Som and Optimality Theory

This article argues that the difference between English and Norwegian with
respect to the presence of a complementizer in embedded subject questions is
attributable to a larger difference between the two languages, namely that
Norwegian is a verb second language while English is not. Verb second forces
subject *wh*-phrases to move to the specifier of a higher projection in Norwegian.
The movement creates the need for a complementizer. In English, there is no
such pressure for subject *wh*-phrases to move. Therefore there is no need for a
complementizer. The so called anti *that*-trace effects in Norwegian and the lack
of them in English supports the use of ranked and violable constraints in an
Optimality-Theoretic system.

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1. Introduction

The focus of this paper is the distribution of complementizers in embedded questions in Norwegian and English. In Norwegian a complementizer is obligatory when a subject is extracted locally in an embedded clause (1a and b). The obligatory complementizer has been dubbed an anti **that*-trace effect by Taraldsen (1979). However, when a non-subject is extracted the complementizer is obligatorily absent (1c and d).

(1)   *Local subject extraction in Norwegian*   (Taraldsen (1986))

       a. Jeg vet   hvem som   vant.

            I   know who   COMP   won

       b. *Jeg vet   hvem vant.

            I   know who   won

            'I know who won.'

    Non-subject extraction in Norwegian

       c. *Jeg vet   hvem som   du   så.

            I   know who   COMP   you   saw

       d. Jeg vet   hvem du   så.

            I   know who   you   saw

            'I know who you saw.'

In this language, the configuration [*Wh* [Comp][…t…]]] is sometimes banned and sometimes required. By contrast, in English the complementizer is obligatorily absent in all embedded questions (2).

(2)   *Local subject extraction in English*

    a.   *I know who that won.

    b.   I know who won.

Non-subject extraction in English

c.   *I know who that you saw.

d.   I know who you saw.

English and Norwegian are the same with respect to non-subject extractions: they both ban [*Wh* [Comp][…t…]]]. However, they differ with respect to local subject extractions: English bans the complementizer while Norwegian requires it.

I propose that Norwegian requires [*Wh* [Comp][…t…]]] with local subject extractions because Norwegian is a Verb-second (V2) language. On the other hand, English bans the same structure in the same environment because it is not a V2 language. I argue, following Grimshaw (1997), that English subject *wh*-phrases do not move to the specifier of CP, rather they remain in situ (either in the specifier of VP or the specifier of IP). However, in a V2 language like Norwegian subject *wh*-phrases must move to the specifier of CP. The requirement of a complementizer in local subject extractions then follows from government requirements on the trace of the moved subject. In non-subject extractions the presence or absence of a complementizer does not affect the government of the lower trace. Therefore other markedness considerations prefer the absence of the complementizer in both languages.

A subject trace (either in the specifier of IP or specifier of VP in the analysis of Grimshaw 1997) is not governed by the main verb of the clause when that verb remains in situ. I argue that traces want to be governed and that government by a lexical head is better than government by a non-lexical head. Therefore a subject trace, unlike for example an object trace, is in a precarious position since government by the lower lexical verb does not occur. There are many possibilities available to a given language to deal with subject traces. For example, the verb may raise to a position where it can govern the subject trace; a non-lexical head may be inserted to govern the trace; traces could be banned from ungoverned positions; or, the language may simply allow ungoverned traces. I propose that language particular rankings of universal constraints determine which option a language uses, and that those rankings may force a language to use different options in different circumstances.

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The analysis I propose in this paper is framed in Optimality Theory (Prince & Smolensky 1993). The distribution of complementizers in Norwegian and English shows the need for ranked and violable constraints in syntax. The fact that the configuration [Wh [Comp][…t…]]] is grammatical sometimes and ungrammatical at other times (both within a language and across languages) supports the analysis of constraint interaction in an Optimality Theoretic grammar.[i]

In Optimality Theory there is a universal set of constraints (CON) over which output structures are evaluated. Grimshaw (1997) and Vikner (1996) provide evidence that the following constraints are active in languages. I will not argue for the existence of these constraints in this paper. The reader is directed to Grimshaw (1997) and Vikner (1996) for justification of these constraints. I have organized the constraints into groups for expository reasons. The organization is in no way meant to reflect any theoretical claims about the types of constraints in UG.

Two trace-related constraints are central to the analysis proposed here. These two constraints require traces to be head governed.

(3)   *Government Constraints*

> TRACE IS GOVERNED (T-GOV)
>
>> A trace is head governed
>
> TRACE IS LEXICALLY GOVERNED (T-LEX-GOV)
>
>> A trace is head governed by a lexical head

T-LEX-GOV requires that a trace be head governed by a lexical head (Rizzi 1990). T-GOV requires only that the trace be head governed. Since a trace that is governed by a lexical head satisfies both constraints and a trace governed by a non-lexical head violates T-LEX-GOV, all else being equal, government by a lexical head is preferred to government by a non-lexical head.

Both of these constraints rely on the notion of head government defined here in (4).

(4)   *Head Government*

α governs β iff

(i) α is a head

(ii) α c-commands β

Head government requires the governor to be a head and to c-command the trace. Furthermore I

assume there is a locality requirement from Deprez (1989, 1991, 1994): the domain of government

cannot extend past a Barrier (Chomsky 1986), where all maximal projections (XPs) are barriers.

The locality requirement can be ameliorated. The government domain can be extended across a

barrier if it is made transparent. There are two ways a barrier can become transparent for the

purposes of head government. One way to render a barrier transparent is through L-marking

(Chomsky 1986)[ii]. This allows, for example, verbs to govern into their complements since the

complements of verbs are L-marked by the verb. The second possibility arises through *non-*

distinctness (Deprez 1994). Two maximal projections will be non-distinct if they share the same

index.[iii]

There are three economy constraints which bar syntactic movements of various types.

(5)   *Economy Constraints*

ECONOMY OF MOVEMENT (STAY)

Trace is not allowed

NO MOVEMENT OF A LEXICAL HEAD (NO-LEX-MVMNT)

A lexical head cannot move

PURITY OF EXTENDED PROJECTION (PURE-EP)

No movement into the head of a subordinate clause

STAY dislikes movement in general. Whenever a constituent is moved (leaving a trace) the

constraint is violated. NO-LEX-MVMNT is an economy constraint relativized to lexical heads. It is

violated whenever a lexical head is moved. These two constraints have obvious affiliations with the

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Faithfulness constraints in phonology (see Prince & Smolensky 1993). Cross-linguisitically we find that languages avoid movement into the C^0 position of an embedded clause (Rizzi and Roberts 1989, McCloskey 1992). We can posit the existence of a constraint barring this movement, PURE-EP. PURE-EP differs from NO-LEX-MVMNT since it bans movement to a specific landing site rather than movement of a particular constituent.[iv]

In addition to the economy constraints there are four structural constraints relevant to the analysis.

(6)   *Structural Constraints*

OPERATOR IN SPECIFIER (OP-SPEC)

> A syntactic operator must be in a specifier position which c-commands the extended projection where it takes scope

OBLIGATORY HEADS (OB-HD)

> Phrases have lexical heads

HEAD LEFT (HD-LFT)

> Overt perfect heads are leftmost in their projections; where perfect heads are those heads that match the projection in all respects.

NO OPERATOR IN A CASE POSITION (CAOP) Vikner (1996)

> * every operator in a case position

OP-SPEC is the constraint which drives operator movement. It is violated by any operator which is not in a scope taking specifier position. Under the assumption that *wh*-phrases are syntactic operators OP-SPEC forces *wh*-movement to the front of the clause. OB-HD and HD-LFT are constraints that regulate X-bar structures. OB-HD demands that projections be headed. It is violated by any headless XP. HD-LFT demands that overt perfect heads be leftmost in the projection. It is violated by an XP which is not head-initial. HD-LFT is not violated by a non-initial head that is a trace or by heads moved to a non-initial position since moved heads are not perfect heads. CA-OP is a co-occurence restriction on operators and case positions. It demands that operators not be in case positions. It is violated by any operator in a case position (specifier of IP

or VP, or complement of V). CA-OP is the constraint that Vikner (1996) uses to drive V2 in the Germanic languages.

For the sake of brevity I will assume some rankings of these constraints for both English and Norwegian. These rankings are argued for in Grimshaw (1997), Vikner (1997) and Keer (1996). For English I assume the rankings in (7).

(7)   *English constraint rankings assumed*

Ranking	**Justification**
OB-HD » STAY	Inversion of auxiliaries in main clause questions
NO-LEX-MVMNT » OB-HD	NO inversion of main verbs in main clause questions
OP-SPEC » STAY	Fronting of *wh*-questions
HD-LFT » OB-HD	Doubly-filled comp effects in embedded questions[v]
STAY, NO-LEX-MVMNT » CAOP	English is not a verb second language

In Norwegian I assume the rankings in (8)

(8)   *Norwegian constraint rankings assumed*

| **Ranking**	**Justification**
OB-HD » STAY	Inversion of auxiliaries in main clause questions
OB-HD » NO-LEX-MVMNT	Inversion of main verbs in main clause questions
OP-SPEC » STAY	Fronting of *wh*-elements
HD-LFT » OB-HD	Doubly-filled comp effects in embedded questions
CAOP » STAY, NO-LEX-MVMNT	Norwegian is a verb second language

With respect to fronting of *wh*-elements and the doubly-filled comp effects, both languages have the same rankings; OP-SPEC dominates STAY and HD-LFT dominates OB-HD. However, English and Norwegian differ on the relative ranking of CAOP and the two economy constraints STAY and NO-LEX-MVMNT. It is this difference that is responsible for the contrast in (1) and (2).

2. *That*-Trace and Anti *That*-Trace

In Optimality Theory violation of a constraint is not necessarily fatal for a candidate. This feature of the theory is crucial in understanding the sometimes grammatical sometimes ungrammatical nature of complementizer-trace structures.

The complementizer-trace structure, as shown in (9), is a marked structure.

(9)   *Comp-trace structure*
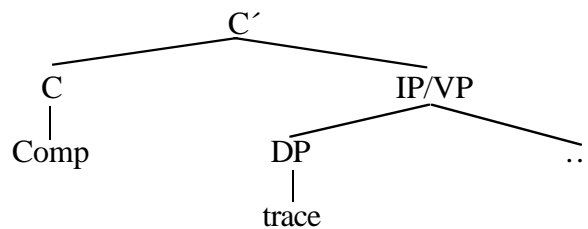
There is a trace in the specifier of IP/VP[vi], so (9) violates STAY. The complementizer governs the trace in (9). However, because the complementizer is not a lexical head (9) violates T-LEX-GOV. These violations alone are not enough to account for the ungrammaticality of (9). Crucially, there must be other candidates that are in competition with (9) that satisfy either STAY or T-LEX-GOV.

I will argue that in English the candidate with the structure in (9) is never grammatical because there is always a competing candidate that satisfies both STAY and T-LEX-GOV. In Norwegian embedded subject questions however, the competing candidates that satisfy STAY or T-LEX-GOV are ruled out by higher ranked constraints so (9) is the optimal choice.

2.1 English embedded subject questions

In English a complementizer-trace structure is ungrammatical with local subject extraction (10a).

(10)   *Local subject extraction in English*

    a.   *I know who that won.

    b.   I know who won.

Two questions need to be addressed: what is the structure of the grammatical (10a), and why is it the optimal output for English as opposed to (10b).

I propose that the structure of (10a) is as in (11) where the *wh*-phrase in the embedded clause remains in the specifier of VP.

(11)   *Subject* Wh *in-situ in English*

```
                    VP
        DP                      V′
        |
        Wh          V                       …
```
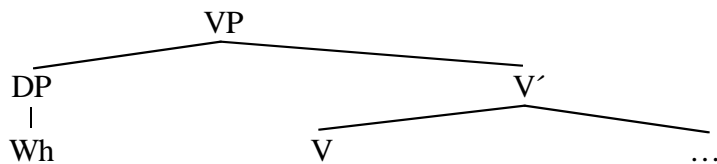
There are four important things to note about the structure in (11) with respect to the constraints posited above. First, OP-SPEC is satisfied by (11). The subject *wh*-phrase is in a scope taking position. Second, (11) violates the constraint CA-OP since the *wh*-operator is in a case position. Third, HEAD-LFT is violated since the head of the phrase (the verb) is not leftmost, the leftmost element being the *wh* -phrase specifier. Fourth, T-LEX-GOV and STAY are satisfied since there is no trace. These points are summarized in the table in (12).

(12)   *Constraint summary*

	OP-SPEC	CA-OP	HD-LFT	T-LEX-GOV	STAY
… [_{VP}who won]	✓	*	*	✓	✓

Both CA-OP and HD-LFT must be subordinate to other constraints in English in order for this candidate to be optimal.

Both the structures in (9) and the structure in (11) violate HEAD-LEFT. Candidate (9) violates HEAD-LEFT because the complementizer is not leftmost in its projection. Candidate (11) violates HEAD-LEFT because the verb is not leftmost in its projection. Since the two candidates tie on HEAD-LEFT, the constraint does not choose between them. Therefore the comparison between (9) and (11) tells us nothing about the relative ranking of HEAD-LEFT in English.

However, the comparison between (9) and (11) does give us evidence for the relative ranking between CA-OP, STAY and T-LEX-GOV. In order for (11) to be optimal over (9) in English, either T-LEX-GOV or STAY must dominate CA-OP. This ranking is shown in the tableau in (13)

(13)   *T-LEX-GOV or STAY is active*

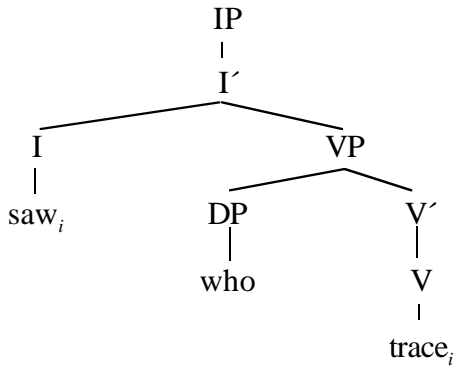| Candidates	T-LEX-GOV	STAY	CAOP
a. ☞ I don't know [_{VP} who won]			*
b. I don't know [_{XP} who_i that [_{VP} t_i won]]	*!	*!	

Since we stated that STAY dominates CAOP in English to account for the fact that English is not a

V2 language, this ranking also rules out candidate (b). The relative ranking of T-LEX-GOV does

not matter. Subject *wh* in-situ is preferred to a T-LEX-GOV or STAY violation.

Note that T-LEX-GOV and STAY are in a stringency relation as defined by Prince (1997). T-

LEX-GOV is a special constraint with respect to the general constraint STAY since a violation of T-

LEX-GOV entails a violation of STAY. A violation of T-LEX-GOV means there must be a trace in the

representation and a trace causes a violation of STAY. Therefore when STAY is active, the activity

of T-LEX-GOV is masked. Given that STAY must dominate CAOP in English, we have no way of

determining the ranking between T-LEX-GOV and CAOP.

Since the winning candidate violates HD-LFT, it is important to ask whether a candidate that

satisfies HD-LFT could be optimal. The answer is no. The HD-LFT violation in the winning

candidate (a) is caused by the presence of the subject. In order to alleviate this violation there are

two possible repairs. One repair is to move the verb out of the VP. Verb movement has the effect

of deactivating HD-LFT since the trace of the verb is not overt and is not subject to HD-LFT. The

second repair is to move the subject *wh*-phrase out of VP. Movement of the *wh*-phrase alleviates

the HD-LFT violation since the trace in the specifier of VP is invisible and the verb is leftmost in its

projection.

Consider the structure shown in (14) where the verb has moved out of VP.

(14)   *Verb movement to alleviate HD-LFT violation*

```
                          IP
                          |
                          I´
                  _____|_____
                 I                 VP
                 |            _____|_____
               saw_i         DP           V´
                             |            |
                            who           V
                                          |
                                        trace_i
```

The structure in (14) does not violate HD-LFT since the V-head is no longer overt. However, this structure violates a number of other constraints. Most importantly it violates NO-LEX-MVMNT and OP-SPEC. Therefore we can rule this candidate out by having either NO-LEX-MVMNT or OP-SPEC dominating HD-LFT.
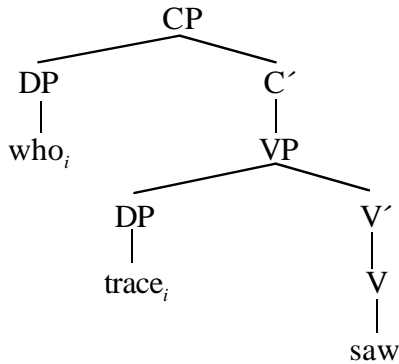
(15)   *NO-LEX-MVMNT or OP-SPEC » HD-LFT*

Candidates	NO-LEX-MVMNT	OP-SPEC	HD-LFT
a. ☞ [$_{VP}$ who won]			*
b. [$_{IP}$ win$_i$ [$_{VP}$ who t$_i$]]	*!	*!	

If either NO-LEX-MVMNT or OP-SPEC dominates HD-LFT, then candidate (b) is ruled out and English verbs stay in situ. The fact that simple declarative sentences such as *John won* have subject-verb word order indicates that NO-LEX-MVMNT must dominate HD-LFT. Therefore the ranking of OP-SPEC is undetermined.

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Consider the structure in (16) where the wh-phrase is moved out of the VP.

(16)   *Movement of* wh-*phrase to alleviate HD-LFT violation*

```
                    CP
          ┌─────────┴─────────┐
         DP                   C´
          │                    │
        who_i                 VP
                    ┌──────────┴──────────┐
                   DP                     V´
                    │                      │
                 trace_i                   V
                                           │
                                          saw
```

The structure in (16) violates four constraints; OB-HD, STAY, T-LEX-GOV, and T-GOV. OB-HD is violated because the CP is headless. T-LEX-GOV and T-GOV are violated because the trace in the specifier of VP is ungoverned. STAY is violated since the *wh*-phrase has moved. I have stated above that HD-LFT must dominate OB-HD in English. Therefore (16) cannot be ruled out because of the OB-HD violation. Rather, (16) shows that STAY, T-LEX-GOV or T-GOV must dominate HD-LFT.

(17)   *STAY, T-LEX-GOV or T-GOV » HD-LFT*

Candidates	T-LEX-GOV	T-GOV	STAY	HD-LFT
a. ☞ [_VP who won]				*
b. [_CP who_i [_VP t_i win]]	*!	*!	*!	

Movement of the *wh*-phrase out of the VP in English is blocked because doing so creates an ungoverned trace. Note that *[_CP who_i won_k [_VP t_i t_k]] which manages to govern the trace will be ruled out as in (15) above by NO-LEX-MVMNT over HD-LFT.

The rankings responsible for English embedded subject questions are given here in (18).

(18)   *English Rankings for embedded subject questions*

STAY » CAOP

NO-LEX-MVMNT » HD-LFT

STAY, T-LEX-GOV or T-GOV » HD-LFT

The result of the rankings in (18) is that English has no anti *that*-trace effects. In English subject *wh*-phrases remain in situ, thus there is never a trace for subject *wh*-phrases that needs to be governed. English subject *wh*-phrases remain in situ for two reasons: moving them is more costly than meeting any desire to have an operator in a non-case position (STAY dominates CAOP) and moving them is more costly than meeting any desire to have the verb leftmost in its projection (STAY, NO-LEX-MVMNT dominate HD-LFT).

2.2 Norwegian embedded subject questions

The difference between English and Norwegian with respect to embedded subject questions is a result of different rankings of the same constraints in the two languages. Recall that in Norwegian embedded subject questions the configuration [*Wh* [Comp [t…]]] is grammatical. In fact it is required. The examples in (19) are repeated from (1) above.

(19) *Embedded Questions* (Taraldsen (1986))

a. Jeg   vet   hvem   som   vant.

I   know   who   COMP   won

b. *Jeg vet   hvem   vant.

I   know   who   won

'I know who won.'

These facts follow from the different ranking of CAOP in Norwegian. Norwegian is a V2 language, therefore CAOP forces subject *wh*-phrases to move from their base positions. It is this movement that forces the presence of the complementizer.

The comp-trace candidate, with the structure in (9) above, violates both T-LEX-GOV, HD-LFT and STAY. All three of these constraints must be subordinated to other constraints in Norwegian in order for this candidate to be optimal.

We know that CAOP dominates STAY in Norwegian since Norwegian is a V2 language. In addition, CAOP must dominate T-LEX-GOV as shown in (20).
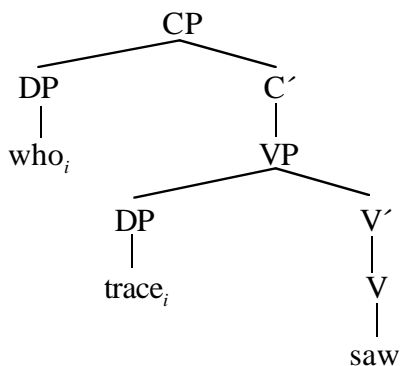
13

(20)   *T-LEX-GOV and STAY are subordinate in Norwegian*

Candidates	CAOP	T-LEX-GOV	STAY
a. …[$_{VP}$hvem vant]	*!		
b. ☞…[$_{CP}$hvem$_i$ som [$_{VP}$t$_i$ vant]]]		*	*

High ranked CAOP blocks subject in situ candidate (a). Therefore candidate (b) wins. The

comparison of these two candidates does not tell us anything about the relative ranking of HD-LFT

since both candidates violate the constraint as noted above.

Again, we must determine whether there is another candidate which does better on HD-LFT.

One way to satisfy HD-LFT is to not have a complementizer in CP as in the structure in (16)

repeated here as (21).

(21)   *Movement of* wh-*phrase to alleviate HD-LFT violation*

```
                    CP
            ┌───────┴───────┐
           DP              C´
            │               │
          who_i            VP
                    ┌───────┴───────┐
                   DP              V´
                    │               │
                  trace_i           V
                                    │
                                   saw
```

In (21) both phrases pass HD-LFT. HD-LFT applies to the CP vacuously because it has no head.

Whereas the trace in the specifier of the the VP is invisible to HD-LFT, so the VP passes the

constraint. However, this structure violates OB-HD, STAY, T-GOV and T-LEX-GOV as stated above.

Both the grammatical complementizer-trace candidate and the candidate in (21) violate STAY

and T-LEX-GOV equally. Therefore these constraints do not decide between them. Furthermore,

we know independently that HD-LFT dominates OB-HD in Norwegian. Therefore the preference

for the complementizer-trace candidate must be due to the ranking of T-GOV over HD-LFT.

(22)   *T-Gov » Hd-Lft gives anti *that-trace effect*

Candidates	T-Gov	Hd-Lft	Ob-Hd
a. ☞…[$_{CP}$hvem$_i$ som [$_{VP}$t$_i$ vant]]]		*	
b. …[$_{CP}$hvem$_i$ [$_{VP}$t$_i$ vant]]]	*!		*

In Norwegian, the sequence complementizer-trace in embedded subject questions is preferred to a null complementizer-trace configuration because of T-Gov dominating Hd-Lft.

Another candidate which passes both Hd-Lft and T-Gov is one with embedded verb second as shown in (23).

(23)   *Embedded Verb Second*
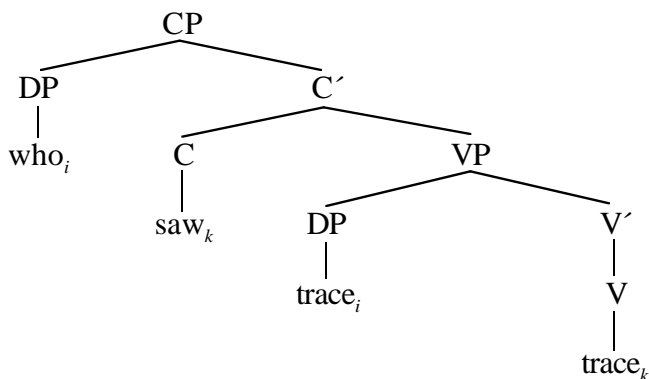
The candidate in (23) is particularly good. It satisfies both government constraints as well as Ob-Hd, Op-Spec, and CaOp. Furthermore, it satisfies Hd-Lft since the moved verb is no longer a perfect head and therefore not subject to the constraint. What does this candidate have going against it? It violates Stay twice, No-Lex-Mvmnt once, and it violates Pure-Ep.

The candidate in (23) actually wins in matrix clauses. Therefore, Stay and No-Lex-Mvmnt must be subordinate to Ob-Hd in Norwegian. we know that Ob-Hd is subordinate to Hd-Lft. By transitivity then Hd-Lft must dominate Stay and No-Lex-Mvmnt. Therefore Pure-Ep must be the constraint ruling out this candidate in subordinate clauses.

(24)   *PURE-EP » HD-LFT and T-LEX-GOV*

Candidates	PURE-EP	HD-LFT	T-LEX-GOV
a. ☞…[$_{CP}$hvem$_i$ som [$_{VP}$t$_i$ vant]]]		*	*
b. …[$_{CP}$hvem$_i$ vant$_k$ [$_{VP}$t$_i$ t$_k$]]]	*!		

Although movement of the verb to C⁰ allows the trace in the specifier of VP to be lexically

governed, it does so at the expense of a PURE-EP violation. Norwegian prefers to insert a

complementizer (a worse governor) than to pay this price.

The anti-*that-trace effects in Norwegian embedded subject extractions motivate the

following rankings.

(25)   *Norwegian rankings for embedded subject questions*

CAOP » T-LEX-GOV and STAY

T-GOV » HD-LFT

PURE-EP » T-LEX-GOV and HD-LFT

The result of the rankings in (25) is that Norwegian has anti *that-trace effects. Norwegian

subject *wh*-phrases cannot remain in situ due to the high ranking of the CAOP constraint. The

activity of T-GOV ensures that subject traces in Norwegian must be governed. Also, government

from a complementizer is preferred over verb movement due to the constraint PURE–EP.

3. Emergence of HEAD-LEFT

Both English and Norwegian rank HD-LFT above OB-HD. In embedded subject extractions the

effects of this ranking are not seen because higher ranked constraints force violation of HD-LFT.

When those higher ranked constraints are inactive in English and Norwegian HD-LFT becomes

active and rules out candidates which violate it. A constraint is inactive when all the relevant

candidates agree on the constraint, either they all pass the constraint or all fail it. In non-subject

extractions in both languages and in multiple extractions in Norwegian we see the emergence of the

HD-LFT over OB-HD ranking.

3.1 Non-subject embedded questions - both languages

With non-subject extractions the complementizer is ungrammatical in both languages. Examples are given in (26).

(26)   *Non-subject embedded questions*

   Norwegian

    a. *Jeg vet   hvem som   du   så.

        I   know who   SOM   you   saw

    b. Jeg vet   hvem du   så.

        I   know who   you   saw
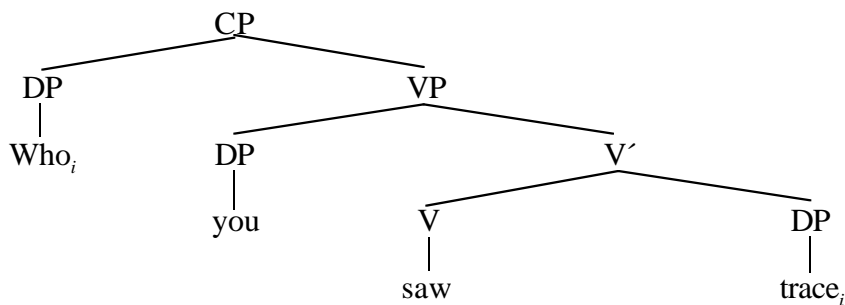
        'I know who you saw.'

   English

    c. *I know who that you saw.

    d. I know who you saw.

In both languages the configuration [*wh* [comp [...t...]]] is ungrammatical.

In English, OP-SPEC is not satisfied by a non-subject *wh*-phrase in situ. Therefore, the *wh*-phrase must move to the front of the clause, creating a new projection. In Norwegian the *wh*-phrase must also move since both CAOP and OP-SPEC are not satisfied by the *wh*-phrase in situ. The structure of the grammatical examples in (26b and d) is shown in (27).

(27)   *Non-subject embedded questions*

```
                        CP
             ┌──────────┴──────────┐
            DP                     VP
             │            ┌────────┴────────┐
           Who_i         DP                 V´
                          │          ┌──────┴──────┐
                         you         V             DP
                                     │             │
                                    saw          trace_i
```
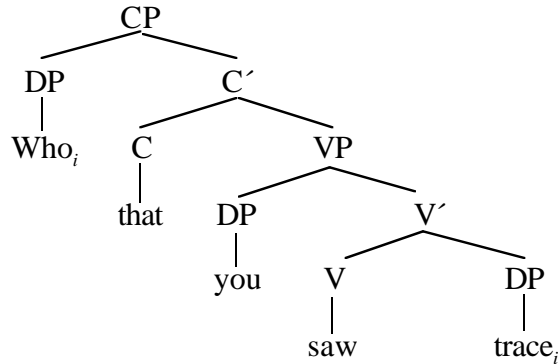
The candidate in (27) violates OB-HD since the CP is headless. It also violates STAY, but only under compulsion from OP-SPEC. The candidate passes both government constraints since the

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trace is lexically governed by the verb. It also satisfies HD-LFT with respect to the CP since there is

no C^0 head.[vii]

To compare, the *wh*-phrase - complementizer candidate is shown here in (28).

(28)   Wh-*phrase - complementizer candidate*

```
                        CP
              ┌─────────┴─────────┐
             DP                   C´
              │          ┌────────┴────────┐
            Who_i        C                 VP
                         │         ┌───────┴───────┐
                        that      DP              V´
                                   │        ┌──────┴──────┐
                                  you       V            DP
                                            │             │
                                           saw          trace_i
```

The VP structure in both (27) and (28) is exactly the same. Therefore like (27) this candidate

violates STAY and satisfies both government constraints. However, the CP structure is different

from that in (26). This candidate violates HD-LFT and satisfies OB-HD.

Since all other constraints are either passed or failed equally in these two candidates, the

decision comes down to the relative ranking of OB-HD and HD-LFT. In both languages HD-LFT

dominates OB-HD.

 (29)   *HD-LFT decides when government constraints inactive*

Candidates	HD-LFT	OB-HD
a. ☞ Jeg vet [$_{CP}$ hvem$_i$ [$_{VP}$ Bill så t$_i$]]		*
b. Jeg vet [$_{CP}$ hvem$_i$ som [$_{VP}$ Bill så t$_i$]]	*!	

Absence of a head is preferred to a non-left aligned head. In non-subject embedded questions, HD-

LFT forces violation of OB-HD: both languages have Doubly filled Comp effects, since both

languages have the same ranking.

3.2 Multiple extractions in Norwegian - all fail

Further evidence that Norwegian ranks HD-LFT over OB-HD comes from cases of multiple *wh*-

movement. In multiple extractions from embedded clauses where the subject is moved long

distance and the object is moved locally, the complementizer is ungrammatical in Norwegian. Examples are given in (30).

(30)   *Multiple embedded wh-questions*

   a. [$_{CP}$ Hvilket ord$_i$ vet   du   ikke [$_{CP}$hva$_j$ [$_{VP}$t$_i$ betyr t$_j$]]]

          which word   know you not   what   means

   b. *[$_{CP}$ Hvilket ord$_i$ vet   du   ikke [$_{CP}$ hva$_j$ som [$_{VP}$ t$_i$ betyr t$_j$]]]

          which word know you   not   what COMP   means

   'Which word don't you know what means.'

In the case of embedded subject questions above, T-GOV is instrumental in forcing the complementizer to be present even though the presence of the complementizer violates HD-LFT.   In these examples we also have an ungoverned trace in the subject position, but the complementizer is ungrammatical (30b).

   What is different in (30) versus the cases in (1) above is that the complementizer in (30a) is unable to govern the trace in subject position. The tree in (31) shows why government fails.

(31)   *Failure of government from complementizer in multiple extractions*
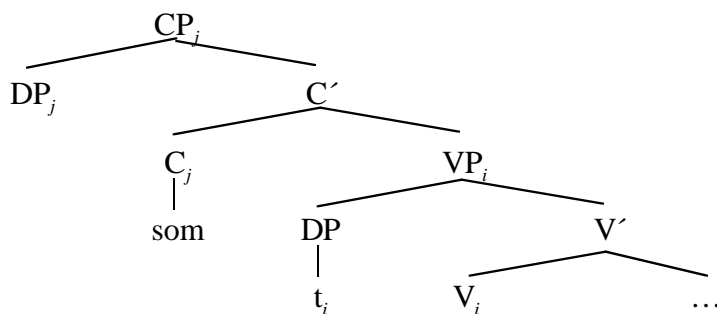
In the specifier of VP we have the trace of the subject which has moved long-distance to the specifier of the matrix CP. In the specifier of the subordinate CP we have the object *wh*-phrase. Assuming specifier-head agreement, the complementizer gets the index of the object *wh*-phrase and the verb gets the index of the subject *wh*-phrase. Therefore the complementizer has a different index from the VP, and VP is a barrier to government from the complementizer. A complementizer in this configuration cannot govern the trace in subject position.

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Since T-Gov is violated in both the candidate with a complementizer (the trace cannot be governed) and the candidate without the complementizer, the decision is passed on to the HD-LFT, OB-HD ranking which chooses in favor of the headless CP.

(32)   *Complementizer absent due to HD-Lft*

Candidates		HD-LFT	OB-HD
a.	☞ Petter$_j$ … [$_{CP}$ hvilken man$_j$ [$_{VP}$ t$_i$ kjenner t$_j$]]		*
b.	Petter$_j$ … [$_{CP}$ hvilken man$_j$ som$_j$ [$_{VP}$ t$_i$ kjenner t$_j$]]	*!	

HD-LFT over OB-HD chooses the candidate without the complementizer. Again, we see doubly filled comp effects.

Evidence that the position of the subject trace in (30a) is an ungoverned position comes from Swedish. In parallel cases in Swedish, a resumptive pronoun is found (Engdahl 1985).

(33)   *Swedish resumptive pronouns in embedded wh-questions*

    a. Vilket ord   vet   du   inte vad   det betyder

        which word   know   you   not   what   it   means

        'Which word do you not know what it means.'

    b. *Vilket ord   vet   du   inte vad   betyder

        which word   know   you   not   what   means

        'Which word do you not know what means.'

The only possible way to make this question in Swedish is to have a resumptive pronoun in the subject position as in (33a). However, with respect to anti *that*-trace effects, Swedish is exactly like Norwegian.

We can account for the difference between Norwegian and Swedish by positing another universal constraint that dislikes the use of resumptive pronouns. This constraint is given in (34).

(34)   NO RESUMPTIVE PRONOUN (*RES)   Do not have a resumptive pronoun.

In Swedish, this constraint is violated whenever forced to be violated by T-Gov. That is, T-Gov dominates *RES.

(35) *Swedish resumptive pronouns*

Candidates	T-Gov	*Res	Hd-LFT[viii]	Ob-Hd
a. ☞ vilket ord$_j$ vet du inte [$_{CP}$ vad$_j$ [$_{VP}$ det$_i$ betyder t$_j$]]		*		*
b. vilket ord$_j$ vet du inte [$_{CP}$ vad$_j$ [$_{VP}$ t$_i$ betyder t$_j$]]	*!			*

The higher ranked T-Gov forces violation of *Res in Swedish. The fact that a resumptive pronoun is possible in the embedded subject position of a multiple *wh*-question indicates that this positions is not governed.

In embedded subject questions Swedish is exactly like Norwegian.

(36) *Embedded Subject Questions in Swedish*

    a. Jag   vet   vem   som   vann.

       I   know who COMP won

    b. *Jag vet   vem$_i$ han$_i$ vann.

       I   know who$_i$ he$_i$ won

      'I know who won.'

The complementizer is required in Swedish. Furthermore, a resumptive pronoun is not allowed.

If *Res dominates T-Lex-Gov in Swedish anti *that*-trace effects will still be optimal.[ix]

(37) *Swedish anti-*that*-trace effects*

Candidates	T-Gov	*Res	T-Lex-Gov	Hd-LFT
a. Jag vet [$_{CP}$ vem$_i$ [$_{VP}$ det$_i$ vann]]		*!		
b. ☞ Jag vet [$_{CP}$ vem$_i$ som [$_{VP}$ t$_i$ vann]]			*	*

In these candidates, the subject trace is governed by the complementizer, therefore T-Gov is inactive. The complementizer is grammatical in Swedish when its presence alleviates a T-Gov

violation due to *RES dominating T-LEX-GOV. In Norwegian then, *RES must dominate T-GOV since the ungoverned trace is preferred to the use of a resumptive pronoun.[x]

In both English and Norwegian doubly filled comp effects emerge when higher ranked constraints are inactive. Therefore both English and Norwegian rank HD-LFT above OB-HD.

4. Conclusion

The analysis presented in this paper ties the existence of anti *that-trace effects in Norwegian and their absence in English to a well known difference between the two languages: Norwegian is a verb second language and English is not. In Norwegian subject *wh*-phrases must move out of the IP or VP due to the verb second requirements. This movement forces a trace in the subject position. Since subject traces are not head governed by the lower verb and head government by the higher verb is blocked, the complementizer is called upon to govern the trace. In English, subject *wh*-phrases remain in situ. With no trace in the subject position, there is no need for the complementizer as a governor.

Although [*wh*[Comp [...t...]]] is a marked structure, it does not lead to absolute ungrammaticality in an Optimality Theoretic system. Other constraints can force the emergence of this structure. The Norwegian pattern, with the complementizer being sometimes required and sometimes banned is exactly the type of pattern predicted by ranked in violable constraints interacting in an Optimality Theoretic grammar.

By contrast, theories that utilize surface true constraints (for example Taraldsen 1986 and Rizzi 1990) have difficulty accounting for the sometimes marked, sometimes unmarked nature of this structure. Surface true constraints must be weakened to account for this pattern either by incorporating exceptions directly into the constraint, by positing empty structure, or by positing levels at which constraints are true.

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[i] I will ignore complementizer optionality. In both languages complementizers are optional in most embedded declaratives. See Bakovic (1996) and Bakovic and Keer (1998) for an analysis of complementizer optionality in Optimality Theory.

[ii] α L-marks β iff α is a lexical category that θ-governs β (Chomsky 1986;15).

[iii] Another possibility is to maintain that all maximal projections are barriers, but that this requirement is a violable constraint in the Optimality Theoretic sense. I will not pursue that idea here since I feel it leads me too far off the topic.

[iv] At this point PURE-EP is a rather descriptive constraint. See Grimshaw (1998) for an attempt to derive the effects of this constraint from other principles in the grammar.

[v] I will discuss this ranking in more detail below.

[vi] The OT constraints proposed here, following Grimshaw (1997), have the effect of preferring minimal phrase structure. I therefore assume that CP can dominate VP directly, with no intervening IP.

[vii] The candidate in (27) does violate HD-LFT in the VP, but it shares that violation with all the other relevant candidates. Therefore I will be ignoring this violation in what follows.

[viii] I am only counting HD-LFT violations inside the CP.

[ix] Vata (Koopman 1984 ,Rizzi 1990) has resumptive pronouns with all subject extractions. In this language, subject *wh*-phrases must move and T-LEX-GOV dominates *RES.

[x] In English, the multiple extractions are ungrammatical. Therefore there must be some other candidate that wins in English, but is ruled out in Norwegian and Swedish. See Legendre, et al. (1995).