forall^2 \ldots \forall^1 \ldots \Rightarrow \forall^2 / \forall^1 \ldots \forall^1 [z] \ldots \)

Since sentences such as (81) are considerably better than sentences such as (79a)
and (79d), (80) should probably be generalized so that it also covers the case where
we have A² instead of V² and Y is N.

(81) Det var den eleven som syskonen var så väldigt mycket äldre än _
    (It was that pupil that his brothers and sisters were so much older
     than _)

D. No X¹ can have a missing subject

(82) a. *Sven glömde jag – hade vederlagt det förslaget
    (Sven, I forgot _ had refused that proposal)
    b. *Svens försökte jag komma ihåg _ eget förslag
    (Sven's, I tried to remember _ own proposal)

70
There are a number of exceptions to D. First we have cases like those in (83).

(83) a. Jag såg henne inte  
    (I didn’t see her)

b. Jag såg inte vilka som var där  
    (I didn’t see who were present)

c. Mannen som kom  
    (The man who came)

Such cases may be analyzed as involving clauses with a subjectless finite S. However, if we allow rules that generate subjectless S:s, we would have to stipulate somehow that cases like (82a) are excluded.

To avoid that, I have analyzed the clauses in (83) as (N) VP clauses.

Secondly, we have cases like (84)

(84) Den teorin tror jag ___ är vederlagd  
    (That theory, I think ___ is refuted)

This construction is limited to certain verbs, though, notably verbs of saying and believing. Again, a general solution would create more problems than it would solve. A better solution is to add the following VP rule to the grammar:

(85) VP/Ni [V Ni [e] VP  
    [finite  
    [bare]]

Verbs can then be subcategorized in terms of this kind of VP.

Thirdly, we have the case of cleft sentences with displaced foundations, illustrated in (50) above. These are captured by the following two rules:

(86) a. VP/Xi [V [vara] S/Xi  
    [finite  
    [som]]]

b. VP/Ni [V [vara] Ni [e] VP  
    [finite  
    [som]]]

Finally, we have cases where a subordinate clause, normally an interrogative clause, has as subject a resumptive pronoun bound by a foundation:

(87) Det är Erik som jag inte vet om han kommer  
    (It’s Erik that I don’t know if he’ll come)

A tentative rule for such cases is given in (88).\footnote{\textsuperscript{5}}

(88) S/Ni [PRO; VP]  
    [sub]

A problem with (85) and (86b) is that the gaps have no subject-relation to the following VP:s. Note though that a mechanism that links subjects to their predicates is needed anyway, in cases where subject and predicate are not dominated by the same S. To accomplish this, we can let certain rules put the indices s (for subject) and p (for predicate) on constituents.
The indices s and p are assigned in the following way in the present grammar fragment:

(89) rule

(61b) \( s \) \( p \)

(61d) \( \text{N}^i \) \( \text{VP} \)

(62c) \( \text{N}^i \) \( \text{VP} \)

(66c) a. \( \text{VP} \)

b. \( \text{N}^i \) \( \text{VP} \)

(66d) a. \( \text{A}^i \)

b. \( \text{N}^i \) \( \text{A}^i \)

(67b) \( \text{N}^i \) \( \text{NP} \)

(67d) \( \text{NP} \) \( \text{VP} \)

(67e) a. \( \text{VP} \)

b. \( \text{PP} \) \( \text{VP} \)

(68d) \( \text{VP} \)

(68f) \( \text{VP} \)

(71b) \( \text{VP} \)

A p-marked constituent is then linked to the closest s-marked constituent that c-commands it (a constituent A c-commands another constituent B if neither A nor B contains the other constituent, and the first branching category dominating A dominates B).

If we then let (85) and (86b) put s-indices on the gaps and p-indices on the VP:s we get the desired result.

To the rules presented so far must be added rules for vad-foundations and certain VP-foundations. Gaps bound by vad-foundations are introduced by the following rules:

(90) a. \[ \text{N}^3/\text{vad} \left[ \text{ART} \ [\text{e}] \text{för} \ \text{N}^i \ ] \right. \]

\[ \left. \text{[Q]} \right. \]

b. \[ \text{A}^3/\text{vad} \left[ \text{ART} \ [\text{e}] \text{AP} \ ] \right. \]

\[ \left. \text{[E]} \right. \]

A VP foundation can not contain the head of a VP, an S, or an S. Thus, if the ordinary head VP of a Vi is a foundation, that Vi must have another head VP. In Swedish, the VP projection of göra (do) serves as substitute head VP:

(91) a. *Sjunger tror jag inte att han __

(Sings, I don’t think that he __)

b. Sjunger tror jag inte att han gör __

(Sings, I don’t think that he does __)

c. *Jag tror inte att han gör sjunger

(I don’t think that he does sings)
Gaps bound by head VP-foundations are introduced in the following way:

\[ (92) \quad \text{VP/VP} \left[ V \right] \left[ \text{göra} \right] \text{VP} [e] \]

I now turn to the rules that transfer dependencies. These are enumerated by the metarule (73). Our task is thus to specify the possible values of \( X^i \) and \( Y^i \) in (73).

To begin with, dependencies are transferred from more inclusive projections to less inclusive projections, from \( S \) to VP to VP, from N\(^3 \) to NP to NP, etc. This might be regarded as an automatic consequence of the Head Feature Convention, but is, I believe, better treated as a distinct subpart of (73). For if we let HFC transfer dependencies, we would always end up with structures such as (93).

\[ (93) \quad X^i/Y^i [X/Y^i, \ldots, Y^i [e], \ldots] \]

Even if we constrained HFC so that it could not transfer dependencies below \( X^i \), we would still get structures such as those in (94).

\[ (94) \quad \begin{align*}
\text{a.} & \quad A^3/vad [\text{ART} [e] \text{AP/vad}] \\
\text{b.} & \quad \text{VP/PP} [\text{VP/PP pp} [e]]
\end{align*} \]

Secondly, a dependency can be transferred to all kinds of objects:

\[ (95) \quad \begin{align*}
\text{a.} & \quad \text{Nobelpriset hörde jag ett rykte att han hade fått \_} \\
& \quad \text{(The Nobel Prize, I heard a rumor that he had been awarded)} \\
\text{b.} & \quad \text{Snö långt jag inte precis efter att få se \_} \\
& \quad \text{(Snow, I don't exactly long for to see \_)} \\
\text{c.} & \quad \text{Den här dörren kan jag inte få tag på nyckeln till \_} \\
& \quad \text{(This door, I can't get hold of the key to \_)} \\
\text{d.} & \quad \text{Vänstra foten är jag rädd att han blev kall om \_} \\
& \quad \text{the left foot, am I afraid that he got cold in \_} \\
& \quad \text{(His left foot, I'm afraid got cold)}
\end{align*} \]

Transfer to \( A^1 \) and ADVP modifiers is excluded:

\[ (96) \quad \begin{align*}
\text{a.} & \quad *\text{Oehört sprang han \_ fort} \\
& \quad \text{(Extremely, he ran \_ fast)} \\
\text{b.} & \quad *\text{Otoligt såg han en \_ vacker kvinna} \\
& \quad \text{(Incredibly, he saw a \_ beautiful woman)}
\end{align*} \]

Transfer to PP modifiers of N and V is sometimes excluded, sometimes marginally possible and sometimes quite all right:

\[ (97) \quad \begin{align*}
\text{a.} & \quad *\text{Storgatan berättade han om ett hus vid \_} \\
& \quad \text{(Main street, he told us about a house in \_)} \\
\text{b.} & \quad \text{Sitt stora svarta hatt kom han med vatten i \_} \\
& \quad \text{(His big black hat, he came with water in \_)} \\
\text{c.} & \quad *\text{En timma är vi hemma om \_} \\
& \quad \text{(An hour, we are home in \_)}
\end{align*} \]
d. Vår affär kan ni köpa böcker i ___
   (Our store, you can buy books at ___)

e. Den kniven skär vi bröd med ___
   (That knife, we slice bread with ___)

f. *Bär klarade jag mig genom att äta ___
   (Berries, I survived by eating ___)

g. Honom måste jag stå på tå för att skaka hand med ___
   (Him, I have to stand on my toes to shake hands with ___)

Transfer to \( V^i \) modifiers of N and V seems sometimes possible, as Kerstin Severinson-Eklundh pointed out several years ago:

(98) a. Huset måste vi anställa någon som ser efter ___ när vi är borta
   (The house, we must hire someone that looks after - when we are away)

b. Sportspelgen sommar jag om/när jag ser ___
   (The sports program, I fall asleep if/when I watch ___)

Transfer to subjects, finally, seems to be excluded:

(99) *Glas tycker jag tallrikar av ___ är väldigt snygga
   (Glass, I think plates of ___ are very nice-looking)

The object cases are covered by the following specification of \( X^i \) in (73)

(100) \( X^i \) is \( X^1 \)

As for the modifier cases, it is unclear to me under what conditions transfer is possible. The following specifications of \( X^i \) and \( Y^i \), which clearly give rise to overgenerating rules, is the best I can come up with:

(101) \( X^i \) is \( V^2 \), \( N^2 \), and \( Y \) is \( P \), \( V \)

The transfer from a more inclusive to a less inclusive projection, finally, is covered by the following version of (73):

(102) \( x_j \ldots x_i \ldots \Rightarrow x_i/z_k \ldots x_i/z_k^j \ldots \)  
(i is less than or equal to j and greater than 0)

This concludes my demonstration that unbounded dependencies in Swedish can be generated by phrase structure rules only.

Notes

1. This paper is a revised version of chapter 2 of Arward (1981). I wish to thank Ulf Telemen and Elisabet Engdahl for useful comments on that chapter, and Eva Ejlered for making me write this version.

2. From now on, what was called XPQ (interrogative phrase) in part one, will be split up into three types of phrases: XQP proper, XPG, and XPQ.

3. In what follows, I will capture the distinction between objects and modifiers, for example, in terms of different projections of \( X \) (\( X^1 \ vs \ X^2 \)). If such an analysis cannot be defended for a particular language, where the distinction is still relevant to the description of unbounded dependencies, we can differentiate \( Y^i \)s by means of two features: [modifier] and [object] [+mod] is then modifier, [-mod, +obj] object, and [-mod, -obj] subject. Such an analysis is of course also a possible alternative analysis of the Swedish data.

74
4. Note that an index can be used on a new foundation without problems, once an old dependency has been eliminated.

5. The case covered by (88) is just the tip of an iceberg. In general, it seems that a dependency can be realized as a resumptive pronoun provided it is at least two clauses down from the foundation that binds it. Suppose we modify our indexing procedure in the following way: Instead of indexing A and B/A as \( A_j, B/A_j \), we index them as \( A_j, B/A_j, 0 \), where 0 indicates that the foundation is in the same clause as the derived category. Whenever the dependency is transferred to a new clause, 0 changes to 1 and 1 to 2. If the second index is 2, then nothing further happens to it. We can then add the following metarule to our grammar:

\[
x_i \cdots v_j \cdots \Rightarrow x_i/v_j \cdots \quad \text{PRO}_j \cdots 1
\]

In order to avoid cases like *[Jag vet inte vem? han är lite (I don't know who he resembles)], we should also change \( S/N_1 \) to \( S/N_k \), where \( k \) is 1 or 2, in (88).

If there are environments where a dependency can be realized only as a resumptive pronoun, we can put the index 3 on dependencies that are transferred into such environments. \( B/A_k \), \( k \) dependencies can then be eliminated by gaps when \( k = 0,1 \) or 2, and by resumptive pronouns when \( k = 2 \) or 3.

6. In order to avoid that (102) transfers dependencies to \( N \) subjects of \( N^2 \) or \( V \) subjects of \( V^2 \) (in case we let the grammar generate the latter type of subjects), we would have to mark somehow, by means of the feature (head), for example, that a given \( X \) projects the same \( X \) as the \( X \) that dominates that \( X \).

References


