

# The Swedish Comparative Correlative Construction: *Ju... Desto...* and Variations

# **Sheila Dooley**

The University of Texas at Brownsville sheila.dooley@utb.edu

#### **Abstract**

The comparative correlative or CC construction<sup>1</sup> refers to sentences of the type which are expressed in English as The more we eat, the fatter we get. In Swedish these occur most commonly as correlations of the degree adverbs ju and desto. In English such sentences have been noted for their apparently idiosyncratic syntactic properties 1987, McCawley 1988, Culicover Jackendoff 1999). This study of the Swedish comparative correlative is based on corpus data from the online Språkbanken corpus available through the University of Göteborg and extends the existing body of cross-linguistic knowledge about the CC construction. Recent studies have either focused on English exclusively or have not considered Swedish. Den Dikken's 2005 cross-linguistic study of the CC includes data on close relatives of English in the Germanic family such as Dutch and German, but only mentions Swedish in a footnote. The Swedish CC is a robust construction occurring in both written and spoken Swedish. There is variation among speakers, with some using a  $ju \dots ju$ ... combination and others preferring ju... desto.... These two forms may also occur together in the same text. Corpus data makes it possible to present the full range of speaker variation in the form of the Swedish CC. While most work on comparative correlatives limits discussion to a basic biclausal type of CC, this study establishes the existence of multiclausal CC structures in Swedish. It also demonstrates that the ju...ju... form has a long history and is not merely part of the informal spoken language register, as prescriptive grammars have claimed.

# 1. Introduction

In English the comparative correlative or CC construction is a biclausal construction built around two comparative phrases, both beginning with the as in The more we eat, the fatter we get. Such have been regarded as exhibiting sentences relatively idiosyncratic syntactic properties (Fillmore 1987, McCawley 1988, Culicover and Jackendoff 1999). On the other hand, it has also been established that CC constructions share many similar properties cross-linguistically. The basic biclausal nature of the construction is one such feature which is shared by languages such as Dutch (Den Dikken 2005), German (McCawley 1988), French (Abeillé & Borsley 2008), Chinese (Lin 2007), and others.<sup>2</sup> Swedish shows many of the basic cross-linguistic properties of the CC identified for English and other languages. However, there is also a range of acceptable variation in the expression of the CC in Swedish. This makes it an interesting subject for study to extend cross-linguistic understanding of the CC construction overall.

The goal of this study is to present the full range of variations for the CC in Swedish through the use of corpus data from the online Språkbanken corpus available through the University of Göteborg. This corpus allows access to a wide variety of texts, including blogs, newspaper articles, and even tweets. The Språkbanken corpus also includes literary texts and provides historical data for comparison with modern usage. The data for this study therefore includes both contemporary and historical Swedish language use, and all examples given here were produced naturally rather than elicited. The Swedish Academy Grammar (Svenska Akademiens grammatik or SAG; Teleman, Hellberg & Andersson 2010) has also been used as a source for some examples in this study.

The prototypical Swedish CC is formed by correlations of two comparative phrases beginning with the words ju and desto or its variant dess. The glossing of these lexemes will be discussed in the next section. First, the basic properties and syntax of the Swedish CC will be reviewed to establish a baseline analysis. This will allow for comparisons with the known properties of the CC cross-linguistically, such as clausal structure, word order variations, lexical variations, and clausal reduction. Then, variations found in the corpus data will be examined and added to the basic data to obtain a thoroughly detailed view of the behavior of the Swedish CC construction.

# 2. The Swedish Correlative Construction: A Prototype

An existing analysis of the Swedish comparative correlative construction is included in the online Construction, which is a database at the University of Göteborg devoted to cataloguing and describing Swedish constructions that are often neglected in mainstream grammatical analyses (Lyngfelt et al 2013). In the Construction the basic meaning and syntax of the CC is defined in the following manner:<sup>4</sup>

(1) 'The adverb *ju* introduces a proportional subordinate clause and expresses that a graded increase of property of some phenomenon corresponds to a graded







increase in a property of another phenomenon which is expressed in the main clause. The main clause begins with the adverb *desto*.'

This definition establishes the three most salient characteristics of the construction: its comparative meaning, its biclausal syntax<sup>5</sup>, and its use of the words  $ju \dots desto$ ... to begin the two clauses. A typical example of the Swedish CC construction is shown in (2):<sup>6</sup>

(2) **Ju** närm-are vi kom, JU near-COMP we come.PST

**desto** orolig-are blev vi.
DESTO worried-COMP become.PST we

'The closer we came, the more worried we became."

(SAG, Vol 2, Adverb §48, p.678)

The most obvious surface feature of the Swedish CC is its use of the adverbs ju and desto. Providing direct translations for these lexemes is difficult because they have no direct equivalents in English and they occur in more than just the CC construction. The form ju is also identified as a modal particle and functions as an important pragmatic marker, making it a very frequently heard lexeme by speakers of all ages. As an adverb in the Swedish CC, ju does perform the same function as the English determiner 'the', but glossing it directly as such is unsatisfactory, since it is not a determiner in Swedish. The other CC lexeme desto is in fact etymologically related to English 'the' and its cognate in the German CC construction (Roehrs, Sprouse, & Wermter 2002), but desto is not related in any way to ju and it, too, occurs in contexts outside the CC. 8 For these reasons, both ju and desto will not be glossed as 'the' but simply as ju and desto and treated as grammatical primitives in this study.

Like its other CC counterparts cross-linguistically, the basic Swedish CC is composed of two clauses. Following practice in Culicover & Jackendoff (1999:546) the first clause (typically beginning with *ju*) will be referred to as C1 and the second clause (typically beginning with *desto*) as C2. There are variations in how *ju* and *desto* are used to introduce the two clauses, but the C1-*ju* and C2-*desto* is the most frequently occurring combination. Before looking at variations in Section 3, this section reviews the basic properties of the prototypical Swedish CC and makes some cross-linguistic comparisons.

# 2.1. Word order: Subordinate clause C1 and main clause C2

First, the C1 and C2 clauses differ in word order, which in turn identifies them as differing in syntactic status, as the Construction definition quoted above indicates. Swedish has obligatory verb-second word order in main clauses: the finite verb must always appear in the second position in declarative main clauses. This results in subject-verb inversion if a constituent other than the subject is fronted to become clause-initial. Word order in C1-ju is straightforwardly SVO, even though the subject is not the first constituent in the clause: the ju and a comparative expression are clause-initial. This lack of verb-second effect in C1 suggests that the C1-ju clause is a subordinate clause. In contrast, the C2clause obligatorily shows subject-verb inversion, which identifies it as a main clause. Thus, we have a complex sentence structure with a main clause preceded by a subordinate clause, as represented in (3) for the example given above in (2):

# [ [Ju närmare vi kom ] $_{C1}$ , desto oroligare blev vi. ] $_{C2}$

SAG (Vol 3:212) supports the classification of C1-ju clauses as subordinate clauses. The verb-second effect in the Swedish C2 was referred to in a footnote by Culicover & Jackendoff (1999:549) and used as indirect support of their main clause analysis for the English C2. Existing studies of CC in other languages differ in their account of the exact structural relationship between the C1 and C2 clauses, with some (most recently Taylor 2013) advocating a hierarchical structure and others preferring juxtaposition of the two clauses (for example, Culicover & Jackendoff Nevertheless, all are in agreement that C1 should be characterized as a subordinate clause and C2 as a main clause, and the Swedish data supports this.

# 2.2. Comparative constituents

Each clause in the CC begins with a comparative constituent introduced by *ju* or *desto*. The comparative constituent itself consists of a comparative adjective or adverb modifying a phrase of varying categorial status (i.e. an XP). This structure is schematized by the Constructicon (Lyngfelt et al 2013) as involving comparative AP complements to the *ju* and *desto* adverbs or to the combination of *ju/desto* with a *mer/mindre* 'more/less' expression of the comparative:

# (4) [ju AP<sub>i</sub>komp (XP) desto AP<sub>j</sub>komp (XP)]/[ju mer/mindre XP desto mer/mindre XP]

Frequently occurring comparative adjectives and adverbs besides *mer/mindre* 'more/less' include *fler* 'more' (countable), *högre* 'higher/greater', *längre* 'longer/farther', and *svårare* 'harder, more difficult'. The range of phrases which may occur in the XP position is exemplified below and includes adjective



phrases (5), noun phrases (6), adverb phrases (7), prepositional phrases (8), and clauses (9). When comparison is expressed directly through inflection on the adjective as shown in (5) for the adjective personligare 'more personal', there may not be any XP constituent, as the parentheses notation (XP) indicates in (4).

(5) Ju mer [**privat-a**]<sub>AdjP</sub> vi bli-r, JU more private-PLU we become-PRS

desto [**personlig-are**]<sub>AdjP</sub> bli-r vi också. DESTO personal-COMP become-PRS we also

'The more private we become, the more personal we become also.'
(*Bloggmix* 2008)<sup>9</sup>

(6) Ju fler [bidrag]<sub>NP</sub>,
JU more contribution.PLU

desto fler [sång-er]<sub>NP</sub> sjung-er han. DESTO more song-PLU sing-PRS 3SG.M

'The more contributions, the more songs he sings.' (*Åbo Underrättelser* 2012)

(7) Ju längre [**söderut**]<sub>AdvP</sub> hon kom JU long.COMP southward she come.PST

 $\begin{array}{lll} desto & [\textbf{underlig-are} \ ]_{AdjP} & te\text{-dde} \\ DESTO & strange\text{-}COMP & present\text{-}PST \end{array}$ 

sig hennes utseende och klädedräkt REFL her appearance and clothing

för de människ-or hon träffa-de for the person-PLU she meet-PST

'The farther south she went, the stranger her appearance and clothes seemed to the people she met.'
(Bloggmix 2005)

(8) Ju bättre [på brott]<sub>PP</sub>, tyck-s det, JU good.COMP at crime think-PASS it

desto sämre [påkänsl-or]<sub>PP</sub>
DESTO bad.COMP at emotion-PLU

'The better at crime, it seems, the worse at emotions.' (*GP* 2001)

(9) Ju längre [kvinnlig-a ledamöt-er JU long.COMP feminine-PLU member-PLU

**har funn-it-s i parlament-et**]<sub>S</sub>, have PRS exist-PTCP-PASS in parliament-DEF

desto högre är DESTO high.COMP be.PRS

 $[kvinnor epresentation-en.]_{NP} \\ female.representation-DEF$ 

'The longer there have been women members in parliament, the greater women's representation is.'

(Samhällsvetenskap 'Social Science', Phd diss. in Government, no date)

Examples (7) and (9) show that the XP in the C1 and C2 clauses of the CC need not match in categorial status. In (9) the C1 comparative modifies a whole clause, while the C2 comparative *högre* 'higher' modifies the subject noun *kvinnorepresentationen* 'women's representation'.

### 2.3. Clause reduction

The two clauses in the English CC may lack any finite verb. This occurs when the overt verb would be a form of the copula, as in (10):

(10) The more intelligent the students, the better the marks. (Abeillé & Borsley, 2008:1142)

This is also the case for the Swedish CC:

(11) **Ju** lägre index **desto**JU low.COMP index DESTO

frisk-are folk. healthy-COMP people

'The lower the index, the healthier the people.' (*Åbo Underrättelser* 2012)

(12) **Ju** snabb-are internet, JU fast-COMP internet

**desto** större fil-er. DESTO big.COMP file-PLU

'The faster the internet, the bigger the files.' (*Twittermix* 2009)

(13) **Ju** förr **desto** bättre.

JU early.COMP DESTO good.COMP

SHEILA DOOLEY



'The sooner the better.' (*Twittermix* 2012)

Examples (11) and (12) show clause reduction which is arguably copula deletion, leaving two noun phrases modified by comparative adjectives (lägre and friskare in (11); snabbare and större in (12)) correlated with each other. Example (13) involving more substantial reduction shows the Swedish equivalent of a well-known English aphorism which is also expressed as a reduced CC. The Swedish example omits not only the copula \(\bar{a}r\) 'is/are' but also a hypothesized non-referential subject det, equivalent to English non-referential 'it'. Similar to English, Swedish normally requires an overt formal subject det in finite clauses. Copula deletion in the English CC can only occur under very specific conditions (Culicover & Jackendoff 1999:554), although more recent studies have questioned exactly what those conditions are (Abeillé & Borsley 2008:1142; Taylor 2004:8-9). Determining the precise constraints upon copula deletion in the Swedish CC requires separate investigation beyond the scope of this study. 10 Corpus data such as the above examples are sufficient to show that deletion is possible in the Swedish CC.

#### 2.4. Embedded CC

The whole biclausal CC can itself function as an embedded object complement introduced by the subordinating conjunction (i.e.complementizer ) *att* 'that':

(14) Stat-en säg-er att [ [ ju mer den state-DEF say-PRS that ju more it

får spender-a ] **desto** rik-are may- PRS spend-INF desto rich-COMP

bli-r vi som nation.] become-PRS we as nation

'The state says that the more it may spend, the richer we become as a nation.' (*Åbo Underrättelser* 2012)

This shows that although the two clauses of the CC are identifiable as separate units, together they form one constituent. Whatever the structural status of this constituent, embedding it under an overt subordinating conjunction such as *att* 'that' results in two complementizers in immediate sequence (complementizer recursion), as shown in (14), which is regarded as problematic for some languages. However, complementizer recursion in Swedish is well-attested by the occurrence of embedded main clause word order (i.e. V2) in subordinate clauses (see Andersson 1975 and Brandtler 2008). Examples like (14) are predicted by the existing accounts of

Swedish complementizer recursion/embedded clause word order.

The corpus also contains occurrences of the Swedish CC embedded under the subordinating conjunctions *som* 'like/as' and *som om* 'as if' (15-16). The mulitword subordinating expression *som om* 'as if' occurs more frequently with the CC than *som* alone.

(15) Det känn-s **som** [[**ju** högre it feel-PASS like JU high.COMP

ställning man ha-r ] [desto mer position one have-PRS DESTO more

flexibel kan man var-a . . . .] ] flexible can one be-INF

'It feels like the higher position you have the more flexible you can be. . . . ' (GP 2012)

(16) Och det var **som om** [ **ju** mer Gud nekaand it be.PST as if JU more God deny-

de henne moderskap-et] [**desto** store PST her motherhood-DEF DESTO big.COMP

blev hennes längta-n ] become.PST her longing-DEF

'And it was is if the more God denied her motherhood, the greater grew her longing.' (*Bonniersromaner II* 1980-81)

While embedded CC such as these certainly exist, they are by no means frequent. Corpus searches return only a handful of examples (less than 15) for each subordinating conjunction queried with the CC following it. Even if they are relatively rare, instances of embedded CC in Swedish are relevant to questions about the structural status of CC clauses and to our knowledge of the conditions under which complementizer recursion is allowed by the grammar. <sup>11</sup>

### 2.5. Optional complementizer insertion

Equally relevant to the questions of structural status and complementizer recursion is the possibility of an overt complementizer such as *som*, *att*, or *om* occurring immediately after the comparative *ju/desto* phrase in either C1 or C2. Optional 'that' complementizers in the English CC are discussed in Culicover & Jackendoff 1999 and extensively investigated in Taylor 2013. Taylor (2013: 66) concludes that English is the only language crosslinguistically for which some speakers allow optional complementizer insertion after the



comparative phrase of a C2. She also finds that insertion of a complementizer in the C1 is always preferable to insertion in the C2 in English. The same seems to be the case for Swedish.

It is not difficult to find instances of the complementizer *som* in a C1-*ju* clause. Nearly all of them use *mer* 'more', *mindre* 'less', and *färre* 'fewer' to form the comparative constituent, but (19) below shows *som* following the adverb *oftare* 'more often'. The word *som* is not, however, used in the same sense as in the previous examples, as the glosses indicate. In these sentences, it functions as a relative marker equivalent to 'that/which/who' in English.

(17) **Ju** färre **som** är few.COMP that be.PRS

sjukskrivn-a, **desto** bättre för all-a. sick.listed-PLU,DESTO good.COMP for all-PLU

'The fewer that are out on sick leave, the better for everyone.' (*Bloggmix* 2009)

(18) Men **ju** mer **som** stå-r på spel but JU more that stand-PRS on game

**desto** mer nervös bli-r man DESTO more nervous become-PRS one

'But the more that is at stake, the more nervous you get.' (*GP* 2008)

(19) ... och **ju** ofta-re **som** tänd-er-na and JU often-COMP that teeth-PLU-DEF

belasta-s desto svår-are damage-PASS DESTO hard-COMP

ha-r tänd-er-na att have-PRS teeth-PLU-DEF to

remineralisera-s och återhämt-a sig. remineralize-PASS and recover-INF REFL

'... and the more often that the teeth are damaged, the harder it is for the teeth to restore enamel and recover.'
(Svenska wikipedia 2013)

As for complementizers in C2, Swedish does allow the complementizer *att* 'that' to appear immediately after the C2 *desto* comparative phrase:

(20) ... ju lägre grad av kontroll ... JU low.COMP degree of control

över risk-er-na, **desto** trolig-are **att** over risk-PLU-DEF DESTO likely-COMP that

människ-or upplev-er oro, human-PLU experience-PRS worry

rädsla eller otrygghet ]. fear or insecurity

'The lower the degree of control over the risks, the more likely that humans experience worry, fear, or insecurity.' (*Samhällsvetenska*, 'Social science', PhD diss. in Media and Communication, n.d.)

(21) Vintertid bör temperatur-en ligg-a wintertime should.PRS temperature-def lie-

mellan 5 och 15°C, men ju lägre INF between 5 and 15°C but JU low.COMP

temperatur desto viktig-are att temperature desto important-COMP that

jord-en håll-s torr ground-DEF keep-PASS dry

'In the wintertime the temperature lies between 5 och 15°C, but the lower the temperature the more important that the ground be kept dry.' (Svenska wikipedia 2013)

At first these examples seem to refute the claim that English is the only language which allows overt complementizers to appear directly after the C2 comparative phrase. On closer inspection, however, it becomes apparent that these examples share significant structural similarities. All are instances of *desto* followed by a comparative adjective which modifies the entire *att*-clause rather than some constituent within the *att*-clause. What we probably have here is actually a C2 with its own full clausal subject (the *att*-clause) and copula reduction. In other words, examples (20) and (21) correspond to (20a) and (21a), with obligatory subject-verb inversion of a formal subject and copula when both are expressed overtly:

- (20a) ... ju lägre grad av kontroll över riskerna , desto troligare (är det) att människor upplever oro , rädsla eller otrygghet
- (21a) Vintertid bör temperaturen ligga mellan 5 och 15°C, men ju lägre temperatur desto viktigare (**är det**) att jorden hålls torr.





No corpus examples were found in which a complementizer *som* or *om* occurred immediately after a C2 *desto*. If complementizers truly were possible after a C2 *desto*, then we could expect to see other complementizers besides *att* there. Their absence supports the above reduced clause interpretation of optional *att*. Examples with *desto* followed by *att* can therefore be subsumed under copula deletion, and the cross-linguistic generalization that overt complementizers are normally not allowed in C2 holds for Swedish.

#### 2.6. Extractions

A great deal has been written about the possibilities for extraction from CC constructions in English. It is very difficult, however, to investigate extraction possibilities for Swedish CC using the kind of corpus data upon which this study is based. The sentences needed to confirm hypotheses about extraction constraints are extremely specific in nature. This type of data is best collected through the use of specially constructed test sentences presented to native speaker consultants for judgment. The purpose of this study is not to choose between different theoretical models, but to illuminate the syntactic behavior of the Swedish CC in naturally occurring corpus data. Therefore, this study will not address the possibility of extractions from Swedish CC.

# 2.7. Summary: Prototypical properties of the Swedish CC

The observed properties of the prototypical Swedish CC can now be summarized as follows:

- a. The CC is composed of two clausal constituents, which can be referred to as C1 and C2.
- b. C1 begins with a comparative phrase introduced by the adverb *ju*
- c. C2 begins with a comparative phrase introduced by the adverb *desto*
- d. C1-*ju* is a subordinate clause that does not show verb-second word order
- e. C2-desto is a main clause with obligatory verb-second word order
- f. The comparative modifies an optional XP realized as AdjP, AdvP, NP, PP, or S
- g. C1 and C2 may be reduced clauses (i.e. may delete the copula and a non-referential subject)

- h. The whole CC may be embedded under a subordinating conjunction
- i. Complementizer *som* may occur after the comparative XP in C1

These are the properties which any formal account of the CC construction must predict. While the formalized Constructicon analysis shown earlier in (4) is sufficient to cover most of the behavior of the CC outlined in this section, it does not directly constrain the word order properties of the C2 (property e). Furthermore, this basic analysis fails to accurately predict a great deal of the actual usage of the CC among speakers and writers. Corpus data shows that the C1-ju and C2-desto pattern is only one among several different patterns for this construction. The next section presents corpus data which is not formally recognized by the prototype description or the Construction analysis reviewed thus far.

# 3. Variations of the Protoype

This section documents the corpus data on variations to the Swedish CC. The majority of these variations prove to be lexical in nature, but they also add to our understanding of the syntactic properties introduced in Section 2. The fundamental subordinate clause + main clause structure, word order, and semantics of the CC are, however, not affected by these variations. This supports a deeper semantic basis for the CC construction than just a surface clausal collocation of lexical items such as *ju* and *desto* with comparatives as represented in the Construction analysis.

# 3.1. C1 and C2 may both begin with ju

One very simple and common variation in the form of the Swedish CC is a tendency toward lexical doubling: both clauses are often introduced by the adverb *ju*, as shown in (22) and (23).

- (22) För **ju** närm-are jul-en vi komm-er, So JU near-COMP Xmas-DEF we come-PRS,
  - **ju** större risk är det tyvärr att JU big.COMP risk be.PRS it unfortunately that

sånn-a här fin-a sak-er such-PLU here fine-PLU thing-PLU

bli-r slutsåld-a become-PRS sold.out-PLU

'So the closer to Xmas we come, the bigger risk unfortunately that such fine things as these are sold out.' (*Bloggmix* 2007, author aged 42)



(23) **Ju** mindre myndighet-er-na gör JU less administration-PLU-DEF do.PRS

jubättreärdet .JUgood.COMPbe.PRSit

'The less the authorities do, the better it is.' (*Bloggmix* 2005, Stockholm, age unknown)

This ju. . . ju. . . variant is a robust pattern that occurs frequently. Grammar textbooks acknowledge its existence, but authorities have had differing attitudes toward it. Historically grammarians have either regarded the ju. . . ju. . . form as more informal and belonging to the spoken language (Elmquist 1914), or they have eschewed it as totally (Wellander undesirable 1941). Contemporary grammars follow Elmquist and associate it more closely with the spoken rather than the written register (SAG Vol 3:212). Its occurrence is definitely more frequent in the 'conversational' registers of the corpus, including blogs and other webtexts (for example, SweWAC, or Swedish Web as Corpus). However, it is also found in more formal written including contemporary registers, doctoral dissertations in theology, ethnology, history, and art. It is furthermore attested in older literary texts by well-known Swedish authors, including August Strindberg, Erik Gustaf Geijer, and most notably Carl Ehrensvärd, who used it quite frequently in his writings from the 1920s. The earliest examples in the Språkbanken corpus date from the mid eighteenth century, and they can be found in essentially all decades from that time up until the present. They are not specifically restricted to literary contexts meant to simulate the character of informal or conversational speech, but appear in reference to more serious subjects and also in at least one instance in religious poetry, shown in example (24) from 1732. In fact, this very early example contains two instances of the ju...ju... variation.

(24) Jag wet min Högst-a Fader-s I know my high.SUPER- DEF father-POSS

wijs , Ju högre älskad barn , ju way JU high.COMP loved child JU

större Rijs , **Ju** mer-a big.COMP switch JU more- COMP

last, **Ju** större Rast burden JU big.COMP rest

'I know my Heavenly Father's way, The more beloved the child, the bigger the whip, the more burden, the bigger the rest' (Sophia Elisabeth Brenner, *Poetiske Dikter* 2, 1732)

(25) **Ju** längre jag åskåda-de long.COMP I behold-PST

denna öfverjordisk-a lustgård, **ju** mer this over.worldy-DEF paradise, JU more

hänryckt-es jag af dess fägring. enchant-PASS I of its beauty

'The longer I beheld this heavenly paradise, the more enchanted I was by its beauty.' (Vilhelm Fredrik Palmblad, *Holmen i sjön Dall*, 1841)

(26) **Ju** förr du uppfyll-er denna JU soon.COMP you fulfill-PRS this

pligt af skald-en , medborgar-en och duty of poet-DEF, citizen-DEF and

förbundsbroder-n mot den andre, union.brother-DEF toward the other

**ju** välkomna-re för oss. JU welcome-COMP for us

'The sooner you fulfill this duty of poet, citizen and comrade toward the other, the more welcome for us.'
(Gustaf Ljunggren, Svenska akademiens historia 1786–1886, p. 108, 1886)

Perhaps due to the increased accessibility to written texts afforded by the internet in the last few decades, the ju. . . . ju. . . variation seems to have become more noticeable to readers, and in 2009 it prompted questions to popular online language discussion boards and grammar experts. There has even been online speculation that the ju. . . ju. . . pattern is evidence of some English influence on the Swedish language to mimic the English CC pattern the. . .the. . . (Rydergren 2011). The advice given to those who have questioned this variation has in some cases been rigidly prescriptive, but in most cases has followed the view of SAG cited earlier in identifying the ju. . . ju. . . variation as ". . . en vardagligare variant av ju-desto" ('a more everyday variant of judesto'; Ringarp & Andersson 2009). Nevertheless, as the above corpus examples demonstrate, it cannot be considered a new phenomenon, a result of English influence, or usage that is limited to one register. In all respects, the ju. . . ju. . . variation preserves the semantics and syntax of the prototype ju. . . desto. . . construction. Notice especially that the subject-verb inversion of C2 is still obligatory, even when the C2 is introduced by ju (25).<sup>13</sup> The ju.





... ju. ... pattern is just a lexical variation, and an old one in Swedish at that.

# 3.2. C1 and C2 may both begin with desto

The other possibility for lexical doubling, with both clauses introduced by *desto*, has been documented in *SAG*:

(27) Och **desto** mer man få-r trän-a ihop **desto** bättre bör

and DESTO more one may-PRS train-INF together DESTO good.COMP should.PRS

det ju bli. it of.course<sup>14</sup> become.INF

'And the more you get to train together, the better it should be, of course.' (*SAG* Vol 3, Adjective Phrases §28, pp212-213)

This pattern is attested in the modern corpus data, although the ju...ju... variation is almost five times as plentiful. Example (28) below from the Swedish Web as Corpus portion of the *Språkbanken* is typical of modern internet prose, and establishes that the second clause functions as a main clause with subject-verb inversion. Example (29) from a non-fiction text on champagne shows that the *desto.* ... desto. ... variation is not confined strictly to informal language registers. It also confirms the possibility of clause reduction with doubled desto. As with the ju....ju... variation, all the prototypical properties of the CC construction are present. The only difference is the lexical variation in the words introducing the two clauses.

(28) **Desto** mer man förvara-r där, DESTO more one store-PRS there

**desto** jobbig-are bli-r det att DESTO hard-COMP become-PRS it to

byt-a storage-tjänst. change-inf storage-service

'The more you store there, the harder it gets to switch storage service.' (SweWAC, n.d.)

(29) **Desto** mer kyld dryck, **desto** fler bubbl-or.

DESTO more chilled drink DESTO more bubble-PLU

'The colder the drink, the more bubbles.' (*Forum för ekonomi och teknik* 'Forum for economics and technology' 2011)

In literary sources the *desto...desto...* variation is extremely rare: only three examples were discovered in the corpus. The oldest example among these is dated 1900.

(30) **Desto** yngre **desto** lätt-are, men DESTO young.COMP DESTO easy-COMP but

karl-ar och kvinnfolk lika man-PLU and womenfolk alike

'The younger the easier, but men and women alike.'

(Salomon Brelin, Svenska memoarer och bref I, 1900)

Perhaps the desto. . . desto. . . variation is much rarer than the ju...ju... variation because of the overall difference in frequencies of usage for the words desto and ju. A simple word search of the Språkbanken corpus finds 51,142 tokens of desto compared to 1,751,018 tokens of ju. Certainly the word ju occurs in more varied contexts of use than the CC because it is also used as a pragmatic marker, while desto does not have such varied and frequent usage. Frequent use of ju as a pragmatic marker means that Swedish speakers of all ages -- including very young children acquiring their native language -- are likely to be more familiar with the word ju than with the word *desto*. It is tempting to speculate that a lexical variation introducing both clauses of the CC construction with the same word may be influenced by the greater familiarity with ju rather than desto. The widespread use of ju with a wide range of comparative expressions is even more likely to have influenced the doubling of ju in the

# 3.3. Reversed desto. . . ju

A third lexical variation, not an instance of lexical doubling, is possible. The reverse order of *desto*. . . ju . . . can occur, but the syntax of the two clauses is unchanged. In other words, C1 is still the subordinate clause and C2 is still the main clause with obligatory subject-verb inversion.

(31) **Desto** fler som blogga-r , **ju** vanlig-DESTO more who blog-PRS JU common-

> are bli-r det med den sortens COMP become-PRS it with that sort.of

offentlig-a uppkastning-ar. public- PLU throwing.up-PLU



'The more (people) who blog, the more common that kind of public gutspilling becomes.'
(*Bloggmix* 2006)

It is crucial to note that reversing the order of the two CC markers to *desto...ju...* does not change the internal word order constraints on the two clauses: the second clause, now introduced by *ju*, still has the status of a main clause and must show verb-second word order, while the first clause introduced by *desto* is still a subordinate clause. This is the clearest evidence that *desto* itself does not induce the verb-second subject-verb inversion in the main clause. The inversion in the C2 (i.e. main) clause follows from the normal requirement of verb-second word order of Swedish: The sentence begins with the C1 clause rather than the actual subject of the sentence. The C1 is thus analogous to a sentence-initial adverbial clause.

# 3.4. 'Notional' comparatives

Some examples were found in which C2 seems to lack any overt introductory CC marker. The C1 clause of these examples still begins with *ju*, and the C2 clause still shows obligatory subject-verb inversion, even if an initial *ju/desto* marker and comparative are absent. Brackets are provided to show where the C2 main clauses begin.

(32) **Ju** längre de vit-a JU long.COMP the white-PLU

varg-ar-na sträck-te sig, wolf-PLU- DEF stretch-PST REFL

[ försvaga-de-s deras kraft-er.] weaken-PST-pass their strength-PLU

'The longer the white wolves pushed themselves, the more their strength was weakened.'

(Olof Högberg, *Under "Jesu bröders" spira. 1-2*, 1915)

(33) **Ju** längre tid-en gå-tt long.COMP time-DEF go-PTCP

[ ha-r jag gå-tt allt mer have-PRS I go-PTCP even more

åt det sistnämnd-a.] toward the last.named-DEF

'The more time has passed, the more I have leaned toward the latter.' (*Bloggmix* 2006)

(34) **Ju** fler kommentar-er du more comment-PLU you

skicka-r, [större chans!] send-PRS big.COMP chance

'The more comments you send, (the) bigger (the)chance.' (*Bloggmix* 2005)

Furthermore, the C2 in (32) lacks any overt comparative expression. Nevertheless, a degree change in C2 correlated with the overt comparative from C1 is expressed by the finite verb *försvaga* meaning 'to grow weaker'. Such 'notional' CC without a morphologically expressed comparative are also documented by McCawley (1988:179-180) for English. In the third example (34), the C2 is a highly reduced clause lacking the CC marker ju/desto and the finite verb (see the discussion of clause reduction earlier in 2.3). As one reviewer points out, examples like these have the structure of basic main clauses introduced by a subordinate clause containing a comparative. The simple lack of any ju/desto marker in C2 need not, however, call into question the classification of these examples as instances of the CC. The comparative in C2 is expressed clearly enough by other lexical items such as allt mer (33), which insures that the semantics of the CC remain intact.

### 3.5. Inverted CC

Other examples of apparent omission of an introductory marker, this time in the first clause of a CC, are given below, but they are not simply omissions. The last of this group of examples also involves a "notional" degree change expressed by a verb (  $\ddot{o}ka$  'increase' ) such as the one noted in the previous section.

(35) Och de smaka-de allt bättre and they taste-PST even better

[ ju mer han satte i sig.] 16
JU more he put.PST in REFL

'And they tasted even better the more he stuffed into himself.' (*PAROLE*, 1976)

(36) Jag kan rabbl-a på i timm-ar, och I can rattle.INF on in hour-PLU and

bli-r bara mer och mer exalterad become-PRS only more and more exalted





[ **desto** längre jag håller på ]! DESTO long.COMP I carry- PRS on

'I can rattle on for hours, and get more and more exalted the longer I go!' (Bloggmix 2010, age 18-20)

(37) Trivsel-n tyck-s ök-a Wellbeing-DEF appear-PASS increase.INF

[ **ju** mer deltagande det är JU more participation it be.PRS

i organisatorisk-a affär-er ] in organizational-PLU business-PLU

'Wellbeing appears to increase, the more participation there is in organizational matters.'

(Samhällsvetenskap 'Social science', no date)

None of the second clauses in these three examples show verb-second word order. Every clause in these examples is straightforward SVO, even though all three examples express a CC marker (ju/desto) and comparative in their second clauses. Interestingly, the English translation of example (37) also follows a similar pattern, with only the second clause introduced by the English CC expression the more. Actually, the second clauses of all these examples are not C2 but instead C1. The English translation of (37) is a pattern known as a 'reversed' CC or Inverted CC (ICC) (McCawley 1988:176). inverted CC, the subordinate C1 clause appears after the C2 main clause instead of before it. Also, since the initial CC marker of the C2 clause would now occur in sentence-initial position, it is somehow obligatorily suppressed. <sup>17</sup> These examples show that Swedish also has an ICC construction. They also demonstrate that, as in the 'notional' comparatives exemplified in the previous section, the degree correlation between the two clauses may be expressed by other means than a morphological comparative. Verbs whose inherent aspects express degree change may be correlated with a morphological comparative, forming a 'notional' comparative. This phenomenon seems to be more common in Swedish in the sentence-initial C2 clauses of the ICC. This is reminiscent of McCawley's (1988:179) observation that 'notional' comparatives may only occur in the main clause of ICC in English.

#### 3.6. Multiclausal CC

The prototypical pattern for the Swedish CC is that it is biclausal, but corpus data shows that in actual

usage the CC is often much more complex syntactically. First of all, the C1 and C2 components may themselves be quite complex. Example (38) below shows that both C1 and C2 may each consist of several embeddings, including relative clauses, infinitival clauses, and adverbial clauses. Bracketing has been added to help clarify the clausal boundaries.

(38) Och [ **ju** mer jag få-r att gör-a and JU more I get-PRS to do.INF

[som jag vet [att jag inte komm-er [att that I know.PRS that I not come-PRS to

hinn-a med [eftersom tid-en bara gå-r]]]]] reach-INF with since time-DEF only go-PRS

[ **desto** mer känn-er jag mig DESTO more feel-PRS I REFL

[som ett psykfall [som bara gö-r like a mental.case that only do-PRS

en massa sak-er hel-a tid-en a bunch thing-PLU whole-DEF time-DEF

utan mening ]]]. without meaning

'And the more I have to do that I know I won't get to since time just passes, the more I feel like a mental case who just does a bunch of meaningless things all the time.' (*Bloggmix* 2006, age 20)

This suggests that the *ju. . . desto. . .* correlation is not dependent on any locality constraint in order for the construction to be produced or processed correctly. This kind of syntactic complexity cannot be dismissed as peripheral or sloppy style confined to the digital universe of youthful bloggers. A similar example is taken from a prominent Swedish newspaper:

(39) För **ju** längre det dröj-er för for JU long.COMP it delay-PRS for

regering och riksdag att förlik-a sig government and parliament to reconcile-INF REFL

med det faktum att ett statligt monopol with the fact that a stately monopoly

inte är förenligt med en öppen not be.PRS compatible with an open



europeisk marknad , **desto** större är european market desto big.COMP be.PRS

sannolikhet-en att det som likelihood-DEF that it which

beskriv-it-s som ett "laglöst tillstånd " describe-PTCP-PASS as a lawless state

vad gäll-er alkoholförsäljning inträd-er . what refers.to-PRS alcohol.sale ensue-PRS

'For the longer it takes for the government and parliament to accept the fact that a state monopoly is not reconcilable with an open European market, the greater the likelihood that what has been described as a 'state of lawlessness' with respect to alcohol sales will ensue.'

(PAROLE, Svenska Dagbladet, Vol. 113 Num: 63 Page: 2, 1997)

It is worth noting that the English translations of these very complex examples, having preserved as faithfully as possible the syntactic structure and word order of the original Swedish examples, are fully acceptable and are constructed with the English the more. . . the more. . . comparative correlative. Such naturally occurring syntactic complexities have not been examined before in studies of the English CC, other than as part of discussions of specially constructed extraction possibilities from CC.

A second type of complexity which has only recently been discussed in the literature on CC constructions is that more than just two comparatives may be correlated. Cappelle (2011:102) cites data drawn from the British National Corpus and from internet examples such as the following which demonstrate that several different scales of comparison may be linked through coordination in one CC expression:

(40) If we are doing something that isn't working, then the more choices we have, or the more flexible we can be, the more likely we are to find something that does work.

(www.aeona.co.uk/aeonanlp.htm, accessed 5 June 2008, cited in Capelle 2011:102)

This type of multiscalar and multiclausal correlation was found frequently in the Swedish corpus data examined in this study. Multiscalar correlation is not confined to one particular register or time period. The following examples are representative of multiscalar CC in Swedish. Example (41) contains two C1, and example (42) contains two C2 (one introduced by *ju* and another introduced by *desto*):

(41) **Ju** längre tid-en gå-r, och JU long.COMP time-DEF go-PRS and

framför allt **ju** längre tid-en gå-r before all JU long.COMP time- DEF go-PRS

utan att jag hör nåt från X, without that I hear.PRS something from X

ja **ju** mörk-are och svår-are yes JU dark-COMP and hard-COMP

bli-r det become-PRS it

'The more time goes, and most of all the longer time goes without me hearing anything from X, yes the darker and the harder it gets.' (Bloggmix 2004)

(42) ... **ju** mer alkohol **ju** större ... JU more alcohol JU big.comp

rus och desto mer utav hjärna-n och buzz and DESTO more of brain-DEF and

nervsystemen påverka-s. nervous.system affect-PASS

'... the more alcohol, the bigger the buzz and the more of the brain and nervous system affected.'
(Bloggmix 2008)

An especially complex example of multiscalar correlation is the following quote from the 1893 novel *Familjen på Haapakoski* by Jacob Ahrenberg. The character Helena is pondering a difficult choice confronting her because she and her love Erik are of different nationalities.

(43) Och det förfärlig-aste var, att **ju** and the terrible-SUPL be.PST that JU

ädla-re, **ju** bättre, **ju** anderik-are noble-COMP JU good.COMP JU spirited-COMP

hennes Erik var, det vill säg-a **ju** varm-are her Erik be.PST it will say-INF JU warm-

han var fäst vid sitt COMP he be.PST attached to his

land, **ju** trägnare han arbeta-de för det --country JU persistent.COMPhe work-PST for it



**ju** värdig-are dotter af sitt ju worthy-COMP daughter of her

land hon å sin sida var, **desto** country she on her side be.PST DESTO

större blef dissonans-en dem big.COMP become.PST dissonance-DEF them

emellan, **desto** svår-are var det att between desto hard-COMP be.PST it to

fören-a dem, **desto** större det unite- INF them desto big.COMP the

offer den ena parten måste bringa sacrifice the one part-def must

den andra. bring.inf the other

'And the worst was, that the nobler, the better, the more spirited her Erik was, in other words the more warmly he was attached to his country, the more persistently he worked for it ----- the more worthy daughter she was of her country for her part, the larger grew the dissonance between them, the harder it was to unite them, the bigger the sacrifice one must bring to the other.'

First, degree variation in three different adjectives ('noble', 'good', and 'spirited') describing the character of Erik combine in stylistic repetition to form a C1 portion of a CC. A second C1, also involving stylistic repetition, establishes further characteristics of Erik. Then, Helena adds a third C1 describing her own character. Three different C2 describing the how the couple's relationship with each other correlates with these characteristics complete the comparison. Schematically, we have these multiclausal CC patterns in this one example from a Swedish literary work:

44.

- a.  $_{C1}[c_1[ju(noble)], \quad _{C1}[ju(better)], \quad _{C1}[ju(spirited)]]$  . . .  $_{C2}[desto(large grew the dissonance)]$
- b.  $_{C1}[_{C1}[ju(warm)], \quad _{C1}[ju(more persistently)]], \dots _{C2}[desto (hard to unite them)]$
- c.  $_{C1}[ju(more worthy daughter)], ...$   $_{C2}[desto(bigger the sacrifice)]$

Taylor 2013, which is the most comprehensive study of CC constructions to date, claims that the CC is

biclausal in all the languages studied thus far. Up until now, we have also assumed this is true for Swedish and have treated the prototypical Swedish CC as biclausal. But this generalization must be reassessed in light of the multiclausal examples presented here. Even with multiscalar correlations, it still seems that the Swedish CC has a two-part structure, as the schematic patterns in (44) suggest. There may be several C1 or several C2 clauses, but they are not interspersed with each other. All the C1 must come first, followed by all the C2. There is still thus a recognizable 'first part' and 'second part' to the CC construction. In calling the CC biclausal, previous studies are correct in that there are two and recognizable portions of the construction. Taken literally, however, to indicate that only two syntactic clauses may participate in the construction, the term 'biclausal' is erroneous.

# 3.7. Summary: Revised properties of the Swedish CC

The lexical variations for introducing the C1 and C2 clauses of the Swedish CC indicate, interestingly, that the essence of the CC construction is not strictly dependent on anything inherent in the lexical items desto or ju themselves. There is apparently no constraint which dictates that desto cannot begin a subordinate clause. Similarly, there can be nothing inherent in the character of ju which constrains it from introducing a main clause containing subjectverb inversion. Finally, there are even inverted CC which lack an introducing ju or desto in one of the clauses. This has consequences for a fully inclusive analysis of the Swedish CC construction in all its variant realizations. The grammatical expression of the Swedish CC construction is not solely dependent upon the choice of any particular lexical items to introduce the two clauses. Neither is it dependent upon some strictly local biclausal syntactic dependency, since it can occur over long and complex structures which themselves contain multiple embeddings of relative clauses, infinitives, and adverbial clauses. Furthermore, it may involve linking the meanings of more than just two comparatives in multiscalar correlation. prototypical properties first established in Section 2 should be revised to the following:

- a. The CC is composed of at least two but possibly more clausal constituents which combine in a two-part correlation
- b. Each CC clause begins with a comparative phrase introduced by the adverbs *ju* or *desto*
- c. C1 clauses are subordinate clauses that do not show verb-second word order
- d. C2 clauses are main clauses with obligatory verb-second word order



- e. The comparative modifies an optional XP realized as AdjP, AdvP, NP, PP, or S
- f. CC clauses may be reduced clauses (i.e. may omit the copula and a non-referential subject)
- g. The whole CC may be embedded under a subordinating conjunction
- h. The comparative may be 'notional' (i.e. encoded by a verb expressing degree change), in which case the clause expressing the 'notional' comparative may omit *ju/desto*
- i. Inverted CC (ICC) occur, in which a C2 may precede C1. *Ju/desto* is obligatorily null in the C2 of an ICC.

Allowing for the actual usage observed in the corpus data requires complication of the original prototype analysis, but documented variations should be included if the goal is to give a complete and accurate representation of what speakers produce.

Instead of arising from a ju. . . desto. . . lexical correlation, the whole Swedish CC construction must stem from the correlation of the two or more comparative meanings that are linked with each other. The semantic core of this construction transcends clausal boundaries, making it difficult to define with approaches that are either tied to phrasal units smaller than a clause or heavily dependent on surface lexical items for their properties and constraints. Taylor (2006) treats 'the' as the controlling lexical item for the properties of the English CC, pointing out that this approach is in principle available to a construction grammar account which allows for treating individual lexical items as constructions with inheritance properties. A similar analysis is difficult to apply to Swedish, however, because so many variations -- including omission -- exist for the introduction of the C1 and C2 clauses, as this section has demonstrated. Furthermore, expression of the comparative can be through the semantics of the finite verb, which removes control of the construction from a predictable lexical item such as desto or ju. Finally, the range of variation of the Swedish CC also invites questions about how such complex patterns can be acquired by speakers.

### 4. Conclusion

Using corpus data from a wide variety of contemporary and historical texts, this study has examined both the basic properties and possible variations in the construction of comparative correlatives (CC) in Swedish. The data confirms that the Swedish CC construction also exhibits many of the properties which occur cross-linguistically in the CC construction: biclausal syntax, clause reduction, potential complementizer recursion, multi-scalar

correlation, and the possibility of inverted CC word order. This result adds important knowledge to our understanding of the CC construction both within Swedish and cross-linguistically and allows for further research into the universal properties of the construction. For example, multi-scalar correlation is a property which has only recently been given attention, and its occurrence in Swedish confirms that this is indeed an important cross-linguistic property of the CC construction.

The data also shows a uniquely Swedish property of the CC, namely a considerable range of options for how comparisons are signaled lexically by the correlation of ju, desto, and even the semantics of the finite verb. Swedish CC can be expressed with the lexical correlations a) ju...desto..., b) ju...ju. .., c) desto... desto..., and d) desto... ju... Most important, the data demonstrates that the lexemes ju and desto themselves do not affect the basic syntactic structure (i.e. main clause vs. subordinate clause word order) of the clauses they introduce. Their contribution to the construction is global and semantic rather than local, and the syntax of the CC remains the same regardless of which lexical option a speaker chooses. This result suggests that the basis of the CC construction lies not with specific lexical items and their individual properties, but with a larger configuration that is based on a frame of meaning in which those lexical items participate together

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# Notes

- , -

infinitive, JU: *ju*, PASS: passive, PLU:plural, POSS: possessive, PRS:present, PST: past, PTCP: participle, REFL: reflexive, SUPL: superlative.

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<sup>7</sup> As a modal particle *ju* is used frequently in both written and spoken Swedish discourse to express a speaker's confidence in what is being said or to connect to what has already been said (Aijmer 1977), so an accurate English translation depends crucially on the context of use.

<sup>8</sup> Interestingly, *desto* occurs in non-CC expressions whose English translations on the surface seem to use 'the' of the English CC: *icke desto mindre* 'none the less', *desto mer* 'all the more'.

<sup>9</sup> For corpus examples cited in the text of this study, as much source information as possible has been provided, including the source corpus, date, and age of the speaker/writer, when available.

speaker/writer, when available.

10 See also example (34) in section 3 for another instance of clause reduction in the CC. In (34), the C2 is a reduced clause, while the C1 is not reduced.

<sup>11</sup> CP-recursion for English is debatable, and is discussed at length in Taylor 2013 since it is crucial to her account of a structural syntactic tree representation for the English CC. The goal of this study is not to determine the exact structural configuration of the Swedish CC but to investigate the full range of its behavior in documented corpus data.

<sup>12</sup> In fact, only three different adjectives appear in this configuration in the corpus data: *troligare* and its synonym *sannolikare* 'more likely', and *viktigare* 'more important'.

<sup>13</sup> Examples (24) and (26) do not show subject-verb inversion because they are reduced clauses.

<sup>14</sup> The ju in this example translated as 'of course' is the pragmatic particle ju discussed earlier in section 2.

<sup>15</sup> Thanks to a reviewer for pointing out this factor in the more frequent choice of doubling ju.

<sup>16</sup> A reviewer points out that the words *alltid* and *allt* share etymology with *ju*, which may account for *allt* being able to function similarly to *ju* in examples such as (35).

<sup>17</sup> McCawley assumes that a complementizer position in each clause is filled by the comparatives in CC showing the usual C1-C2 order. His explanation for the prevalence of 'notional' comparatives in ICC is that in the ICC the main clause does not need to express a complementizer position overtly, so the comparative meaning can be carried by the verb instead.

### **Processing Information**

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<sup>&</sup>lt;sup>1</sup> The term 'construction' will be used throughout this paper in a traditional and theory-neutral sense. Referring to the comparative correlative as a construction simply acknowledges that it is a recognized grammatical structure that has a finite set of identifiable characteristics and that has received attention and study in an existing body of literature. The purpose of this study is not to support a construction grammar analysis of the Swedish CC in particular, but rather to illuminate facts about its behavior which are important data for any theoretical analysis.

<sup>&</sup>lt;sup>2</sup> For a concise but comprehensive overview of the crosslinguistic literature on the CC construction see Taylor 2013: 7-9.

<sup>&</sup>lt;sup>3</sup> SAG (Svenska Akademiens grammatik, Vol 3:212) identifies the word dess as a variant of desto which occurs in regional, informal, or archaic registers of Swedish. Since it occurs in the same contexts as desto and is clearly a stylistic variant for it, dess will not be discussed further in this study. Our focus is instead upon variations involving ju versus desto.

<sup>&</sup>lt;sup>4</sup> The original definition in Swedish is the following: "
Adverbet ju inleder en proportional bisats och anger att
[en gradökning] Property av ett fenomen motsvarar
[gradökningen] Property hos ett annat fenomen som anges i
matrissatsen. Matrissatsen inleds med adverbet desto."

<sup>5</sup> CC constructions do not always contain a finite verb and
thus may not immediately appear to involve clauses.
These will be discussed in section 2.3 as involving
reduced clauses.

<sup>&</sup>lt;sup>6</sup> Abbreviations used in examples include: COMP:comparative, DEF:definite, DESTO: *desto*, INF: