## Location Specific Constraints in Matrix and Subordinate Clauses ✶

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## 1. Introduction

Matrix and subordinate clauses can be different. This paper has two goals. One is to set out a general perspective on the differences between matrix and subordinate clauses, based on constraint interaction (Prince and Smolensky 1993, 2004).. The other is to solve an empirical problem with a long history: the fact that inversion of a subject and auxiliary does not occur in subordinate interrogatives in English. I argue that both goals can be at least partly satisfied in theory which posits constraint families whose members evaluate the same structural configurations in different locations. The structures that emerge as optimal can be different where a constraint evaluating a phrase in one location is ranked differently from the same constraint evaluating a phrase in a different location. The constraints on matrix and subordinate clauses are in essence *the same*, and they are *the same as those governing the structure of all projections*. The different patterns enforced by these constraints in various places within sentences results from ranking among location-neutral constraints and the two kinds of location specific constraints. The ranking governs their interaction, which in turn determines grammaticality.

Two structural locations are targeted by the constraints: the highest projection of a matrix clause and the highest projection of a subordinate clause. As a result, the differences between matrix and subordinate clauses are predicted to lie at their tops, since these are the targets of the location-specific constraints (henceforth "LS constraints"). Projections which are not at the top of a matrix or at the top of a subordinate are subject only to the general, location-neutral version of the constraints.[1] Complements to certain groups of verbs, which notoriously pattern with matrix clauses in some respects, are argued to be subject to both matrix-level and subordinate-level constraints.

This proposal aims to answer the question of whether the differences between main and subordinate clauses can be understood as *systematic*. Most centrally, I will argue that HEADLEFT (the constraint requiring left alignment of a head in its maximal projection) for subordinate domains (HDLFT/*sub)* is ranked higher in English than the general HDLFT constraint, which is separated in the ranking by several conflicting constraints. HDLFT/*sub*, in the cases explored here, is dominated only by OBSPEC*/mtx* (See Grimshaw in prep, the supplement to this paper, for further rankings.) The result is that mis-aligned heads have different consequences at the edge of a subordinate clause (where they violate HDLFT/*sub*) than they do elsewhere, because of the different ranking of HDLFT*/sub* and HDLFT itself. This unifies a variety of grammatical phenomena: the behavior of complementizers, adjunction and inversion at the edge of subordinate clauses. I argue that all three follow from the avoidance of HDLFT*/sub* violations in the highest projection of a subordinate clause.

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Of course the properties of the highest projection could in principle have consequences for the lower, e.g. through head-to-head relationships, but these are not enforced by LS constraints, and we will not encounter examples here.

Several recent proposals aim to account for some subset of these phenomena (Chomsky 1986, Rizzi and Roberts 1989; McCloskey 1992, 2006; Grimshaw 1997; Emonds 2004). The present investigation was motivated initially by a desire to replace the constraint dubbed "Pure EP" (Grimshaw 1997:394). This constraint simply describes by stipulation the generalizations governing inversion and adjunction which McCloskey (1992) showed to be related. The improved solution must derive the generalizations from the interaction of independent and theoretically coherent constraints, rather than stipulating them directly.

The presentation I give here is simplified in several respects. Grimshaw in prep. contains an account of the constraints, their rankings and typology, the candidates and the logic of the argument, which meets a higher standard of rigor.

## 2. Constraints on the Structure of Phrases

Constraints on phrases determine their basic structure and how they combine to form complex syntactic expressions. Those in (1) are based on Grimshaw 1997, 2001, 2002.[2]

| | | |
|---|---|---|
| (1) | HdLft | A head is leftmost in its projection |
| | SpecLft | A specifier is leftmost in the projection which immediately dominates it |
| | ObHd | A projection has a head |
| | ObSpec | A projection has a specifier |

The first two are alignment constraints (McCarthy and Prince 1993, Legendre 1998 et seq., Grimshaw 2000, 2001, 2002.) Their ranking determines the order of elements in a projection. The last two constraints I call "obligatory element constraints"and they require the presence of particular elements: the head and the specifier. ObHd played a central role in the analysis of Grimshaw 1997. ObSpec lies behind the "Extended Projection Principle", and the constraints Subject and Epp (see Grimshaw 1997, Grimshaw and Samek-Lodovici, 1998, Samek-Lodovici 1998, 2005, and references in these works).

Other things being equal, a grammatical English phrase realizing a head and two arguments looks like candidate e. in (2).[3] (Other things are not necessarily equal if the phrase is a matrix projection or a subordinate projection, as will become apparent below.)

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I am not considering the constraint CompLft of Grimshaw 2001, 2002. Its ranking in English entails that it does not make any crucial decisions in the comparisons analyzed here, although it is crucially ranked . See Grimshaw in prep., which supplements the present work.

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Faithfulness constraints are not at issue in this proposal, since there is never any evidence for unfaithfulness. The inputs are therefore comparatively unimportant and are simply not given. Obviously, once faithfulness constraints are considered, the input becomes critical. See Bakovic and Keer (2001).

(2) English Phrases

| | | ObHd | SpecLft | OBSpec | HdLft |
|---|---|---|---|---|---|
| a. | [Spec __ YP ] | ✶! | | | |
| b. | [H Spec YP ] | | ✶! | | |
| c. | [ __ H YP ] | | | ✶! | |
| d. | [Spec YP H ] | | | | ✶✶! |
| e.☞ | [Spec H YP ] | | | | ✶ |

A projection with a specifier that is not leftmost violates SpecLft. A projection with no specifier violates ObSpec, and one with no head violates ObHd. The optimal structure satisfies all three of these constraints, but violates HdLft. ObHd must dominate HdLft in order for the headed structure (e.) to be selected over the headless structure in (a.). ObSpec must dominate HdLft, in order for the structure with a specifier to be selected over the structure with no specifier (c.). SpecLft must dominate HdLft, since the optimal structure has a HdLft violation but is still selected over the candidate in (b.) which is left-headed. (e.) is preferred over (d.) because it better satisfies HdLft. This decision depends crucially on the violation of the alignment constraint HdLft being *gradient*, so that the head in (e.) violates HdLft once because it is separated from the left edge by one element, whereas the head in (d.) violates HdLft twice because it is separated from the left edge by two elements: the specifier and the complement. Their rankings choose the unmarked phrase structure for English.

(3) Ranking for English:
ObHd >> HdLft
SpecLft >> HdLft
ObSpec >> HdLft

## 3. Location Specific Constraints

The constraints above assess all phrases equally, regardless of their location in clause structure. Predicting the behavior of matrix and subordinate clauses requires LS constraints[4]. The key definitions are given in (4).

(4) **Definitions**
A "matrix projection" is a projection which is undominated
A "subordinate projection" is a projection which is dominated only by phrases in a different extended projection (see Grimshaw 2005, a revision of Grimshaw 1991)
An "internal projection" is one which is neither matrix not subordinate: it is dominated by a phrase in the same extended projection

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[4] The LS constraints can be viewed as counterparts to positional markedness and faithfulness constraints; see Beckman 1997, Zoll 1998, and Nelson 2003 for example.

In the structure in (5), for example, "α" is a matrix projection. "γ" is a subordinate projection. All other projections, such as "β", are *internal* projections, neither matrix nor subordinate.

(5) $[_\alpha$ Subj I $[_\beta$ V $[_\gamma$ C IP ]]]

What (4) defines is matrix and subordinate "projections" and not "clauses". Every projection in (5) is part of a matrix clause and the IP is part of a subordinate clause. But only the very top projection in (5) is a matrix *projection* and only the very top projection in the subordinate is a subordinate *projection*. This is important in circumscribing the location of structural variation between matrix and subordinate clauses. In this section I present just the constraint HDLFT, made specific to these domains. Subsequently we will see evidence that OBHD and OBSPEC also have LS counterparts.

The interpretation of HDLFT employed here governs the relationship between any X-zero and its maximal projection: it is based on McCarthy and Prince 1993.

(6) HDLFT *Every X-zero is at the left edge of an X-max*. More precisely:
Align (X-zero: X head of matrix/*sub*ordinate/any projection, Lft, XP, Lft)
= by defn. ∀X-zero s.t. X is the head of a projection,
∃XP s.t. left edge of X-zero and left edge of XP coincide.

This constraint is violated by an X-zero which is not at the left edge of its projection. It cannot be violated if no X-zero is present. The family of LS HDLFT constraints is given in (7).[5] The definition of SPECLFT, and the SPECLFT family, are the same, *mutatis mutandis*.

(7) The HDLFT family:

| | |
|---|---|
| The head of a matrix projection is leftmost | (HDLFT/*mtx*) |
| The head of a subordinate projection is leftmost in | (HDLFT/*sub*)[6] |
| The head of a projection is leftmost | (HDLFT) |

A matrix projection and a subordinate projection are also projections and the general version of the constraint holds of all projections. Therefore, for example, a headed subordinate projection in which the head is not at the left edge of the projection violates HDLFT/*sub* and HDLFT. More generally, if a projection violates an

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No direct evidence for the constraint HDLFT/*mtx* is found in the cases analyzed here, and I include it only because a general theory which does encompass all the motivated constraints seems to include this one.

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This constraint is related to Pesetsky's (1998) constraint LE(CP): "The first pronounced word in CP is a function word related to the main verb of that CP" (p 351). Both constraints are violated in a CP containing a specifier and a head. However, they do not agree in every case. Of particular importance here, LE(CP) is violated if a CP has no head, and it is violated if the (possibly extended) head of the CP is not at its left edge. Thus it is violated where *either* OBHD *or* HDLFT is violated (as a HDLFT alignment constraint with the quantification reversed would be.) As a result LE(CP) does not distinguish between the structure [Wh __ IP] where the head is empty and [Wh V IP ], where inversion has occurred, and the head V is not on the left: both violate the constraint. The difference between these candidates is crucial for the analysis of inversion patterns. LE(CP)has a different theoretical status too: it is not an alignment constraint, nor an instance of a general constraint like HDLFT.

LS constraint then it must also violate the general one. However, violation of the general constraint does not entail violation of an LS constraint.[7]

## 4. Complementizers in Matrix and Subordinate Clauses

English complementizers are impossible in matrix clauses, but allowed in subordinates. (Complements without *that* are analyzed in Section7.1.) The proposed line of explanation holds that the *structure* with no complementizer is preferred over the C-IP structure in matrix clauses, while the *structure* with a complementizer is preferred for subordinates; it is not, for example, a lexical property which determines the distribution of *that*.

(8) a. *That the president resigned
b. The president resigned
c. They reported that the president resigned

(9) Violations incurred by C-IP and IP clauses[8]

| | OBHD | SPECLFT | OBSPEC | HDLFT |
|---|---|---|---|---|
| a. [C [Spec I VP] ] | | | ✶! | ✶ IP |
| b. [Spec I VP] | | | | ✶ IP |

The grammaticality of C-IP (a C with an IP complement) for subordinates is not accounted for, since no constraint prefers the C-IP structure over the IP candidate, as (9) illustrates. Although C-IP is left-headed, and IP is not, the candidates tie on HDLFT, both having one violation in VP and one in IP. HDLFT therefore cannot be the decisive constraint. In fact, OBSPEC will be the only relevant constraint and it will always prefer the structure with no complementizer, even for subordinate clauses.

However, the location of the HDLFT violations is different in the two cases. In the IP candidate, there is a violation of HDLFT in the top projection, since the specifier (ie. the subject) intervenes between I and the left edge of IP. In the CP candidate, HDLFT is satisfied in the top projection: nothing intervenes between the C and the left edge of CP, since CP has no specifier. The HDLFT violation in the top projection can be decisive in choosing between C-IP and IP in subordinate clauses *if* there is a LS HDLFT constraint governing subordinate projections. Since HDLFT is not decisive in choosing between the same candidates in matrix clauses, we must conclude that a violation at the left edge of a subordinate clause is not evaluated in the same way as a violation in another location. So the evidence for HDLFT/*sub* comes from the existence of fatal HDLFT violations where the general HDLFT constraint cannot be responsible.

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For example: if the highest projections in two candidates each violate HDLFT and HDLFT/*sub*, a lower projection can violate HDLFT in one candidate and not in the other. The two candidates tie on HDLFT/*sub*, but not on HDLFT. If two candidates each have one HDLFT violation, but in different locations, the candidates then tie on HDLFT, but not on HDLFT/*sub*.

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Throughout this paper I show violations incurred if every projection contains a specifier, a head and a complement, unless otherwise stated. Moreover, I don't show violations within VP since they are never significant in the comparisons at stake. I do indicate the location of VP-external head alignment violations.

In a matrix clause, the constraint HdLft/*sub* (or any other LS constraint for subordinate projections) is vacuously satisfied, hence the highest ranked constraint on which the candidates differ is ObSpec, which is fatally violated in the C-IP structure. This analysis is shown in (10). In a subordinate clause, HdLft/*sub* is not vacuously satisfied: if the top projection contains a head that is not left-aligned with the maximal projection then HdLft/*sub* is violated. Thus the IP candidate in (11) violates HdLft/*sub*. Now we know that this constraint dominates ObSpec, so that the C-IP candidate is chosen over the IP, as demonstrated in (11)[9].

(10) A complementizer in a matrix clause

| | SpecLft | ObHd | HdLft/*sub* | ObSpec | HdLft |
|---|---|---|---|---|---|
| a. [C [Spec I VP] ] | | | | ✶! | ✶IP |
| b.☞ [ Spec I VP] | | | | | ✶IP |

(11) A complementizer in a subordinate clause

| | SpecLft | ObHd | HdLft/*sub* | ObSpec | HdLft |
|---|---|---|---|---|---|
| a. ☞ V [C [Spec I VP ]] | | | | * | ✶ IP |
| b. V [ Spec I VP] | | | ✶! | | ✶ IP |

At the edge of a subordinate clause, therefore, and only there, a left-headed structure is optimal even in a grammar where ObSpec dominates the general HdLft constraint. (As it must in English, see (2)). HdLft is ranked too low to force the choice of the C-IP structure.

(12) HdLft/*sub* >> ObSpec >> HdLft

The posited constraints govern *structure*: obligatory structural elements and alignment. They make no reference to the features or other properties of the particular elements which realize the structure.

9 It is possible to satisfy Ob-Spec in a subordinate clause by raising the subject into the highest specifier position, but this candidate violates HdLft/*sub*, so it loses to candidate a. for the same reason as the IP candidate, namely the structure of its top projection.

## 5. Inversion in Matrix and subordinate clauses [10]

While matrix wh-interrogatives show inversion of the subject and the auxiliary, in subordinate interrogatives inversion is ungrammatical:

(13) a. Which books *have they* read?
b. *Which books *they have* read?
c. They told me which books *they have* read
d. *They told me which books *have they* read

Subject-auxiliary inversion is also found with negative preposing, and in this case, inversion occurs regardless of whether the inverting clause is matrix or subordinate.

(14) a. Never *have they* read such books
b. *Never *they have* read such books
c. They told me that never *have they* read such books
d. *They told me that never *they have* read such books

The empirical generalization, stated in the terms developed here, is that inversion is allowed in a matrix projection, disallowed in a subordinate projection, and allowed in an internal projection. (15) illustrates how it holds for interrogatives.

(15) $[_{IP}$ They $[_{VP}$ told me $[_{CP}$ which books *have* $[_{IP}$ *they* $[_{vp}$ read ]]]]]

| | | | | |
|---|---|---|---|---|
| a | b | c | d | e |
| *mtx* | *int* | *sub* | *int* | *int* |

Phrase c. is a subordinate projection, the others are not. Raising *have* to the head position of CP results in a violation of HDLFT/*sub*, and this inversion is impossible. (16) illustrates how the generalization holds for negative preposing.

(16) $[_{IP}$ They $[_{VP}$ told me $[_{CP}$ that $[_{XP}$ never *have* $[_{IP}$ *they* $[_{vp}$ read such books]]]]]]

| | | | | | |
|---|---|---|---|---|---|
| a | b | c | d | e | f |
| *mtx* | *int* | *sub* | *int* | *int* | *int* |

The projection in which inversion occurs is an internal projection, not a subordinate projection, even though it is contained within a subordinate clause. Inversion in this projection is grammatical.

There is no way to satisfy both OBHD and HDLFT in a projection which contains a specifier before the head. If the projection contains a head, it satisfies OBHD but violates HDLFT (candidate e. in (19)). If the projection lacks a head, it satisfies HDLFT but violates OBHD (candidate b. in (19)). This observation holds when the head is supplied by inversion, exactly as in other cases. The tension between the two constraints determines

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10 I follow the current convention of referring to the phrase which dominates IP as "CP" even when it is not headed by a complementizer; *faute de mieux*.

whether a projection has a head, or lacks one.[11] Neither of these rankings predicts the actual pattern.

(17) If OBHD >> HDLFT inversion will occur in **all** of the three configurations
If HDLFT >> OBHD inversion will occur in **none** of the three

However, positing HDLFT/*sub*, ranked above OBHD, which in turn ranks above HDLFT, prevents inversion just in a subordinate projection.

(18) HDLFT/*sub* >> OBHD >> HDLFT

We now know, then, that HDLFT/*sub* dominates both OBHD and OBSPEC, which in turn dominate HDLFT. We can compare optima for the candidates in (19), all of which have a specifier, a complement, and either a head filled by movement or an empty head. (19) schematizes the cases, abstracting away from the nature (wh or negative) of the specifier in each case.

(19) Inversion in a matrix, subordinate or internal projection

| | SPECLFT | HDLFT/*sub* | OBHD | OBSPEC | HDLFT |
|---|---|---|---|---|---|
| MATRIX PROJECTION: | | | | | |
| a. Spec __ IP | | | ✶! | | ✶IP |
| b. ☞ Spec V IP | | | | | ✶IP ✶CP |
| | | | | | |
| SUBORDINATE PROJECTION: | | | | | |
| c. ☞ V [Spec __ IP] | | | ✶ | | ✶IP |
| d. V [Spec V IP] | | ✶! | | | ✶IP ✶CP |
| | | | | | |
| INTERNAL PROJECTION: | | | | | |
| e. V[ that [$_{XP}$ Spec __ IP] | | | ✶! | | ✶IP |
| f.☞ V [ that [$_{XP}$ Spec V IP] | | | | | ✶IP ✶XP |

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In Grimshaw 1997, I proposed that OBHD dominates STAY, giving rise to inversion. That paper does not recognize the role that HDLFT inevitably plays in governing inversion. STAY is an economy of movement constraint, now possibly eliminated. See Grimshaw 2006.

In the matrix projection (candidates a. and b.) HDLFT/*sub* is satisfied vacuously, and OBHD forcesinversion.[12] In the internal projection XP (candidates e. and f.) HDLFT/*sub* is satisfied because the projection of *that*, which is the highest projection in the verbal extended projection, is left-headed. Inversion within the internal projection adds a HDLFT violation, but since HDLFT is dominated by OBHD, the inversion candidate is still the optimum[13]. Inversion at the top of the subordinate clause ( in candidate d.) is the one case which violates HDLFT/*sub*, since it is located in a subordinate projection. In this case the non-inverted candidate is optimal.

With the three constraints: HDLFT, HD-LFT/*sub*, OBHD, there are six possible rankings. The two rankings with OBHD as the highest ranked constraint induce inversion in all three environments. The two rankings with both HDLFT constraints dominating OBHD force an empty head in all three environments. The remaining rankings split the HDLFT constraints: when just HDLFT dominates OBHD, an empty head will occur in all three environments, and when just HDLFT/*sub* dominates OBHD, a head must be present in every configuration except in subordinates. Polar questions also show inversion in main clauses and not in subordinates, and the solution proposed here generalizes immediately to them, provided that they have filled specifiers (containing a null operator presumably.) They thus satisfy OBSPEC, and inversion within them violates HDLFT/*sub* when in the relevant location. As for *if* and *whether* as heads, they will violate HDLFT/*sub* if they co-occur with a null operator in their specifiers. Under this analysis, faithfulness must force their presence (cf. the proposal in Bakovic and Keer 2001).

A location specific member of a family of constraints, here one specific to subordinate projections, crucially ranked above a constraint which dominates the location free member of the same family, derives the failure of I to C at the top of subordinate clauses and hence in subordinate interrogatives.

In this hypothesis, when a structure is eliminated it is eliminated once and for all, and this does not depend on stipulated lexical properties of any heads. All specifier-head-complement structures are eliminated for subordinate clauses, regardless of the nature of the head or the specifier: a complementizer is ruled out in a subordinate interrogative for the same reason as inversion. In contrast, analyses that eliminate inversion on the grounds that it interferes with selection (see 8.1) say nothing about why a complementizer cannot fill the head position, even if inversion is impossible.

Of course all hypotheses about subordination must account for the fact that the head is a complementizer and not, for example, a raised auxiliary verb. The place to look is probably other constraints in the theory which assess the markedness of chains and of individual functional heads. Grimshaw 2006 is a preliminary work on this topic.

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Later in the analysis, constraints that are specific to matrix projections will be motivated, and their ranking becomes crucial for deriving inversion in matrix projections. See Section 8 for the final ranking.

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Green (1996), challenging the notion of a syntactic root vs. non-root distinction, cites (among several other kinds of example) instances of negative-induced subject auxiliary inversion in subordinate clauses, viewing these as evidence that inversion is not forbidden in subordinate clauses. The analysis given here precisely characterizes inversion as illegitimate not within subordinate clauses, but at the edge of a subordinate clause, in the projection which is subject to the HDLFT/*sub* constraint.

## 6. Another way to violate HdLft/*sub*

The distribution of adjuncts also shows the effects of constraints relativized to syntactic domains. As established in McCloskey 1992, 2006, certain temporal adjuncts can occur at the left edge of a matrix clause, but not a subordinate clause. When *next week* precedes the complementizer in (20) it must be construed as modifying the higher clause. Adjunction is impossible at *the left edge of a subordinate clause*, a familiar location.

(20) a. *They say next week that they will leave
b. They say that next week they will leave
c. Next week they will leave

To simplify matters slightly, I will compare only the subordinate clause structures illustrated in (20), which I will refer to as "external" and "internal" adjunction, finessing the issue of exactly where the internal adjunction should be located and why.

If alignment constraints are satisfied only by alignment to the outer segment, i.e. the whole node, the adjunct in an adjunct-specifier-head sequence is perfectly aligned, but the head is worse aligned than if the adjunct is not present, and the same holds for the specifier. Adjunction to IP therefore adds a violation of HdLft and SpecLft in the IP, as argued in Zepter 2000. SpecLft prefers the ungrammatical CP adjunction (when CP has no specifier), so it cannot explain why CP adjunction is ungrammatical. HdLft does not select candidate b. either, since a. and b. tie on HdLft. Neither SpecLft nor HdLft selects the desired optimum.

(21) Adjunction to a subordinate projection

| | HdLft/*sub* | SpecLft | ObHd | ObSpec | HdLft |
|---|---|---|---|---|---|
| a. V [$_{CP}$ Adjunct [$_{CP}$ C [$_{IP}$ Spec I VP ]] | *! | | | * | *IP *CP |
| b.☞ V [$_{CP}$ C [$_{IP}$ Adjunct [$_{IP}$ Spec I VP]] | | * | | * | ** IP |

However, the location of the HdLft violations is different in the two structures; the ungrammatical candidate has a disruption of head structure in the subordinate projection; the grammatical candidate has the disruption inside an internal projection. The winning candidate satisfies HdLft/*sub*, while the losing candidate violates it. Once we factor in the violation of HdLft/*sub*, we see why adjunction to CP is ungrammatical and internal adjunction grammatical.

Since SpecLft favors external adjunction and HdLft/*sub* favors internal adjunction, the (previously undetermined) ranking between them will decide the optimum. (Since ranking is responsible for the choice, we expect to find cross-linguistic variation in external adjunction, a possibly dangerous prediction.)

(22) HdLft/*sub* >> SpecLft

If adjuncts are analyzed as occupying specifier positions along the lines of Cinque 1999, HdLft/*sub* is still crucial. See Grimshaw in prep. for details.

Adjunction is similarly ungrammatical outside subordinate interrogatives (McCloskey 1992, 2006).

(23) a. *She knows usually where he goes
b. *We found out next week where they will go

This case is informative because the candidate with external adjunction does not violate HDLFT/*sub*, since the highest projection of the complement has no head. See Grimshaw in prep. for an analysis based on another LS constraint: SPECLFT/*sub*.

In essence, the solution for complementizers, inversion and adjunction is the same: the LS constraint dominates a conflicting constraint which itself dominates the general constraint. The ranking of the LS constraint HDLFT/*sub* above OBSPEC chooses a CP for subordinate propositions. The ranking of the same LS constraint above OBHD derives the distribution of inversion. Its ranking above SPECLFT forces internal over external adjunction.

## 7. Complements, main and root clauses

Certain apparent complements show properties which seem intermediate between main clauses and true complements. Examples include complements with no complementizers, those with structures such as "V2"in many Germanic languages, and those with topicalization. (The verbs which take such complements may be related to the verbs which allow extraction from their complements, the "bridge verbs" of Erteshik-Shir 1973.[14]) One thread that runs through the literature on the topic, and the one that I will follow up on here, is the idea that these are in some sense, not complements. For instance, they are clause types which have illocutionary force (Hooper and Thompson 1973), or have a paratactic relation to the higher clause (de Haan 2001), or have a different structure. Emonds (2004) proposes that certain clauses with root-like properties can be "Discourse Projections", making them structurally parallel to true matrix clauses. Furthermore research on the semantics of interrogative and propositional complements supports the conclusion that, crudely speaking, the complements of *wonder*, *ask*, *inquire*, which can only be interrogative in form, are indeed questions, like matrix questions. Complements of verbs like *know, find out, discover*, on other hand denote sets of propositions. Similarly, complements of verbs like *say, think, hope* are really assertions, while complements of verbs like *realize* and *deduce* are not. I refer the reader to McCloskey's discussion of these points, which I have drawn on freely here.

I will refer to the clauses at issue as "subordinate roots", or "s-roots". I will refer to true complements by the obvious nomenclature, and reserve "matrix" for the highest projection of a clausal structure. What is the grammar of an s-root? The answer I propose here is that the structure of s-root clauses is a consequence of the constraints responsible for the syntax of matrix clauses, the constraints responsible for the syntax of purely subordinate clauses, and the ranking among them. This is because, I propose, s-root clauses are subject to both LS constraints governing matrix projections and LS constraints on subordinate projections. This proposal instantiates a view in which apparent complements can resemble main clauses, and extends the above analysis of propositional and interrogative complements.

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See for example, Iatridou and Kroch (1992); Müller and Sternefeld (1993), who propose that the verbs are the same, and de Haan (2001), Vikner (1995), who argue that they are not.

### 7.1 Propositional s-roots

Propositional complements can have not just the C-IP structure analyzed so far, but also a bare structure, as in *They say they will leave next week*. (Doherty 1997).[15] [16] (The hypothesis that these are not CPs is hardly uncontroversial. See Ogawa 2001, Kishimoto 2006 for recent defenses of the CP hypothesis.)

Here I pursue another angle on the patterns displayed by such complements, which takes as central the fact that while apparently embedded, these clauses resemble matrix clauses in lacking a complementizer. How s-roots clauses compare with matrix and subordinates depends on how they are evaluated by the constraints. The four obvious possibilities are: they count as matrix clauses, as subordinate clauses, as neither, or, as both. If s-root clauses are evaluated as subordinate clauses, the C-IP structure will always win. If they are evaluated as matrix clauses the IP structure will always win. If they are evaluated by neither, there is no reason to expect any relationship between structural patterns of matrix and/or subordinate projections and patterns found in s-root clauses. The final option predicts that s-roots are not always identical to a matrix, or always identical to a subordinate, but their grammar is systematically related to both.

Suppose that certain verbs (*say*, *speak*, *tell*, *think*, *hope* ...) admit s-root clauses as (perhaps pseudo-) complements, and that these count as matrix for evaluation by the constraints. (The definition of "matrix projection" in (4) needs to be revised. One possibility would follow the de Haan (2001:22) and Emonds (2004:85) line and posit a node dominating both matrix clauses and roots.)

For an s-root clause, the desired winner is the IP structure. The two candidates tie on HDLFT. We know that HDLFT/*sub* dominates OBSPEC, otherwise IP structures would always be chosen over CP structures in subordinate clauses, see (11). Yet choosing the IP optimum requires the opposite ranking. Again we have a ranking paradox which can be resolved by an LS constraint, in this case, a constraint which penalizes the OBSPEC violation in the matrix projection, and thus eliminates the C-IP structure.

Constraints relativized to the matrix are relevant in the root but not in the subordinate, so the right result will follow if OBSPEC/*mtx* has priority over HDLFT/*sub* but HDLFT/*sub* takes precedence over OBSPEC, as before. The rankings in (24) select the IP candidate in (25).

(24) OBSPEC/*mtx* >> HDLFT/*sub* [>> OBSPEC from before]

Apart from the introduction of the LS constraint and ranking in (24), the analysis is unchanged. HDLFT/*sub* dominates SPECLFT, OBHD and OBSPEC (the ranking among which is unknown), and all three of these dominate HDLFT.

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In earlier work I suggested (Grimshaw 1997: 411) that both options were possible because they both count as optima, having the same constraint violation profiles. However, this cannot be right. In terms of just the constraints of this paper, the CP contains a violation of OBSPEC which IP does not, and the IP violates HDLFT/*sub*, if it is subject to the subordinate LS constraints. Analyses based on faithfulness (and in some cases neutralization) can be found in Legendre et al 1995, Bakovic and Keer 2001. Pesetsky (1998) proposes a "tied-constraint" solution.

16 The analysis given here does not (apparently) generalize to the optionality of *that* in a relative clause.

(25) No complementizer in an s- root

| | OBSPEC/*mtx* | HDLFT/*sub* | SPECLFT | OBHD | OBSPEC | HDLFT |
|---|---|---|---|---|---|---|
| a. V [ $_{\text{s-root}}$ that IP] | ✶! | | | | ✶ | |
| ☞b. V [$_{\text{s-root}}$ IP] | | ✶ | | | | |

The proposal made in Bakovic and Keer 2001 is entirely compatible with that made here. They suggest that the complementizer, or a set of features encoding its properties, is freely included in the input. Thus there is an input with C and an input without C. The two inputs correspond to distinct outputs, except when a markedness constraint dominates faithfulness to the input C. Placed within the present framework, the analysis will be as follows: HDLFT/*sub* chooses the C candidate as optimal, OBSPEC/*mtx* chooses the bare candidate as optimal, provided that these markedness constraints dominate the relevant faithfulness constraints, exactly as in Bakovic and Keer's analysis

S-roots are informative in three ways. First, they establish the need for a location specific version of the constraint OBSPEC. Second, they establish that constraints can be specific to matrix projections, as well as subordinate projections. Third, they show that the ranking between matrix LS constraints and subordinate LS constraints can be determined directly (and not just indirectly, via the rankings of each with other constraints). They can conflict in s- roots, and their rankings can potentially be determined from the conflicts. (In contrast, in a matrix projection, all /*sub* constraints are vacuously satisfied. In a subordinate projection all /*mtx* constraints are vacuously satisfied. No direct conflicts between the two sets of constraints are therefore possible.) We now have direct motivation for two OBSPEC constraints, and hypothesize a subordinate version in accord with a theory which constructs LS constraints for both matrix and subordinate projections. The full consequences of positing all three constraints are discussed in the supplement, Grimshaw in prep..

(26) The OBSPEC family
A matrix projection has a specifier (OBSPEC/*mtx*)
A subordinate projection has a specifier (OBSPEC/*sub*)
A projection has a specifier (OBSPEC)

Declarative s-roots do not provide crucial evidence that the s-root must be subject to BOTH matrix and subordinate LS constraints. The correct optimum would be chosen in (25) even if the s-root were subject only to the matrix constraints. In this case, the ranking of OBSPEC/*mtx* and HDLFT/*sub* would be irrelevant since the root projection would satisfy HDLFT/*sub* vacuously. In fact OB-SPEC/*mtx* would not even be motivated, because HDLFT/*sub* would choose the correct optimum. Evidence that s-roots are subject to both comes from English interrogatives below.

If s-root clauses are subject to both matrix and subordinate LS constraints then they might show matrix or subordinate properties with respect to the ability of adjuncts to occur at their left edge. However the already-established ranking in (24) decides the issue, predicting that the optimum will have adjunction to IP. (27), which is the s-root counterpart of the subordinate example above, shows that this is correct.[17]

(27) They say **next week** they will leave

Adjunction at the outside edge of IP incurs two violations of HdLft/*sub*, since I is separated from the left edge of IP by both the subject and the adjunct. This structure cannot be improved upon by the presence of a complementizer.[18] If the complementizer is above the adjunct, ObSpec/*mtx* is violated. If the adjunct is above the complementizer ObSpec/*mtx* is still violated. Even though the IP adjunction structure violates HdLft/*sub* twice, it is still the optimum.

(28) ObSpec/*mtx* >>HdLft/*sub*

(29) Adjunction to an s- root

| | ObSpec/*mtx* | HdLft/*sub* | SpecLft | ObHd | ObSpec | HdLft |
|---|---|---|---|---|---|---|
| a.☞ V [$_{\text{s-root}}$ Adj IP] | | ** | * | | * | |
| b. V [ $_{\text{s-root}}$ Adj that IP] | *! | * | | | * | |

In sum, adjunction on the edge of the s-root is preferred over the presence of a complementizer, even though the complementizer would avoid one HdLft/*sub* violation. The same constraints and rankings which predict that an s- root complement is an IP also predict that an s- root allows adjunction at its left edge, while a subordinate clause does not.[19]

## 7.2 Interrogative s-roots and inversion

In the versions of English which the data discussed in Section 5 come from, *all* interrogative complements have the empty-headed structure of subordinate interrogatives, rather than the inversion structure of matrix clauses. However, research reported in McCloskey 1992, 2006 shows that in some English dialects, inversion

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McCloskey 2004, n. 9 states that the grammaticality of such examples argues for a complementizer deletion analysis, rather that the IP or TP analysis of C-less complements. This conclusion does not follow under the present analysis, as (29) shows. Doherty 1993 argues that adjunction to bare complements is impossible except where adjunction to the entire CP is admitted. It must be said that these judgements are very difficult and quite variable.

18

The candidate "V [ that Adj IP]" is, according to this analysis, ungrammatical if the clause is an s-root. It violates ObSpec/*mtx*, as does candidate c. The source of the grammatical sentence must be the true subordinate complement, and not the s-root. As a subordinate projection, the highest phrase in this analysis satisfies ObSpec/*mtx* vacuously.

19

In order to complete the picture, it is necessary to look at adjunction to interrogative s-roots. See the supplement, Grimshaw in prep.

is allowed. McCloskey (2006) cites examples like these from various sources:[20]

(30) a. I wondered was he illiterate
b. I asked him from what source could the reprisals come
c. I wonder what is he like at all

McCloskey shows that these are not reported matrix questions, with parenthetical question-taking predicates: *What should we do, I wonder*. Among other points, he cites sequence of tense, pronominal binding and island effects. Not all predicates allow the inversion: *find out, discover, know* ... do not[21]. These examples are also McCloskey's:

(31) a. I've never found out *would he* really have come with me
b. *The police discovered who had they beaten up.

In the terms of the present analysis of subordination, I propose that these are s-root interrogatives, which like s-root propositions are subject to the matrix and subordinate LS constraints. We have seen that standard English selects the same structures for matrix and s-root propositions, namely IPs, but selects different structures for matrix and s-root interrogatives. The "Local" English dialect (McCloskey's term) selects the same structures for matrix and s-root clauses, in both the case of interrogatives and the case of propositions.

I assume there is no lexical difference between the varieties of English, i.e. that both have the same s-root taking verbs in their lexicons. The grammar must be the locus of the dialect difference; the rankings of the relevant matrix and subordinate constraints determine the outcome. The same constraints that group matrix and s-root together for propositions must group s-root and subordinate together for interrogatives in "Standard English"(again McCloskey's term), and s-root and matrix together for Local English.

We know that HD-LFT/*sub* >> OBHD in LocalE English (this is what prevents inversion in subordinate interrogatives such as those in (31)). So inversion cannot be forced by the general OBHD constraint. It is forced, however, by a matrix LS constraint, OBHD/*mtx*, which dominates HDLFT/*sub* and HDLFT, both of which prefer the loser in (32).

(32) Inversion in an interrogative s-root: Local English ("LE")

| | OBSPEC/*mtx* | OBHD/*mtx* | HDLFT/*sub* | SPEC LFT | OB HD | OB SPEC | HD LFT |
|---|---|---|---|---|---|---|---|
| a. V [$_{\text{s-root}}$ wh __ IP | | ✶! | | | ✶ | | |
| ☞b. V [$_{\text{s-root}}$ wh V IP | | | ✶ | | | | ✶CP |

20

I refer the reader to McCloskey 2006 for references to other work on inversion in subordinates.

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The higher context matters too: Green 1996 cites the difference (pointed out in her own earlier work) between *She wants to know who did I appoint* and **She already knows who did I appoint*. See McCloskey 2006 for discussion of such examples.

(33) LE: OBHD/*mtx* >> HDLFT/*sub* >> OBHD

As above, polar s-root interrogatives will match wh s-roots (in both dialects) if they contain an operator in specifier position.

The correct prediction for Standard English is maintained if the new constraint, OBHD/*mtx* is dominated by HdLft/*sub*.

(34) Inversion in an s- root interrogative: Standard English ("SE")

| | OBSPEC/*mtx* | HDLFT/*sub* | OBHD/*mtx* | SPEC LFT | OBHD | OB SPEC | HD LFT |
|---|---|---|---|---|---|---|---|
| ☞a. V [$_{\text{s-root}}$ wh __ IP | | | ✶ | | ✶ | | |
| b. V [$_{\text{s-root}}$ wh V IP | | ✶! | | | | | ✶CP |

Both OBHD and OBHD/*mtx* prefer the loser, so they must be dominated by some version of HDLFT. Since we know that HDLFT itself is ranked below OBHD, it must be HDLFT/*sub* which is over-riding the effects of the obligatory head constraints.

(35) SE: HDLFT/*sub* >> OBHD, OBHD/*mtx*

In sum, a HDLFT constraint must both dominate and be dominated by an OBHD constraint for SE. An OBHD constraint must both dominate and be dominated by a HDLFT constraint for LE. If the dominating constraint is recognized as pertaining to a different domain than the dominated constraint, there is no paradox, and the LE/SE constrast is characterized in terms of alternative rankings of universal constraints. Since the s-root is subject to the matrix and subordinate level constraints, the LS constraints can come into direct conflict. It is the ranking of a matrix constraint, OBHD/*mtx*, relative to a subordinate constraint, HDLFT/*sub*, which is critical in distinguishing the two dialects.

The ranking of HDLFT/*sub* over the OBHD constraints which it conflicts with in subordinates, namely OBHD/*sub* and OBHD, has many consequences. It excludes inversion or complementizers in subordinates, requires C in subordinate propositions, disallows adjunction to subordinate propositions. Because this is maintained in both varieties of English, observable differences between them are few. The consequences of elevating OBHD/*mtx* over HDLFT/*sub* or vice versa will be very limited, in fact visible only in s-roots.

## 8. Constraints and Rankings

This analysis gives direct evidence for the LS constraints in the second column of (36), and indirect evidence for the LS constraints in the third column.

(36)

| General Constraints Motivated Elsewhere [22] | Directly Motivated LS Constraints | Inferred LS Constraints |
|---|---|---|
| HdLft | HdLft/*sub* | HdLft/*mtx* |
| SpecLft | | SpecLft/*sub* SpecLft/*mtx* |
| ObHd | ObHd/*mtx* | ObHd/*sub* |
| ObSpec | ObSpec/*mtx* | ObSpec/*sub* |

The rankings determined in this paper, with the LS constraints bolded, are:

(37)

| | | | | | | |
|---|---|---|---|---|---|---|
| | **HdLft/*sub*** | >> | ObSpec | >> | HdLft | (propositional complements) |
| | **HdLft/*sub*** | >> | ObHd | >> | HdLft | (interrogative complements) |
| | **HdLft/*sub*** | >> | SpecLft | >> | HdLft | (adjunction) |
| | **ObSpec/*mtx*** | >> | **HdLft/*sub*** | >> | ObSpec | (s-root declaratives) |
| LE: | **ObHd/*mtx*** | >> | **HdLft/sub** | >> | ObHd | (LE s-root interrogatives) |
| SE: | **HdLft/*sub*** | >> | **ObHd/*mtx*** | >> | HdLft | (SE s-root interrogatives) |

Each of the bolded LS constraints is motivated by the elimination of a ranking paradox. For example HdLft must both dominate and be dominated by ObSpec, ObHd and SpecLft without the LS constraint HdLft/*sub*. The ranking summary for SE is (38). The ranking for LE has ObHd/*mtx* in the same stratum as ObSpec/*mtx*

(38)

| | | | | | | |
|---|---|---|---|---|---|---|
| **ObSpec/*mtx*** | >> | **HdLft/*sub*** | >> | ObSpec<br>ObHd<br>**ObHd/*mtx***<br>SpecLft | >> | HdLft |

The supplement (Grimshaw in prep.) contains full justification of the proposed rankings, taking into account the complete set of constraints. When the constraint set is expanded to the full families, as it is in Grimshaw in prep. (the supplement),the full ranking preserves the relative rankings shown in (37)-(38). The constraints which are not directly motivated are never decisive, otherwise they *would* be directly motivated, i.e. required for the selection of some optimal candidate. Hence none of them can crucially dominate any of the constraints directly involved in the analysis here. However, some of them are crucially subordinated to one or more of the directly motivated constraints. The complete ranking thus does include crucial dominance relations which cannot be discovered only by studying the directly motivated constraints. This is demonstrated in the supplement.

For related reasons typological predictions for the distribution of complementizers and inversion cannot be fully established without investigation of the constraints that are not motivated directly. Such constraints

[22] Grimshaw 1997, 2001, 2002.

can be decisive in other rankings, and indeed in other competitions, and hence crucially affect the typology. This is explored in the supplement.

## 9. Assessment and Alternatives

### 9.1 Selection and double CP structures

The hypothesis which most closely matches the LS constraints in scope is that put forward by McCloskey (2006), a revision of McCloskey (1992). In McCloskey's proposal, the prohibited inversion and adjunction structures violate a requirement of "l-selection", a relationship between a lexical head and its complement, which is disrupted by adjunction or inversion.

This proposal is based on selection, while the LS constraint proposal is built on structural configurations. As a result LS constraint interaction governs adjuncts as well as arguments, ruling out adjunction to adjuncts, and inversion in adjuncts. The examples in (39) are from McCloskey 2006 and Grimshaw 1997, and illustrate the absence of adjunction and inversion on the edge of adjuncts. (The sources contain a more complete array of data.)

(39) a. *The people when you get home who want to talk to you right away
b. I left when *he had* /* *had he* arrived.

The LS constraints proposal asserts that complements behave the way they do because they are a type of subordinate clause. All selection based proposals (Chomsky1986, Rizzi and Roberts 1989, McCloskey 2006) assert that complements behave the way they do because they are arguments, and in this way these proposals are less general than LS constraints. (The l-selection proposal, however, applies to other arguments, such as DP complements, and McCloskey discusses this. I do not know whether LS constraint interaction can encompass these cases: adjunction affects the alignment of a head here as in subordinate clauses, so this is an avenue to explore.)

In McCloskey's l-selection based hypothesis, the core of the analysis is this. Both dialects require inversion in matrix interrogatives, because matrix interrogatives in both dialects always have a Q complementizer with an uninterpreted T feature which forces raising. In both dialects what I am calling interrogative "s-roots", namely complements to *ask* and *wonder,* are CPs which contain a CP complement to a (usually null) C[23]. The critical difference is that LE has the complementizer with an uninterpreted T in subordinate interrogatives as well, forcing inversion in CP-over-CP structures, i.e. complements to the *ask/wonder* verbs. In these CP-over-CP structures, l-selection is not violated by inversion. In SE, subordinate interrogatives contain a different Q complementizer, which does not have the T feature, and which therefore does not force/allow raising.[24]

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Since the lower CP is not itself an argument, it allows adjunction. Both dialects allow this structure, hence the well-formedness of adjunction. As mentioned above, adjunction to interrogative s-roots in the LS proposal, as well as in the l-selection/CP-over-CP proposal, is treated in Grimshaw in prep.

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This part of McCloskey's proposal is very similar to that found in Rizzi 1991: the Wh Criterion requires a wh element in the head of a CP when the specifier is +wh. The wh element is generated on C-zero in subordinate clauses and on a lower head in main clauses, hence inversion is needed only in main clauses.

I believe that complements to the *find out/discover* verbs must have the Q without an uninterpretable T feature. Otherwise the T will not be checked off, given that the auxiliary cannot raise to T, and all subordinate wh structures with these verbs should be ungrammatical. So the *ask/wonder* verbs are special in two ways: they take CP over CP complements and they have the same complementizer as matrix clauses.

In sum, then, Q+T forces inversion in matrix clauses, and in subordinate clauses where it is present as part of a double CP complement structure. If a subordinate clause has a single CP structure, or if it has a double CP structure but the Q complementizer without T, it does not allow inversion.[25]

The most important point, ultimately, about the double CP hypothesis is that it is designed to render the l-selection requirement, which prohibits adjunction and inversion, *unviolated*. In the LS constraint proposal, there is no constraint or principle which prohibits adjunction and inversion. Instead, their distribution results from the interaction of a set of conflicting violable constraints on the structure of phrases.

We can see two different theoretical strategies at work here. One holds that if a (correct) principle/constraint *appears* to be violated, it may indeed *be* violated, due to conflict with another constraint. The other strategy holds that violation of a (correct) principle/constraint must be only *apparent*, the principle/constraint must be satisfied by properties of the structure that are *not* apparent: a CP-over-CP structure, for example or a complementizer with an uninterpretable feature. Positing these preserves l-selection as an unviolated principle.

Specific differences between the LS constraint proposal and CP-over-CP/l-selection connect to these theoretical imperatives:

(40) Constraint interaction: s-root s are evaluated by all of the constraints, hence they can be different from true complements, which are evaluated only by the general constraints and the LS constraints for subordinate projections.
Inviolability: s-roots (interrogative ones) are different from true complements in having the CP-over-CP structure, and in having a complementizer with an uninterpretable feature in LE.

(41) Constraint interaction: LE and SE are distinguished by alternative rankings of the constraints on phrases.
Inviolability: LE and SE are distinguished by posited lexical properties of the complementizer in subordinate interrogatives.

Emonds (1976, 2004) offers a general theory of the syntax of main and subordinate clauses, according to which main clauses, and certain subordinate clauses which have root properties, have a layer of structure which has no category, and forms a "Discourse Shell". The absence of a category specification allows movement, e.g. into the specifier position, which is free of categorial restrictions, explaining the range of movements found in these clauses. The "unspecified category" at the root ensures that movements of various kinds are consistent with a revised definition of Structure Preservation ( Emonds 2004:93), which is therefore unviolated.

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Although McCloskey does not discuss this point, the analysis appears to extend to negative inversion in the following way. There is a head, e.g. Neg, which has an uninterpreted T feature, forcing movement. Movement is allowed even without an extra projection above the NegP, because the NegP is not l-selected.

These alternatives highlight the fundamental difference between "constraint conflict" and "inviolate principle" theories. Deciding between these kinds of theories (for particular domains at least) thus depends on pursuit of the consequences of these differences.

### 9.2 A Note on CP- over- CP in the LS constraint proposal

What is the status of the double CP representation under the theory of LS constraints? Nothing in principle prevents an empty projection from occurring in an optimum (see Grimshaw 2001, 2002), and the same is true for a projection which contains only a complement as is the case here. In other words, GEN provides such structures for candidate input~output pairs. It is the constraints (and their rankings) which determine whether a particular structural representation is the best output in a particular case, or ever. The nature of alignment constraints entails that they generally prefer less dense distribution of material in structure, i.e. more empty structure. The nature of obligatory element constraints is to prefer more dense distribution of material in structure, i.e. less empty structure. Grimshaw (2001, 2002) shows that the war between these constraints guarantees economy of structure as a theorem.

Is CP-over-CP (or more generally an otherwise empty phrase containing some phrase as a complement) a structure which can be selected as optimal under certain rankings? This issue is pursued in more detail in Grimshaw 2001, 2002, and in the supplement to the present paper. The conclusions can be summarized as follows. Given the constraints posited here, CP- over- CP structure is harmonically bounded, and therefore cannot be the optimum in any grammar, and therefore not in LE. The CP-over-CP candidate is harmonically bounded by the candidate with an empty head which the LS constraint analysis assigns to subordinate interrogatives: it violates all the constraints violated by the empty headed structure, and incurs additional violations as well. This is not to say that every candidate which contains one CP over another is harmonically bounded: a subordinate clause candidate with two CPs, each headed by *that*, is harmonically bounded by a subordinate clause candidate with only one CP headed by *that*, but for an input which includes an adjunct, there is no harmonic bounding relationship, and the CP-over-CP candidate with two *that* heads is optimal under certain rankings. In fact, a double CP structure is allowed by the constraints exactly when the extra CP makes it possible to avoid a HDLFT/*sub* violation. The theory thus makes rather precise predictions about possible optima involving "extra" structure. They are possible exactly when the constraint system allows them to be.

## 10. Conclusion

Main clauses, subordinate clauses and s-root clauses are all different, and it seems that no theory can maintain that they are exactly the same. The issue is how to confront the differences. One way is to posit principles which arbitrarily distinguish among these clause types. PUREEP (Grimshaw 1997) is an example. The present proposal deconstructs PUREEP, deriving the generalization which it stipulates from the interaction of simple constraints. This move approaches the goal of maintaining maximal systematicity; developing a theory of the differences between main and subordinate clauses, and not a list of the differences. The strategy of positing location specific constraints is to treat the conditions governing matrix and subordinate clauses as part of a system, namely the syntax of the language as a whole, and the syntax of all languages.

The limitation of location specific effects to highest projections limits inter- and intra-linguistic variation between matrix, s-root and subordinate clauses to their highest projections (and of course any consequences which follow from properties of the highest projections by virtue of further constraint interaction). In brief, for each constraint-mandated effect, s-root clauses must be either the same as both matrix and subordinate, or the same as one of the two. It is not possible for matrix and subordinate to pattern together leaving s-roots to behave differently. (See Grimshaw in prep., the supplement, for development of this point).

"Families" of LS constraints predict that the structural properties of matrix and subordinate clauses cannot be arbitrarily different. They can differ only in properties governed by the constraint families. A matrix clause cannot differ from a subordinate unless some LS constraint or constraint interaction enforces the difference, which can only happen if the constraints involved are part of the system of general and LS constraints. The constraint system evaluates all other candidates, and determines optima everywhere in the language (and every other language). Likewise, any general obligatory element or alignment constraint now has LS counterparts, which in turn must evaluate matrix, subordinate and root projections. Properties of matrix clauses are inextricably intertwined with properties of phrases in general. Constraints on matrix clauses are inextricably intertwined with the general theory of constraints

## References


Adger, David, Cécile de Cat and George Tsoulas eds. 2004. *Peripheries*. Kluwer.

Bakovic, Eric and Edward Keer. 2001. Optionality and ineffability. Rutgers Optimality Archive 384-0300. In Legendre, et al. eds. 97-112.

Beckman, Jill. 1997. Positional faithfulness, positional neutralisation and Shona vowel harmony *Phonology* 14. 1-46.

Chomsky, Noam. 1986. *Barriers*. MIT Press.

Cinque, Guglielmo. 1999. *Adverbs and Functional Heads*. Oxford University Press.

Doherty, Cathal. 1993. Clauses without 'that': the case for bare sentential complementation in English. Doctoral dissertation. University of California, Santa Cruz.

Doherty, Cathal. 1997. Clauses without complementizers: finite IP complementation in English. *The Linguistic Review* 14. 197-220

Emonds, Joseph. 1976. *A Transformational Approach to English Syntax*. Academic Press.

Emonds, Joseph. 2004. Unspecified categories as the key to root constructions. In Adger et al eds. 75-120.

Erteshik-Shir, Nomi. 1973. On the nature of island constraints. Doctoral dissertation. MIT.

Green, Georgia. 1996. Distinguishing main and subordinate clause: the ROOT of the problem. ms. University of Illinois. http://www.linguistics.uiuc.edu/g-green/

Grimshaw, Jane. 1997. Projection heads and optimality, *Linguistic Inquiry* 28. 373-422.

Grimshaw, Jane. 1998. Constraints on constraints in optimality theoretic syntax. Ms. Rutgers University.

Grimshaw, Jane. 2000. Optimal clitic positions and the lexicon in romance clitic systems. In Legendre, et al. eds. 205-240.

Grimshaw, Jane. 1991. Extended projection. Ms. Brandeis University. Revised version in Grimshaw 2005.

Grimshaw, Jane. 2001. Economy of structure in OT. Rutgers Optimality Archive 434-0601.

Grimshaw, Jane. 2002. Economy of structure in OT. In Carpenter, Coetzee, & de Lacy, eds. *Papers in Optimality Theory II.* University of Massachusetts Occasional Papers 26. 81-120.

Grimshaw, Jane. 2005. *Words and Structure*. Center for the Study of Language and Information.

Grimshaw, Jane. 2006. Chains as unfaithful optima. In Bakovic Ito, and McCarthy eds. *Wondering at the Natural Fecundity of Things: Essays in Honor of Alan Prince*. http://repositories.cdlib.org/lrc/prince/

Grimshaw, Jane. In prep. A supplement to "Location Specific Constraints in Matrix and Subordinate Clauses".

Grimshaw, Jane and Vieri Samek-Lodovici. 1998. Optimal subjects and subject universals. In *Is the Best Good Enough*?, P. Barbosa et al. eds, MIT Press. 193-219.

De Haan. Germen J. 2001. More is going on upstairs than downstairs. *The Journal of Comparative Germanic*

*Linguistics* 4. 3-38.
Hooper, Joan and Sandra A. Thompson. 1973. On the applicability of root transformations. *Linguistic Inquiry* 4. 465-498.
Kishimoto, Hideki. 2006. On the existence of null complementizers in syntax. *Linguistic Inquiry* 37. 339-345.
Legendre, Géraldine. 1998. Second position clitics in a V2 language: conflict resolution in Macedonian. In J. Austin and A. Lawson, (eds.). *Proceedings of the 1997 ESCOL Meeting*. CLC Publications, Cornell University. 139-149.
Legendre, Géraldine, C. Wilson, P. Smolensky, K. Homer, and W. Raymond. 1995. Optimality and Wh-Extraction. In *Papers in Optimality Theory*, J. Beckman, L. Walsh Dickey, and S. Urbanczyk, eds. University of Massachusetts Occasional Papers 18. GLSA, UMass, Amherst, 607-636.
Legendre, Géraldine, Jane Grimshaw and and Sten Vikner eds. *Optimality Theoretic Syntax*, MIT Press, 2000.
Lombardi, Linda. 1999. Positional faithfulness and voicing assimilation in optimality theory. *Natural Language and Linguistic Theory* 17. 267-302.
McCarthy, John. & Alan. Prince. 1993. Generalized alignment. In G. Booij & J. van Marle (eds.), *Yearbookof Morphology*. 79-154. Dordrecht: Kluwer.
McCloskey, James. 1992. Adjunction, selection and embedded verb second. ms. UCSC.
McCloskey, James. 2006. Questions and questioning in a local English. In *Cross-Linguistic Research in Syntax and Semantics: Negation, Tense and Clausal Architecture*, Raffaella Zanuttini, Héctor Campos, Elena Herburger and Paul H. Portner eds.,Georgetown University Press. Publication expected 2006.
Müller, Gereon and Wolfgang Sternefeld. 1993. Improper movement and unambiguous binding. *Linguistic Inquiry* 34. 461-507.
Nelson, Nicole. 2003. Asymmetric Anchoring. Ph.D. Dissertation, Rutgers University.
Ogawa, Yoshiki. 2001. *A unified theory of verbal and nominal projections*. Oxford University Press.
Pesetsky, David. 1998. Some optimality principles of sentence pronunciation.Iin *Is the Best Good Enough*?, P. Barbosa et al. eds, MIT Press 337-383. 1998.
Prince, Alan and Paul Smolensky. 1993. *Optimality Theory: Constraint interaction in generative grammar*. RuCCS Technical Report #2. Rutgers University Center for Cognitive Science, Piscataway NJ.
Prince, Alan and Paul Smolensky. 2004. *Optimality Theory: Constraint interaction in generative grammar*. Blackwells.
Alan Prince 2002. Arguing optimality. In Carpenter, Coetzee, & de Lacy, eds. *Papers in Optimality Theory II*. 269-304. University of Massachusetts Occasional Papers 26. Rutgers Optimality Archive 562-1102
Rizzi, Luigi. 1991. Residual verb second and the Wh-Criterion, Technical Reports in Formal and Computational Linguistics 2, University of Geneva.
Rizzi, Luigi, and Ian Roberts. 1989. Complex inversion in French. *Probus* 1. 1-30.
Samek-Lodovici, Vieri. 1998. Opposite constraints: Left and right focus-alignment in Kanakuru. *Lingua* 104. 111-130.
Samek-Lodovici, Vieri. 2005. Prosody-syntax interactions in the expression of focus. *Natural Language and Linguistic Theory*. 23. 687-755.
Samek-Lodovici, Vieri and Alan Prince 2005. Fundamental properties of harmonic bounding. Rutgers Optimality Archive 785-1205.
Vikner, Sten. 1995. Verb movement and expletive subjects in the germanic languages. Oxford University Press.
Vikner, Sten. 1999. The outer layers of embedded clauses. Handout from the 3rd workshop on optimality

Theory. Universität Stuttgart.
Zepter, Alexandra 2000. Specifiers and adjuncts. Ms. Rutgers University. Rutgers Optimality Archive 413-0900
Zoll, Cheryl. 1998. Positional asymmetries and licensing. Rutgers Optimality Archive 282-0998.

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