Relative clause extraction: Pragmatic dominance, processing complexity and the nature of crosslinguistic variation

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This paper concerns crosslinguistic differences in the acceptability of so-called relative clause extraction constructions, exemplified by the unacceptable English sentence *This boat I know the guy that owns* (associated with the acceptable canonical sentence *I know the guy that owns this boat*). It has sometimes been argued, since Ross (1967), that such extractions are universally blocked by a syntactic constraint. However, following observations of such structures in English and other languages, some linguists have argued that such sentences have varying degrees of acceptability and that the degree of acceptability depends on attention limits and pragmatic foregroundedness/backgroundedness. Another view which appears to have gained ground in recent years is one where the degree of acceptability is directly related to processing difficulty. The analysis presented in this paper is based on a comparison between English and Swedish, and includes authentic data, examples previously discussed in the literature, as well as acceptability-tested invented sentences. In the end it will be argued that, while the dominance- and processing-based proposals are on the right track, there is a more plausible and straightforward way of explaining the observed crosslinguistic variation using the theoretical framework of Construction Grammar. Thus, an alternative account will be presented drawing on general principles which are well established within cognitive- and construction-based theories.

Keywords Construction Grammar, extraction, filler−gap constructions, island constraints, pragmatic dominance, processing effects

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1. INTRODUCTION

At least since Ross (1967), the study of EXTRACTION STRUCTURES (also known as FILLER−GAP CONSTRUCTIONS) has represented a thriving area within the field of linguistic theorizing. In such constructions an element has been 'displaced' from its normal (CANONICAL) position and occurs in a sentence- or clause-initial position. The relevant relationship is often referred to as a LONG-DISTANCE DEPENDENCY, and the restrictions on such dependencies have traditionally been referred to as ISLAND

CONSTRAINTS. The specific construction that will be discussed here is the so-called RELATIVE CLAUSE EXTRACTION CONSTRUCTION (or occasionally the COMPLEX NP EXTRACTION CONSTRUCTION),[1] which can be illustrated by the unacceptable English sentence *This boat I know the guy that owns* (associated with the acceptable canonical sentence *I know the guy that owns this boat*).

Both from an English and from a crosslinguistic perspective this type of extraction has attracted interest among linguists since there has been some debate concerning its acceptability status (see Chomsky 1977, Erteschik-Shir 1982, Kluender 1998 and Hofmeister & Sag 2010, among others). From the perspective of Scandinavian languages such as Swedish and Danish, for example, it has often been argued that acceptability in these structures is higher than in corresponding English sentences, even though there does not appear to be any obvious difference between the languages in most other types of extractions.[2]

Within generative approaches based on Chomskyan grammar, a very large number of books and papers have been devoted to claims concerning SYNTACTIC constraints in these sentence types, both to explain facts of English and to explain crosslinguistic differences (e.g. Chomsky 1977, 1981, 1986, just to mention some of the more influential works). By contrast, in cognitive- and construction-based approaches such as Deane (1991), Van Valin (2005) and Goldberg (2006), restrictions on extraction have been argued to be explainable not in terms of innate syntactic constraints, but in terms of LIMITS TO ATTENTION or whether the embedded environment from which an element has been displaced is semantically/pragmatically BACKGROUNDED or FOREGROUNDED. In Van Valin (2005), as well as in Goldberg (2006), this principle is described by the theoretical concept POTENTIAL FOCUS DOMAIN, but this is essentially an extension of an idea suggested already in the 1970s by Erteschik-Shir (1973), who uses the term (pragmatic) DOMINANCE. Yet another view which appears to have gained ground in recent years is one whereby island constraint effects arise due to processing difficulties. In these approaches it is sometimes suggested that crosslinguistic variation is related to conventionalized differences in what is considered acceptable processing complexity within an extraction structure. For example, such a view is held by Kluender (1998:268), who argues that 'island effects arise as a result of CONVENTIONALIZED difficulties of real-time processing', and more recently a similar view has been presented in Hofmeister & Sag (2010).

In the present paper, it will be argued that neither the concept of pragmatic dominance nor processing restrictions appears to be sufficient to explain observed crosslinguistic variation, and that some modification of these proposals is necessary. The alternative suggested in this paper could in fact be regarded as syntactic in nature, but not in the sense of the generative grammar analyses referred to above. Instead, an analysis will be presented on the basis of already existing principles in the theoretical framework of Construction Grammar, in particular the versions of Croft

(2001) and Verhagen (2009). Thus, although Chomskyan grammar discoveries of the great complexity of island constraints have been important for the understanding of extraction structures also from the point of view of Construction Grammar, the basic assumptions of these two approaches appear to be too distinct to allow a more direct integration of theoretical proposals made in these models. For this reason, specific theoretical claims in previous generative analyses will not be discussed in detail in the present paper.[3]

The analysis will be based mainly on Swedish examples contrasted with their corresponding English translations, where authentic data, previous examples in the literature, as well as acceptability judgments on invented sentences will be used to illustrate the relevant theoretical points. Section 2 deals with some relevant empirical issues and important previous analyses of the phenomenon under discussion, where I will address the explanatory potential of dominance- and processing-based proposals in relation to some crucial examples from Swedish. In Section 3, I will present an overview of the relevant parts of the theoretical framework, followed by what is argued to be a more plausible model of the mental representation of the constructions. Finally, Section 4 provides the main conclusions of the paper.

2. ISLAND EFFECTS IN RELATIVE CLAUSE EXTRACTION

In English, extraction from embedded relative clauses has traditionally been regarded as ungrammatical, as stated for example in Ross (1967). Thus, as pointed out in Hofmeister & Sag (2010:366), most English speakers would agree that extraction from the relative clause in a sentence such as (1) does not produce an acceptable utterance (2):

(1) We met the mathematician who solved the puzzle.
(2) *This was the puzzle that we met the mathematician who solved.

Yet, it has been pointed out in the literature that in special semantic and contextual circumstances, a few such English sentences are regarded as acceptable or greatly improved, at least by some speakers:

(3) This is the child who there is nobody who is willing to accept.

(Deane 1991:38)

(4) That's the article that we need to find someone who understands.

(Kluender 1998:257)

(5) Robin, I can't think of anyone who likes.   (Levine & Hukari 2006:260)

While the exact restrictions involved in these structures are yet to be fully understood, observations such as these have encouraged some linguists to try to explain island constraints in non-syntactic terms. Thus, in this section I will describe and

evaluate two major lines of such analyses, the first based on pragmatic dominance, backgroundedness and limits to attention (Section 2.1), and the second based on processing complexity and cognitive resource limitations (Section 2.2).

2.1 Pragmatic dominance

The concept of DOMINANCE in relation to extraction structures was introduced by Erteschik-Shir (1973), and further developed in Erteschik-Shir & Lappin (1979) and Erteschik-Shir (1982, 1998). More recent versions of the same basic idea are adopted in works such as Van Valin (2005) and Goldberg (2006), where embedded environments which are pragmatically FOREGROUNDED (i.e. DOMINANT) are distinguished from those that are BACKGROUNDED (i.e. NON-DOMINANT). In these works, what acceptable extraction constructions are argued to have in common is that the informational center of the utterance lies in the gapped embedded clause rather than in the matrix clause (see also Engdahl 1997:60). Erteschik-Shir & Lappin's definition of dominance is that 'a constituent c of a sentence S is dominant in S if and only if the speaker intends to direct the attention of his hearers to the intension of c, by uttering S' (Erteschik-Shir & Lappin 1979:43). In turn, dominant constituents are argued to be identifiable by the so-called 'lie test', with the crucial property that only dominant constituents can be felicitously negated. Subsequent proposals based on the same idea include Van Valin (2005:215) and Goldberg (2006:130ff.). Goldberg's test, for example, is known as a 'negation test', and the author states that 'when an assertion is negated, only elements within the potential focus domain are contradicted' (Goldberg 2006:135). However, for all relevant purposes, the results of these tests are the same. Applied to example (1) above, the dominance test gives the result in (6), indicating that elements within this (non-dominant) relative clause are unavailable for extraction:

(6) Speaker A: We met the mathematician who solved the puzzle.
     Speaker B: That's a lie – you didn't meet him/*he didn't solve the puzzle.

In other words, negating the non-dominant part of the structure (*who solved the puzzle*) leads to an infelicitous result in this context, presumably because the relative clause in this sentence represents presupposed information (Goldberg 2006:130). Thus, the claim here is that the acceptability of extraction from complex NPs is determined by pragmatic function rather than by syntactic constraints.

On the assumption that constraints on extraction in at least some cases are related to pragmatic notions such as dominance, an important question concerns the nature of crosslinguistic variation. For example, the Scandinavian languages have often been claimed to allow a greater range of extractions, for example in the case of extraction from complex NPs (see Allwood 1982; Andersson 1982; Engdahl 1982, 1985, 1997; Erteschik-Shir 1982; among others). While this claim has sometimes

been contested by non-Scandinavian linguists (see Section 2.2 below), I will argue here that the available evidence strongly suggests that although some factors that determine extraction acceptability in Swedish are the same as in English, there are clear examples where there is a marked difference between the two languages.

The first group of sentences that have been shown to be completely natural and regularly occur in Swedish (as well as in Danish) are based on PRESENTATIONAL constructions, i.e. structures where a new referent is introduced into a situation through the use of *it/there*-insertion. Some authentic examples are the following, where (7) is borrowed from Engdahl (1997:59), and (8) and (9) from Lindahl (2010:33–34):[4]

(7) Det   språket   finns   det   många   som   talar.
     that language are   there many   who   speak
     'There are many people who speak that language.'

(8) Schack   var   det   inte   många   som   gillade.
     chess   were   there not   many   who   liked
     'There were not many (of them) who liked chess.'

(9) Det   är   det   väl   ingen   som   vet.
     this is   there probably nobody   who   knows
     'There is probably nobody who knows this.'

Still, at least in a subset of the acceptable Swedish examples, extraction from such constructions appears to work relatively well even in English, as in Deane's (1991) example (3) above. A second category of sentences where there appears to be a consistent difference between the two languages is one involving matrix verbs of perception or cognition.[5] Whether a particular verb has this function is context-dependent, but some common verbs in this category are *känna* 'know', *se* 'see', *möta* 'meet' and *veta* 'know of'. Some authentic and fully acceptable Swedish extractions of this type from Engdahl (1997:67) are examples (10) and (11), while example (12) borrowed from Erteschik-Shir (1982:176) shows the parallel situation in Danish:

(10) Den   teorin   känner   jag   ingen   som   tror   på.   (Swedish)
      that theory   know   I   nobody   who   believes   on
      'I don't know anyone who believes in that theory.'

(11) En   sådan   frisyr   har   jag   aldrig   sett   någon   som   ser
      a   such   hairstyle have I   never   seen   anyone who   looks

      snygg   ut   i.   (Swedish)
      good   out   in
      'I have never seen anyone who looks good in that kind of hairstyle.'

(12) Det   har   jeg   mødt   mange   der   har   gjort.   (Danish)
that   have   I   met   many   who   have   done
'I have met many people who have done that.'

Erteschik-Shir (1982:177) argues that in the relevant cases such matrix verbs can be perceived as introducing dominant embedded clauses, and that evidence of this is provided by the fact that these embedded clauses can be negated in the dominance test, as in (13), based on (12):

(13) Speaker A: I have met many people who have done that.
　　　Speaker B: That's a lie – nobody has done that!

Thus, the test is argued to identify foregrounded or 'dominant' embedded clauses, and certainly, all the Swedish and Danish constructions presented so far in the paper, in (7)–(12), seem to pass the test. Whether the embedded clause is perceived as dominant appears to depend on several interacting factors. Andersson (1982:40), for example, concludes that (at least) context, relative clause function and sentence content are all relevant factors affecting acceptability in these structures, and he argues that complex NP extraction is often possible in cases where the relative clause has lost its standard 'identifying' function.

　　　While the context-dependent aspect of these proposals goes some way towards accounting for the variability of speakers' judgments WITHIN a language, the proposals are more problematic as accounts of crosslinguistic differences. For example, as Erteschik-Shir (1982:177) herself observes, the lie test appears to give the same result in both English and the Scandinavian languages, which means that pragmatic dominance cannot on its own explain perceptions of acceptability in the relevant languages. Her suggestion is that, while the dominance criterion applies in all languages, there is an additional syntactic constraint in English on extraction from complex NPs – a constraint which does not exist in Danish and Swedish. Allegedly, the result is that extraction constructions involving dominant relative clauses in Scandinavian are fully acceptable, whereas extraction constructions involving the MOST dominant relative clauses in English are perceived as better than those involving non-dominant ones although still not syntactically grammatical.

　　　Clearly, these previous analyses characterize a number of important features of relative clause extractions, and concepts such as dominance, background/foreground, presupposed information, etc. reflect factors which appear to be involved when speakers judge the acceptability of these structures. However, in the following I will focus on a particular set of examples where Swedish clearly and consistently differs from English in terms of the degree to which relative clause extractions are allowed. Moreover, these examples will show that some modification of the previous proposals is necessary to capture the observed facts. The relevant sentences are those where the

relative clause is introduced by transitive verbs of emotion[6] such as *beundra* 'admire', *avguda* 'adore', *avsky* 'hate', *gilla* 'like' and *respektera* 'respect', and where a causal relationship exists between the two clauses. Some authentic examples (found on the Internet) will illustrate the point:

(14) Det beundrar jag dom som klarar av.
that admire I those who get through
'I admire those who get through that.'
(= I admire them BECAUSE they get through that.)

(15) Pengar avskyr jag folk som ger.
money hate I people who give
'I hate people who give money (for Christmas).'
(= I hate them BECAUSE they give money for Christmas.)

(16) Akvarell beundrar jag alla som klarar av.
watercolor painting admire I all who are good at
'I admire all those who are good at watercolor painting.'
(= I admire them BECAUSE they are good at watercolor painting.)

(17) Men avstånden avskyr jag folk som inte håller.
but the distances hate I people who not keep
'But I hate people who don't keep the right distance.'
(= I hate them BECAUSE they don't keep the right distance.)

In fact, it seems quite straightforward to construct examples involving such verbs which are perfectly natural (in a suitable context), as long as the causal relationship between the matrix and embedded clauses is maintained. In other words, there is reason to believe that we are dealing with some kind of productive constructional schema here. The invented sentence (18), for example, seems to be judged as completely acceptable by most speakers, and even (19), which represents an 'extended' instance of the construction where the matrix verb has been replaced by an adjectival construction, is regarded as fully acceptable by many speakers (including myself):[7]

(18) Såna hus förstår jag inte de som vill bo i.
such houses understand I not those who want to live in
'I don't understand those who want to live in such houses.'

(19) Såna låtar är jag verkligen imponerad av de som kan skriva.
such songs am I really impressed by those who can write
'I'm really impressed by those who can write such songs.'

In relation to the dominance-based proposals of Erteschik-Shir (1982), Van Valin (2005) and Goldberg (2006), the interesting fact here is that the matrix clauses rather than the relative clauses appear to represent the informational center of the utterances. A dominance test applied to (14), for example, confirms this intuition:

(20) Speaker A: Jag beundrar dom som klarar av det.
            'I admire those who get through that.'
      Speaker B: Det är lögn – *ingen klarar av det.
            'That's a lie – *nobody gets through that.'
            Det är lögn – du beundrar dom inte.
            'That's a lie – you don't admire them.'

Thus, as shown by the lie test, negating the relative clauses in this way does not lead to a felicitous response, indicating that such relative clauses are non-dominant (i.e. backgrounded/presupposed). Furthermore, that a causal relationship between the clauses appears to be necessary to produce acceptable sentences involving matrix clause verbs of emotion is indicated by the stark acceptability contrast between (22) and (23), as replies to the utterance in (21):[8]

(21) Ser du det stora huset bakom träden?
      'Do you see the big house behind the trees?'

(22) Ja,   det   huset   avundas   jag   dom   som   bor   i.
      yes   that   house   envy   I   those   who   live   in
      'Yes, I envy those who live in that house.' (= because they live in that house)

(23) *Ja,   det   huset   avskyr   jag   dom   som   bor   i.
       yes   that   house   hate   I   those   who   live   in
      'Yes, I hate those who live in that house.' (= for some unknown reason)

Thus, while (22) is generally perceived as perfectly natural by Swedish speakers, this is not the case with (23). The crucial difference between the two sentences lies in the fact that while the 'envy' described by the matrix verb in (22) is causally related to the state described by the embedded clause, such a causal relation does not exist in (23), where the embedded clause simply specifies or identifies the target. Although it cannot be completely ruled out that there are acceptable sentences involving transitive emotion verbs where no causal relation exists, I have not found any such authentic examples, nor have I been able to construct one. An explanation for this difference in acceptability based on pragmatic dominance would have to state that the causal relationship between the clauses improves acceptability due to the resulting relative clauses being foregrounded, even though dominance tests contradict this. Still, it might perhaps be possible to argue that the embedded clause in (22) is LESS backgrounded than that in (23) and that this leads to the difference in acceptability, but the fact that the dominance test fails in all these examples arguably makes Erteschik-Shir's proposal lose some of its explanatory force. Note, for example, that according to Erteschik-Shir (1982:178), stressing the matrix verb in these structures will 'force a dominant interpretation of the matrix and block an interpretation of the relative clause as being dominant'. However, in the cause-related

extraction examples described here, the natural sentence stress falls precisely on these matrix verbs, but the extractions are nevertheless fully acceptable.

Furthermore, while the examples provided here may not represent conclusive evidence that the mental representation of these constructions cannot be based on degree of dominance, I will argue in Section 3 that there is a simpler and more straightforward way of accounting for the relevant facts. Above all, this alternative explanation fits more naturally with the existence of crosslinguistic variation, and it has the strength of being based on already existing principles of a linguistic theory (Construction Grammar).

2.2 Processing restrictions

Kluender (1998), Levine & Hukari (2006) and Hofmeister & Sag (2010), among others, argue that constraints on extraction are best explained in terms of processing difficulties. Kluender (1998:257), for example, argues that the 'only' problem in these sentences concerns processing complexity, and gives (24) as an example of an acceptable English sentence, contrasted with the less acceptable sentence in (25), which contains REFERENTIAL material intervening between the filler and the gap (> symbolizing 'is better than'):

(24) That's the article that we need to find someone who understands. >
(25) That's the article that we need to find the reviewer who understands.

His claim is that if the individual words and phrases, as well as the context, are adapted to produce maximally efficient processing, then extraction from complex NPs is perfectly fine in English. Addressing crosslinguistic variation and previous claims concerning the Scandinavian languages, Kluender (1998:257) states the following:

> It is important to point out in this context that virtually all of the familiar Scandinavian extraction examples cited in the literature as exceptions to subjacency . . . involve topicalization or relativization of definite descriptions and questioning of D-linked *wh*-phrases out of relative clauses with indefinite head nouns. This suggests that the underlying cause of so-called exceptions crosslinguistically is not a grammatical parameter, but basic facts of processing.

Yet, Kluender (1998:268) then claims that '[i]t is also well known that subjacency is "parameterized" across languages, which in practical terms means that a standard subjacency violation in one language may be perfectly grammatical in another. If this is the case, a processing account of subjacency will have to be flexible and all-encompassing enough to explain these crosslinguistic differences in subjacency effects'. However, Kluender also states that 'apparent crosslinguistic differences have often turned out to be not so different after all', and specifically argues that

the claim that subjacency must be defined differently in the Scandinavian languages is incorrect, since 'it has since been shown that English exhibits the same range of so-called exceptions' (1998:268).

Levine & Hukari (2006:262) elaborate on Kluender's analysis and state that the (so-called) complex NP constraint is 'just another instance of processing failure'. In fact, Levine & Hukari (2006:385) argue that 'most of the effects which have led investigators to posit a dichotomy within the class of Unbounded Dependency Constructions are not syntactic in nature', but instead explainable in terms of 'pragmatics, computation and real-time processing'.

One of the more recent processing-based accounts is that of Hofmeister & Sag (2010). Since this is a clearly important and exceptionally detailed study, it is worth spending some time on discussing its main claims. Hofmeister & Sag argue that 'island-violating constructions involve numerous processing pressures that aggregate to drive processing difficulty above a threshold, resulting in unacceptability' (2010:366). They subsequently argue that competence grammars 'overgenerate significantly', and that processing factors (including semantic and pragmatic effects) explain why only some of the syntactically licensed sentences are perceived as fully acceptable (2010:368).

While Hofmeister & Sag are somewhat unclear with regard to how 'syntactic constraints' interact with processing complexity, and in what sense processing factors 'include' semantic and pragmatic effects,[9] their introduction clearly indicates that in their account, unacceptability of e.g. relative clause extractions stems from COGNITIVE RESOURCE LIMITATIONS (Hofmeister & Sag 2010:367):

> More generally, this view follows a tradition that analyzes acceptability as the end result of a series of cognitive processes. Accordingly, acceptability reflects the contribution of grammatical principles (competence-based factors), as well as resource limitations (performance-based factors). ... This perspective – that processing difficulty sometimes accounts for unacceptability – also underlies the standard treatment of 'garden path' sentences, for example, *The horse raced past the barn fell*. ... Acceptability contrasts for other sentence types have received a similar treatment: unacceptability is attributed to constraints on learnability or processing limitations ... The unacceptability of [e.g. Relative Clause Extraction], in contrast, has not been widely regarded as stemming from limitations on memory or other cognitive resources. ... In this article, we argue that at least some island phenomena, [e.g. Relative Clause Extractions], owe their character to the accumulation of performance-related difficulties that rises above a threshold to cause unacceptability.

In order to assess the explanatory potential of this interesting idea, their statement that the crucial factor concerns limitations on speakers' cognitive resources must be

discussed at some length. In particular, I will address here the question of whether this could be reconciled with the existence of crosslinguistic variation in the acceptability of relative clause extraction.

First of all, concerning crosslinguistic differences such as those found between English and Swedish, Hofmeister & Sag seem to argue that there is no SYNTACTIC difference between such languages with respect to relative clause extraction. Instead, Hofmeister & Sag (2010:367) state that 'the variation in acceptability judgments associated with these constructions, both language-internally and crosslinguistically, can be better explained by appealing to cognitive constraints on language processing'. Note, however, that the constraint they suggest as relevant for variation of acceptability judgments WITHIN a language appears to be based on the idea that speakers 'learn to accept' processing complexity in a structure:

> Moreover, exposure to a certain type of linguistic stimulus can make it easier to process the next time a similar stimulus is encountered. This can theoretically account for why the same individual can perceive islands differently over time: island violations become easier to process as familiarity increases, resulting in judgments of higher acceptability. (Hofmeister & Sag 2010:403)

Yet, the question is whether this type of constraint is sufficient to explain the general pattern of relative clause extraction acceptability in English. Although Hofmeister & Sag do argue that processing factors include semantic and pragmatic effects, it is evident that these are claimed to affect real-time judgments of acceptability (what they refer to as 'performance-based factors'), rather than conventionalized linguistic forms ('competence-based factors'). Thus, while the experiments described in Kluender (1998) and Hofmeister & Sag (2010) convincingly show that structures which are difficult to process are associated with degraded acceptability ratings, the crucial issue concerns whether such processing restrictions can REPLACE conventionalized syntactic island-constraints (of some kind).[10]

In the remaining part of this section I will point out a few direct consequences of the processing-based approach as described by Hofmeister & Sag (2010), in particular in relation to the existence of crosslinguistic variation between English and Swedish. Although I believe that these consequences lead to a somewhat unlikely view of the mental representation of linguistic knowledge, I will not provide empirical evidence against this view. Instead, I will simply argue that it seems worthwhile investigating whether the acceptability judgments as well as the relevant crosslinguistic variation could be explained in an alternative or modified way where such consequences are avoided (to be explored in Section 3).

First of all, Hofmeister & Sag (2010:367) argue that the processing constraints in extractions are basically of the same type as those found in e.g. garden path structures, such as *The horse raced past the barn fell*. However, an important property of

such structures is that the perception of degraded acceptability generally disappears on a second and third hearing/reading. The reason is that once listeners/readers have familiarized themselves with the structure of the utterance (which is generally ambiguous), processing factors no longer negatively affect acceptability. On the assumption that the acceptability of relative clause extraction is also degraded due to processing difficulties, one might expect such structures to improve in a similar way once speakers have familiarized themselves with the structure of the sentence and the intended meaning of the utterance. However, although experiments involving extractions regularly show that acceptability does increase with repeated exposure (see for example Hofmeister & Sag 2010:402–403), it does not seem that acceptability increases to the same extent as in garden path sentences (where the immediate result is a perfectly acceptable sentence). Of course, it is theoretically possible that English extractions are so much more complex than garden path structures that full acceptability is rarely reached. However, such a view would have the somewhat surprising consequence that (truly) bilingual Swedish–English speakers could not have different acceptability judgments for relative clause extractions in the two languages.[11] While this does not rule out language-specific processing complexity cut-off points in principle, it does point against an account of processing complexity cut-off points based on cognitive resource limitations, as implied by Hofmeister & Sag (2010:367). In other words, it seems unlikely that the only reason English speakers do not generally accept relative clause extractions is because they find them too difficult to process.

The main question, therefore, concerns whether there might exist some form of conventionalized 'processing complexity cut-off points' in different languages. Yet, there is little indication that e.g. Swedish speakers are less sensitive than English speakers to processing complexity at some general level, for example concerning garden path structures or many other types of extractions. The claim must therefore be reduced to concern different processing complexity cut-off points within the specific category of RELATIVE CLAUSE EXTRACTION CONSTRUCTIONS. However, when the constraint is reduced to affect only one particular construction, it is no longer clear how it relates to the cognitive resource limitations suggested by Hofmeister & Sag, and the proposal seems to lose much of its independent motivation. Thus, in the next section I will argue that, if what is conventionalized is a construction-specific constraint anyway, its mental representation could be reduced to already existing principles in Construction Grammar, with no need to introduce the additional theoretical concept of conventionalized language- and construction-specific processing complexity cut-off points.

3. A MODIFIED ACCOUNT OF RELATIVE CLAUSE EXTRACTION

As argued above, although an explanation of crosslinguistic variation in island constraints based on pragmatic dominance and processing complexity cut-off points

cannot be ruled out in principle, the consequences of such approaches seem to be that some modification is necessary to capture speakers' mental representation of such constraints. In other words, while the basic principles suggested by Hofmeister & Sag, Erteschik-Shir, Goldberg, Van Valin, Deane and others clearly appear to be relevant for the 'real-time' acceptability status of extractions, something more might be needed to explain conventionalized aspects of relative clause extraction constructions and in what sense these conventions differ in the minds of (for example) English and Swedish speakers. In this section, I will argue for an approach based on general principles in Construction Grammar with the potential to explain the patterns under investigation here. It is therefore necessary to provide a short overview of these theoretical principles, and to show in what sense they are relevant in the present context.

3.1 Theoretical framework

Although there are a number of different versions of construction-based theories, such as Construction Grammar (Goldberg 1995), Radical Construction Grammar (Croft 2001) and Cognitive Grammar (Langacker 1987), they are unified by the idea that grammatical structures ('constructions') are pairings of meaning and form, basically in the same way as in the case of words and more complex lexical items. As a consequence, there is argued to be a continuum of linguistic constructions from completely phonologically specified to completely schematic ones, where the latter include what has traditionally been regarded as syntactic rules. The version of Construction Grammar adopted here is essentially that of Radical Construction Grammar (Croft 2001), with the slight modification and theoretical clarification presented in Verhagen (2009). In this version of the theory, linguistic constructions are made up of form–meaning pairings, as in all Construction Grammar theories. For the present purposes, the crucial aspect concerns the form-side of constructions, and in particular what affects speakers' perception of what represents acceptable use of a construction.

Verhagen (2009:140) makes the following point concerning what it means to know a construction in one's language:

> Knowing a construction involves (i.a.) knowing what kinds of elements fit into the construction's open slots. In other words, it involves knowing something about the characteristic *distribution* of certain elements: at least all elements one has ever encountered in the same constructional environment belong to the *class being defined by this slot* (and also elements that are sufficiently similar to them in relevant respects, if the type frequency is high enough for the category to become productive, cf. Bybee 1985) [italics in the original].

Elaborating on the principles of Croft (2001) in particular, Verhagen (2009:140) argues that such schematic slots in constructions represent 'the traditional structuralist notion of "paradigm"', and that the notion of paradigm is 'indispensable in a comprehensive theory of grammatical constructions'. Verhagen (2009:145) concludes that the form-side of a construction is organized on the basis of phonological forms (MORPHEMES) and conceptually defined schematic categories (PARADIGMS), where the latter essentially replace the traditional notion of 'syntactic category'.

In order to clarify these suggestions, consider the following example:

(26) I enjoy reading.
　　 [ACTOR] [*enjoy*] [EVENT/STATE *-ing*]

The specific schema in (26) presumably exists as a conventionalized construction in English, which means that it is both associated with a specific meaning and that it specifies required properties of its various slots. As mentioned above, the specifications of the slots in the construction could be of two types, namely morphemes[12] (*enjoy* and the *-ing* ending) and paradigms (ACTOR and EVENT/STATE). In line with Croft (2001), Verhagen (2009), and others, paradigms are represented by schematic conceptual representations based on generalizations across encountered instances of the construction. In combination, these constructional specifications give rise to speakers' acceptability judgments, for example the fact that the deviating morpheme in *I enjoy *to read* is generally judged unacceptable by English speakers. It is important to emphasize that these are not specifications 'on top of' syntactic structure, instead these constructional specifications ARE the syntactic structures.

Note that in some specific cases a paradigm in one construction may coincide with a paradigm in another construction, or an existing construction may represent a paradigm in a more complex construction (see Verhagen 2009:144–147). However, usually the paradigm that defines some specific slot in a specific construction is unique to that construction, and this is equally true within and across languages (Croft 2001:34ff.). Consider the following constructional schema in English associated with 'transfer by using ballistic motion' (Goldberg 1995, Croft 2003):

(27) English Ballistic Motion Construction (an instance of the ditransitive *give*-construction)
　　 [ACTOR] [BALLISTIC MOTION EVENT] [RECIPIENT] [THEME]
　　 Example: I threw him the box.

It must be noted here that the rough constructional specifications in (27) are mainly meant as descriptive labels, and they certainly do not capture the full conceptual representation of the paradigms conventionalized in the mental grammar of English speakers. Instead, the 'true' mental representation of a paradigm includes all elements

one has ever encountered in the same constructional environment, as well as a conceptual generalization across these elements (leading to the productive possibility of using novel elements that are sufficiently similar to the previously encountered ones). The consequence is that the conceptual representation of the 'Ballistic Motion Event' paradigm in (27) blocks the acceptability of non-ballistic verbs such as *push*, presumably because the semantic properties of *push* are not sufficiently similar to the 'ballistic motion' aspect of the conceptual specification in the construction, as seen in (28)–(31):[13]

(28) I threw the box to him.
(29) I pushed the box to him.
(30) I threw him the box.
(31) *I pushed him the box.

However, if the construction with the form of (30) is compared with the structurally parallel Swedish construction, it is immediately clear that while the Swedish construction includes verbs such as *ge* 'give' and some other transfer verbs, as seen in the acceptability of (33), the ballistic motion aspect has not been conventionalized, leading to the unacceptability of utterances such as (35):

(32) Jag gav asken till honom.
      'I gave the box to him.'
(33) Jag gav honom asken.
      'I gave him the box.'
(34) Jag kastade asken till honom.
      'I threw the box to him.'
(35) *Jag kastade honom asken.
      'I threw him the box.'

In line with the above discussion, therefore, the constructions in the two languages arguably differ in terms of the conceptual specification of the event paradigm, where English has a more 'open' or 'extended' conceptual frame in comparison with Swedish (see Löwenadler 2013 for further discussion of this point).

Finally, as noted by Verhagen (2009:140–141), not all conceptual specifications of constructional slots can be specified as independent properties of individual slots, but there are also 'syntagmatically' defined properties. Such syntagmatic constraints can be associated with both the phonological (morpheme) specifications and the conceptual (paradigm) specifications. While the former can be exemplified by e.g. morphological number agreement between different parts of the structure, the latter type can be exemplified by the following contrastive pairs:

(36) The train **screeched** into the station.
(37) *The dog **barked** into the room.   (Goldberg 1995:62)

(38) The car **squealed** around the corner.
(39) *The car **honked** around the corner.   (Jackendoff 2002:290)

As Jackendoff (2002:290) notes, whether or not a particular verb is possible in this specific construction appears to be decided by whether 'the sound emission can be associated directly with the action of moving'; in other words, a requirement for acceptability is that a causal relation exists between the motion expressed by the sentence and the sound expressed by the event verb. As I will argue below, similar types of syntagmatic constraints represent crucial aspects of the relative clause extraction constructions analyzed in the present paper.

3.2 Constraints in relative clause extraction constructions

Following this short introduction to some relevant principles of Construction Grammar, we now turn to the main issue, namely what kind of constraints are associated with relative clause extraction constructions. The argument that will be made here is that acceptability judgments in these constructions are determined by the same principles that are relevant in non-extraction constructions, and that no additional principles concerning language-specific cut-off points based on processing complexity or pragmatic dominance are required.

Focusing first on paradigmatic conceptual aspects of the constructions (i.e. specifications concerning the conceptual content of individual slots), it seems clear that there are differences at least concerning the possible pragmatic functions of the extracted element (or FILLER ARGUMENT). As pointed out by Engdahl (1997:73), for example, fillers which are CONTINUOUS TOPICS do not normally exist in English, whereas such fillers are common in Swedish structures of various types. In such sentences, the initial pronominal filler functions as a non-contrastive pronominal topic, linking the sentence in which it occurs to a previous sentence (Engdahl 1997:72). Consider the following piece of discourse in Swedish, where there is no acceptable utterance in English parallel to (41) in structure and meaning:

(40) Igår   köpte   jag   en   ny   jacka.
      yesterday bought   I   a   new   jacket
      'Yesterday I bought a new jacket.'

(41) Den   ska   jag   ha   på   mig   ikväll.
      it   shall I   have   on   me   tonight
      'I shall wear it tonight.'

It turns out that continuous topic fillers often occur in Swedish relative clause extraction constructions as well, as in example (42) (see Lindahl 2010 for other authentic examples).

(42) | Det | är | det | inte | många | som | har | gjort.
---|---|---|---|---|---|---|---
  | *it* | *are* | *there* | *not* | *many* | *who* | *have* | *done*

'There aren't many people who have done it.'

The occurrence of such examples in Swedish indicates that there is at least one conceptual paradigm in relative clause extraction where the conventionalized specifications of English and Swedish differ from each other. However, it is equally clear that this cannot be the only crucial factor, since many authentic and fully acceptable Swedish examples discussed here and elsewhere in the literature include focused or contrastive (rather than topical) fillers. Therefore, following the descriptive format of Verhagen (2009:140), I will attempt to sketch a tentative (and obviously in no way complete) formal representation of the three related types of Swedish relative clause extraction constructions discussed here, namely (i) the Presentational complex NP extraction construction, (ii) the Focused relative clause complex NP extraction construction, and (iii) the Cause-related complex NP extraction construction.[14]

First of all, it must be made clear that the constructional schemas in Tables 1–3 below only contain the relevant and most important characteristics of the constructions.[15] For example, the verbal specifications of 'perception' and 'emotion' must probably be defined in a more restrictive way in order to accurately represent the conventionalized instances and the schematized conceptual properties. Furthermore, it is highly likely that Swedish speakers differ in the extent to which they accept these structures (i.e. the extent to which these constructions exist as representations in their mental grammar). While this is an interesting area for empirical research, the general specifications in Tables 1–3 will suffice to illustrate the theoretical point developed here.

An important point to note is that the specifications of the individual paradigms in the constructions are likely to be quite general. For example, slot (vi) in the constructions is simply specified as 'any verbal element' giving rise to some semantic/pragmatic relationship in the context of the whole sentence. This reflects the fact that the conceptual constructional constraints are often syntagmatic in nature, as specified by the constraints in (vii) and (viii) in Tables 1–3 (see Section 3.1 above). On the other hand, empirical studies such as Lindahl (2010), as well as the common characteristics of invented sentences in previous studies, indicate that there are clear tendencies concerning the types of elements that occur in the various slots. Yet, these tendencies do not necessarily reflect 'true' paradigmatic constraints, since other types are often possible as long as the syntagmatic constraints specifying the semantic and pragmatic relationships between the sentence parts are satisfied. Instead, the tendencies appear because certain fillers for various semantic and pragmatic reasons correlate with the general ('whole-sentence') meanings specified by these constructions.

Det språket	*finns*	*det*	*många*	*som*	*talar*
that language	are/exist	there	many	who	speak
Schack	*var*	*det*	*ingen*	*som*	*gillade*
chess	was	there	nobody	who	liked
(i) Filler Arg	**(ii) Matrix Vrb**	**(iii) Matrix Sbj**	**(iv) RC-head**	**(v) RC-marker**	**(vi) RC-Vrb**
Nominal, topic or focus, contrastive or continuous	Existential 'be' (linking verb)	Phonological form: [*det*]	Pronominal, non-specific	Phonological form: [*som*]	Any verb that could function as informational center
Undergoer in (viii)	**(vii) Matrix clause:** Existential meaning		Entity in (vii) & Actor in (viii)	**(viii) Relative Clause:** Informational center of the utterance	

Table 1. Presentational complex NP extraction construction in Swedish.

Det språket	*känner*	*jag*	*en kille*	*som*	*talar*
that language	know	I	a guy	who	speaks
Sån mat	*vet*	*jag*	*ingen*	*som*	*gillar*
such food	know	I	nobody	who	likes
(i) Filler Arg	**(ii) Matrix Vrb**	**(iii) Matrix Sbj**	**(iv) RC-head**	**(v) RC-marker**	**(vi) RC-Vrb**
Nominal, topic or focus, contrastive or continuous	Two-argument verb of perception or cognition, non-focus	'Experiencer', pronominal	Nominal target/content of perception or cognition	Phonological form: [*som*]	Any verb that could function as informational center
Undergoer in (viii)	**(vii) Matrix clause:** Cognition or perception of state/event in (viii)		Undergoer in (vii) & Actor in (viii)	**(viii) Relative Clause:** Informational center of the utterance	

Table 2. Focused relative clause complex NP extraction construction in Swedish.

Den boken	*beundrar*	*jag*	*killen*	*som*	*skrev*
that book	admire	I	the guy	who	wrote
Såna bilar	*avskyr*	*jag*	*folk*	*som*	*köper*
such cars	hate	I	people	who	buy
(i) Filler Arg	**(ii) Matrix Vrb**	**(iii) Matrix Sbj**	**(iv) RC-head**	**(v) RC-marker**	**(vi) RC-Vrb**
Nominal, topic or focus, contrastive or continuous	Two-argument verb of emotion, sentence focus	'Emoter', pronominal	Nominal 'target' of the emotion	Phonological form: [*som*]	Any verbal element giving rise to the causal pattern
Undergoer in (viii)	**(vii) Matrix clause:** Emotion caused by the state/event in (viii)		Undergoer in (vii) & Actor in (viii)	**(viii) Relative Clause:** Expressing the cause of the matrix clause emotion (vii)	

Table 3. Cause-related complex NP extraction construction in Swedish.

In the constructions described in Table 1 and Table 2, a crucial conceptual specification concerns the distribution of the informational center of the utterance, which is of course much in line with the dominance-based proposal suggested by Erteschik-Shir, Goldberg and Van Valin. However, with this kind of schema, the mental representation of the constructional possibilities in different languages can also be associated (in the same way) with constraints related to the individual paradigms in the construction, where presumably English is more restrictive than the Scandinavian languages, for example in the range of possible filler types in slot (i) and matrix verbs in slot (ii). In that sense, the concept of dominance (or 'informational center') is related to the constructional specifications just like other paradigmatic and syntagmatic properties.

This is particularly important in relation to the cause-related construction described in Table 3. Here, in addition to the paradigmatic specifications associated with the individual slots in the construction (and there may be several others in addition to those indicated here), there is the crucial syntagmatic requirement that (vii) and (viii) express the specified causal relationship. By contrast, there are no requirements in this construction that the relative clause must represent the semantic/pragmatic focus of the utterance (as required in the dominance-based approaches discussed in Section 2.1 above); instead, the pragmatic focus lies on the (stressed) matrix verb. Goldberg (2006:130), for example, specifically states that elements that are part of presupposed clauses are backgrounded and therefore unsuitable for extraction, yet the construction in Table 3 appears to be available as a productive schema for Swedish speakers, as seen in Section 2. Crucially, once speakers have acquired the schematic meaning and specifications of this construction, such sentences are presumably no more complex to process than presentational relative clause extractions, even though in this case the relative clause appears to be non-dominant.[16]

It is interesting to note here the parallelism with the syntagmatic specification in the 'sound-emission' construction referred to in Section 3.1, with the examples repeated here for convenience:

(43) The train **screeched** into the station.
(44) *The dog **barked** into the room.   (Goldberg 1995:62)
(45) The car **squealed** around the corner
(46) *The car **honked** around the corner   (Jackendoff 2002:290)

As noted in Section 3.1, a necessary syntagmatic requirement in this construction appears to be that the sound associated with the verb is caused by the motion described in the sentence. In other words, the phenomenon that a specific causal relationship between some parts of a construction may be necessary for acceptability is already observed in other parts of the grammatical system and has a natural place in Construction Grammar theories.

3.3 Syntactic conventionality versus real-time processing

Given the observations so far, a relevant question to ask is whether it is possible that the dominance-based explanation is correct in principle, only incorrectly operationalized. In other words, could it be that Erteschik Shir's 'lie test' and Goldberg's 'negation test' are insufficient as indicators of whether an embedded clause is 'dominant' or belongs to the 'potential focus domain'? I would argue that although this is possible in principle, there seems to be a risk of circularity if sentences representing acceptable extractions are themselves used to define the notion of pragmatic dominance, and the proposal clearly loses some explanatory force if no independent test can verify this concept.

It should be pointed out here that, while I have argued that the concept of dominance and processing restrictions cannot directly explain CONVENTIONALIZED aspects of island constraints, such factors certainly appear to affect 'real-time' acceptability in the sense that acceptability may be degraded if structures are difficult to comprehend or process. However, one of the main arguments in the present paper is that, in order to explain crosslinguistic variation and differences in acceptability judgments between specific instances of these extractions, one must focus on the COMPATIBILITY between conventionalized constructional specifications and the meanings and forms used in an individual utterance.

To develop this argument, an important difference between the explanations of Erteschik-Shir (1982) on one hand and Kluender (1998), Levine & Hukari (2006) and Hofmeister & Sag (2010) on the other is that while the former regards complex NP extraction in English as syntactically UNGRAMMATICAL, the latter regard such extractions as syntactically GRAMMATICAL. As pointed out in Section 2.2, Hofmeister & Sag (2010:368) argue that 'competence grammars overgenerate significantly, leaving it to processing and other factors (including semantic and pragmatic effects) to explain why only a proper subset of the grammatically licensed sentences . . . are judged as fully acceptable', and an essentially similar view is presented in Levine & Hukari (2006:262). By contrast, in Erteschik-Shir (1982) such English structures are claimed to be syntactically inaccessible for extraction, but perceived as relatively acceptable because they have suitable semantic/pragmatic properties.

However, in the present account the dichotomy between syntactic constraints and processing/dominance effects largely disappears. Consider for example the following Swedish sentences, for example as replies to the Swedish equivalent of the utterance *Check out these nice shoes in the picture!*:[17]

(47) Såna skor vet jag en affär på Drottninggatan som säljer.
such shoes know I a store on Queen Street which sells
'I know a store on Queen Street which sells such shoes.'

(48) *Såna skor vet jag en affär på Drottninggatan där det säljs.
     such shoes know I a store on Queen Street where it is sold
     'I know a store on Queen Street where such shoes are sold.'

(49) *Såna skor vet jag en affär på Drottninggatan där de säljer.
     such shoes know I a store on Queen Street where they sell
     'I know a store on Queen Street where they sell such shoes.'

Despite their semantic and pragmatic similarity, only (47) is possible in Swedish, even though all of (47)–(49) are perfectly acceptable in the related structures with the filler *såna skor* 'such shoes' in the more canonical position at the end of the sentence. Arguably, the reason is (at least partly) that the presence of the phonological form *där* in (48) and (49) makes these two structures incompatible with the phonological specifications in the constructional schema described in Table 2.[18] On this account, the question of whether relative clause extraction constructions are syntactically grammatical or ungrammatical misses the point, since conceptually defined paradigms and syntagmatic relationships along with phonological specifications are sufficient to determine the acceptability of the construction. In other words, the relevant component(s) determining the acceptability of specific relative clause extractions should not be defined as 'the interaction between syntactic grammaticality/ungrammaticality and language-specific conventionalized processing/dominance cut-off points', but instead as 'degree of compatibility with language-specific conventionalized constructional phonological/conceptual specifications'. In the production and reception of real-time utterances there are clearly also additional processing complexity effects involved (of the type investigated by Kluender and Hofmeister & Sag, and others), but there is no relevant sense in which it could be argued that Scandinavian speakers have a greater tolerance of processing complexity as such, in comparison with English speakers.

    A final question, then, concerns how the difference between relative clause extraction in English and in Swedish is mentally represented more specifically. In this and previous sections, the characterization of the constructional specifications (albeit tentative and incomplete) has mainly been focused on specifying relative clause extraction possibilities in Swedish. The reason is that, except for the fact that there is essentially agreement that extraction is more prevalent in the Scandinavian languages, there appears to be no clear consensus concerning the acceptability status of parallel English examples (for example concerning sentences such as (3)–(5) above). Still, as has been argued in this paper, what can be said with some certainty is that the cause-related relative clause extraction construction which exists in Swedish does not exist in English. It is argued here that the general difference between English and Swedish acceptability judgments in relative clause extraction reflects the extent to which the forms in the constructional slots and the relationship between

these forms match the conceptual and phonological paradigmatic and syntagmatic specifications of some conventionalized relative clause extraction construction in the language.[19] In Swedish, in comparison with English, such conventionalized constructions appear to be more deeply entrenched among the speakers and show greater variation in terms of the conceptually defined paradigms and syntagmatic relations.

4. CONCLUSION

The aim of this paper has been to present and to discuss some properties of relative clause extraction, and to investigate to what extent crosslinguistic variation in acceptability judgments in these constructions can be explained by existing principles of Construction Grammar in the version of Croft (2001) and Verhagen (2009). It has also been argued that although factors such as processing complexity and pragmatic dominance appear to be relevant for the acceptability status of these structures, such factors are problematic as direct explanations of the conventionalized constraints. In particular, it has been argued here that linking acceptability directly to language-specific processing complexity/dominance cut-off points presupposes the existence of a kind of mental linguistic representation that lacks clear independent motivation and might be redundant.

The general argument presented here is that the construction-specific nature of crosslinguistic variation in island constraints implies that mental representations of acceptability in extractions might be of the same type as those seen in less complex constructions such as the ditransitive, the caused-motion and the resultative constructions (discussed in Goldberg 1995). This can be contrasted with Goldberg's (2006) own suggestion, that island constraints can instead be explained by pragmatic factors relating to backgrounded and foregrounded constituents (see Section 2.1 above). While such an explanation might seem reasonable when constraints in a single language are investigated, it seems less natural when crosslinguistic variation is taken into account. In other words, some kind of explanation is needed for how acceptability judgments relate to conventionalized aspects of languages, not just to general pragmatic dominance or foregroundedness.

As was discussed in Section 3.1 above, the analysis presented here is based on a theoretical framework where syntactic categories are associated with phonological properties, conceptual properties and constructional inheritance, which is an assumption that might not appeal to everyone. However, even on the assumption that there are purely syntactic categories of a construction, the issues discussed in this paper should still be relevant, since differences in the productive aspect of relative clause extractions in languages seem unlikely to be explainable without in one way or another including conventionalized aspects of semantic/pragmatic

constraints. In Erteschik-Shir (1982), for example, the question of whether some type of extraction is 'syntactically grammatical' is based on a comparison with the possibilities in the parallel canonical (non-extraction) variant of the same utterance. Erteschik-Shir's suggestion is that a syntactic constraint is imposed when 'there is a small exceptional subset, i.e. relative clauses are in general non-dominant and a small subset of relative clauses can be used dominantly' (1982:191, fn.5), which she argues is the situation in English but not in the Scandinavian languages. This suggestion appears to be based on the assumption that the syntactic categories in a canonical relative clause construction (allowing e.g. *I admire the guy who wrote that book*) should be identical to those in a related extraction (**That book I admire the guy who wrote*). However, in the theoretical framework adopted in the present paper, the relative clause extraction construction itself is different from its related canonical variant because of the specific conventionalized meaning of the construction, in the same way as the construction that allows *I pushed the box to him* relates to the distinct construction disallowing **I pushed him the box*, as discussed in Section 3.1. On this account, therefore, the relevant question is to what extent there is category overlap between the paradigm slots in the canonical and the extraction constructions, but there is no critical point where a more open schematization of the paradigms in the extraction construction changes its overall status from 'syntactically ungrammatical' to 'syntactically grammatical'. Instead, the productivity of the construction depends on the degree of conceptual abstraction and phonological variation associated with its slots, irrespective of how these specifications relate to those of the canonical construction.[20] In other words, the fact that relative clause extraction appears to be more restricted in English than in Scandinavian is essentially because in Scandinavian the construction has been extended to include more subtypes and more conceptually varied paradigms and syntagmatic relations.[21]

While Erteschik-Shir argues for a combination of the pragmatic notion of dominance and a purely syntactic constraint, I have argued in this paper that the existence of the cause-related relative clause extraction construction in Swedish indicates that the difference between the languages is conceptually more specific than a binary syntactic parameter. In other words, those relative clause extractions in English which some speakers find reasonably acceptable, e.g. (3)–(5), are those which are sufficiently similar to conventionalized (or close to being conventionalized) schematic constructions. This concerns pragmatic function of the filler, as well as semantic content of the matrix verb, nominal head and the relative clause itself. The concept of dominance, therefore, is often a good indicator of whether some particular extraction will be perceived as acceptable, but this mainly occurs indirectly since pragmatic dominance functions as a motivating factor partly responsible for which conceptual specifications will become conventionalized in a language. On this account, therefore, Erteschik-Shir's concept of dominance, Goldberg's distinction between foregrounded and backgrounded

constituents, and Van Valin's concept of potential focus domains are best regarded as likely dimensions of paradigmatic and syntagmatic conventionalization within constructions.[22]

The difference between these previous accounts and the one presented here can be further clarified by relating it to theories of linguistic conventionalization, for example the 'Performance–Grammar Correspondence Hypothesis' (Hawkins 2004). This hypothesis states that 'grammars have conventionalized syntactic structures in proportion to their degree of preference in performance, as evidenced by patterns of selection in corpora and by ease of processing in psycholinguistic experiments' (Hawkins 2004:3). Thus, it is in this sense that processing and dominance factors relate only 'indirectly' to the suggested constraints on relative clause extraction. In other words, while the conventionalization process of constructional specifications is often affected by factors relating to processing complexity and pragmatic dominance, the exact nature of such specifications is the result of many interacting synchronic and diachronic factors, including random variation.

Finally, it has been argued in the present paper that instead of resulting from the interaction between syntactic grammaticality and pragmatic dominance, acceptability of relative clause extractions has evolved from the motivating performance pressure of processing and pragmatic dominance to conventionalized conceptual and phonological specifications within constructions, where these specifications ARE the syntactic constraints. The more exact nature of these constructional specifications, for example to what extent the schemas vary between speakers of the same language, how acceptability varies across different matrix verbs, how the constructional schemas relate to each other synchronically and diachronically, and what other relative clause extraction constructions exist, is a complex and interesting area for future research.

ACKNOWLEDGEMENTS

NOTES

1. The term 'complex NP' derives from the fact that the 'gap' is found within an embedded noun phrase, and it therefore refers also to clauses which are not necessarily relative clauses. In the present paper the terms relative clause extraction and complex NP extraction will be used interchangeably.

2. However, another type of extraction which appears to work better in the Scandinavian languages than in English is extraction from so-called *wh*-islands (see Christensen, Kizach & Nyvad 2013 for a recent discussion of these facts based on experimental evidence).

3. Just to mention a recent generative analysis, which is specifically focused on the difference between English and Scandinavian relative clause extraction, we may note the study by Kush & Lindahl (2011). In this study it is argued that 'relative clauses' in Scandinavian from which it is possible to extract an element are in fact structurally different from standard relative clauses: they are, rather, 'small clauses', with their own distinct structure. However, as convincingly shown by Christensen & Nyvad (2014), there is no evidence of such a claim, since there appears to be no structural contrast between escapable and inescapable islands in Danish. Instead, these authors argue that the factors that make extraction possible/acceptable are extra-syntactic, related to definiteness, semantic dominance or pragmatic salience, 'all of which are fully compatible with a processing account' (Christensen & Nyvad 2014:42).

4. Lindahl (2010) presents a detailed constructional description of this particular extraction type based on Swedish corpus data.

5. See the semantic categorization in Levin (1993) and Van Valin (2005:55).

6. See Levin (1993:191) for a characterization of this verb category in English.

7. In an acceptability test taken by 13 non-linguist Swedish speakers at Gothenburg University, 10 informants regarded (18) as completely acceptable while three did not. The less prototypical structure in (19) was regarded as fully acceptable by six of the informants while the remaining seven found it awkward to different degrees. It should be noted that some of those seven who did not accept sentence (19) judged it as acceptable when it was presented orally and in context after they had taken the written test.

8. Out of the 13 informants, 11 judged (22) as completely acceptable and (23) as unacceptable. The remaining two informants did not accept either of these sentences in their written form.

9. For example, they state that 'the claim that competence grammar has no need for a subjacency condition or a *wh*-island constraint should not be misconstrued as a claim that there are no constraints (or even universal island constraints) within competence grammar' (Hofmeister & Sag 2010:368). On the other hand, they also argue that 'we believe that once the processing burdens are properly understood (and explained partly in terms of semantic and pragmatic factors), there remains little work to be done by purely syntactic island constraints' (2010:379).

10. Sprouse, Wagers & Phillips (2012a) provide experimental evidence that the processing factors described by Hofmeister & Sag (2010) cannot replace formal conventions, or what they call 'linguistic constraints'. Related to this point, Sprouse, Wagers & Phillips (2012b:403) comment:

> [O]f course, it is possible that [Hofmeister & Sag] aim merely to show that comprehension difficulty contributes to the acceptability of island-violating sentences, and that they are not really proposing a reductionist account, leaving linguistic constraints intact. In that case we have no argument with them. But we doubt that this is their position, as it would make their broad attacks on linguistic island constraints somewhat puzzling. Instead, we interpret their position to be one of true reductionism for the island types under investigation here.

I agree with this assessment, even though my view of 'linguistic constraints' is different from that of Sprouse et al. (see the discussion in Section 3).

11. I have no systematic empirical data concerning this issue, but informal discussions with English–Swedish speakers suggest that judgments may certainly be different in the two languages in this regard. Future experiments could easily settle the case.

12. These phonological specifications could also be defined in terms of a CATEGORY of morphemes, such as /d/ and /ɪd/ in past event constructions.

13. The relationship between these two constructions in English, as well as crosslinguistic differences, has been discussed in many works; see e.g. Levin (2008) and Rappaport Hovav & Levin (2008) for recent analyses.

14. The specifications of Table 1 and Table 2 are based partly on authentic examples and discussions in Engdahl (1997) and Lindahl (2010), while Table 3 is based on examples and acceptability judgments presented in the present paper. The semantic terms used here are borrowed from the semantic categorization of Van Valin (2005:55). Note also that the category labels used for the paradigms in these three schemas such as 'matrix verb', 'matrix subject' and 'RC-head' are only used in a descriptive sense, and do not imply that the categories are identical across these and other constructional schemas (see Section 3.1 and also Croft 2001:53–58, 2003:56ff. for discussion).

15. Note also that several of the paradigms in the constructions may be productively developed by speakers into more complex structures (since they are themselves conventionalized constructions in the language).

16. Most likely there are also some Swedish speakers who have not extended the complex NP extraction construction to include the causal sense described in Table 3, and therefore find sentences such as (18) or (22) less acceptable. On the other hand, there are presumably also speakers for whom these patterns have been even further extended to include e.g. more matrix verb types or additional syntagmatic relationships. Such intra-language variation is fully in line with the theoretical framework adopted here.

17. As before, the acceptability of these structures was tested among 13 Swedish speakers. Among those 13 speakers, 12 accepted (47) while rejecting (48) and (49), in line with the argument made here.

18. Of course, in traditional syntactic analyses this difference would usually be explained in terms of a purely syntactic difference between (47) and the other two sentences, but in the theoretical framework employed here the 'syntactic' aspect is replaced by the phonological (morpheme) and/or conceptual (paradigm) specifications of the construction. The same reasoning holds in languages where extraction has been extended into constructions introduced by certain complementizers (i.e. substantive phonological forms) but not others, as in the case of e.g. Irish (Fodor 1992:125; Levine & Hukari 2006:121ff.).

19. In the case of isolated test sentences, there is the additional factor of the extent to which speakers can imagine a suitable pragmatic context where the utterance and the parts of the utterance satisfy the specifications of an existing constructional schema.

20. On the other hand, the relative conceptual distance of some slot filler from the schematic conceptual specification in the construction presumably affects speakers' perception of acceptability. Furthermore, it might be that forms violating phonological specifications of a construction are often perceptually more salient than conceptual violations of paradigms, and therefore tend to lead to more severe judgments of unacceptability.

21. In Christensen & Nyvad (2014:42), it is argued that the difference between English and languages like Danish and Swedish is syntactic in nature, and that 'some islands have bridges that allow elements to escape, and this seems to be the case in the Scandinavian languages in particular'. I basically agree with this assessment, although the notion of

what a 'bridge' is in terms of speakers' mental representation appears to differ between their analysis and the account presented here.

22. It should be noted here that the extent to which some extraction construction emerges or remains as a conventionalized schema in a specific language might also be affected by other motivating factors. In Löwenadler (2012), for example, 'form-related' factors are argued to be relevant in so-called COMPLEMENTIZER–GAP and ADJUNCT INTERVENTION structures in English and Swedish, and Löwenadler (2008) provides a typological overview of various factors restricting subject extraction in different languages. These other factors are also consistent with the Construction Grammar approach described in the present paper.

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