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COMPLEMENTIZERS, FAITHFULNESS, AND OPTIONALITY*

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ABSTRACT: In this paper I advance a theory of optionality in syntax within OT, using the optionality of the English complementizer as an example. The leading idea is that optionality arises purely as a consequence of the usual optimality-theoretic interaction between markedness and faithfulness constraints. In other words, optionality is an expected consequence of violable and conflicting universal constraints and their language-particular ranking, the core assumptions of OT.
KEYWORDS: complementizers; faithfulness; optionality; that-trace; English.

INTRODUCTION

English is well-known for the optional presence of the complementizer *that* in embedded clauses (relative clauses and complement clauses). The presence of the complementizer here is truly optional, in that it triggers no discernible difference in core meaning and/or discourse status.

(1) Complementizer optionality in relatives and complements
   a. The coat [**that** he always wears *t*] doesn't fit him.
      The coat [he always wears *t*] doesn't fit him.
   b. I think [**that** the coat doesn't fit him].
      I think [the coat doesn't fit him].

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In this paper I advance a theory of such (true) optionality[2] within the framework of Optimality Theory (OT; Prince & Smolensky 1993/2004), using complementizer optionality as an example. The leading idea is that optionality arises purely as a consequence of the usual optimality-theoretic interaction between output or *markedness* constraints and input-output mapping or *faithfulness* constraints.[3] In other words, optionality is an expected consequence of violable and conflicting universal constraints and their language-particular ranking, the core assumptions of OT.

1. THE INTERACTION OF MARKEDNESS AND FAITHFULNESS

The optimality (grammaticality in OT) of a form in a given candidate output set is partially dependent on the input associated to that set: the optimal output of an input i_1 may or may not be the optimal output of some other input i_2. Given only markedness constraints, this would of course be impossible — no matter what the input, markedness constraints would battle it out amongst themselves and a unique, least-marked form would invariably surface.

Faithfulness constraints, penalizing disparity between input and output, have thus played a pivotal role in OT since its inception. Depending on the relative ranking of faithfulness and conflicting markedness constraints, contrasting input specifications may or may not surface. If faithfulness dominates markedness (F $\gg$ M), then F-dependent contrasts surface in the output. If, conversely, markedness dominates faithfulness (M $\gg$ F), then F-dependent contrasts are neutralized in the output, in favor of the M-respecting end of the contrast spectrum.

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[2] On discourse-based or apparent optionality within OT, see (among others) Grimshaw & Samek-Lodovici (1995, 1998); Samek-Lodovici (1996), Costa (1996), Choi (1999), and Legendre (1996). A comprehensive overview of approaches to optionality in OT syntax can be found in Müller (1999).

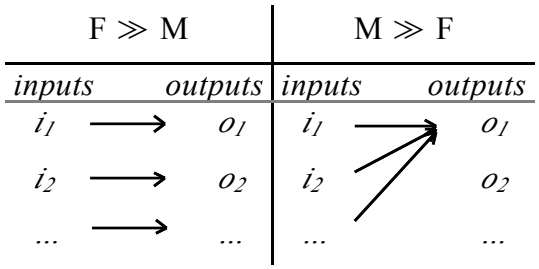

Figure 1: The Interaction of Markedness and Faithfulness

The specific proposal made here is that in addition to semantically discernible (*lexical*) contrasts, there exist semantically inert (*functional*) contrasts governed by a set of faithfulness constraints. When these functional contrasts are preserved in the output because F ≫ M, the somewhat illusory effect is optionality of forms in the context marked by M. The prediction that this theory of optionality makes is the possibility of the ranking M ≫ F, entailing the lack of optionality in the M-relevant context. Comparative evidence (see Keer and Baković 1997, Kurafuji 1997) indicates that this prediction is empirically supported cross-linguistically, where F ≫ M in one grammar and M ≫ F in another. I demonstrate here that the prediction is also empirically supported within a single language, as we'll see for the case of English in §3: since a faithfulness constraint can simultaneously dominate some markedness constraints and be dominated by others, this gives rise to optionality in some contexts but not in others.

There are at least two other possible approaches to optionality in OT, both claiming that the outputs in free variation arise from one and the same input. One approach is to ensure that no constraint distinguishes the outputs, so that if one emerges as optimal, the other(s) must also. In other words, the candidates tie, and in some cases they tie for optimality. The second approach embellishes the basic theory with the notion of a constraint tie, with the same effect: the outputs in free variation arise from the same input. Grimshaw (1997a) takes the former approach, and Pesetsky (to appear) the latter, in their respective analyses of the optionality of the English complementizer. Other work has shown these "one-to-many" input-output approaches to be

[3] Keer and Baković (1999) analogously addresses the optionality of overt and covert operators in English relative clauses; some wider empirical and typological consequences of the analyses in that paper and the present one are taken up in Baković and Keer (2001).

problematic; for instance, Legendre et al. (1995) argue based on extraction facts that candidates with and without the complementizer in English must arise from different inputs. Under the approach advocated here, these candidates do arise from different inputs, as necessary, with no problematic additions to the theory. The analysis laid out below is otherwise parallel to Grimshaw's in that it employs the same set of markedness constraints, thereby retaining the essential explanatory virtues of Grimshaw's overall system.

2. DATA AND ASSUMPTIONS

As noted above about (1), repeated below, the complementizer *that* is often optional in English embedded clauses (relatives and complements). We follow Doherty (1993) in assuming that the structural distinction between *that* -clauses and *that* -less clauses boils down to a distinction in verbal extended projection level, CP and VP/IP, and henceforth note it as such.[4]

(1) Complementizer optionality in relatives and complements

a. The coat [**that** he always wears *t*] doesn't fit him.
   The coat [he always wears *t*] doesn't fit him.

b. I think [**that** the coat doesn't fit him].
   I think [the coat doesn't fit him].

Sometimes the complementizer is obligatory — for instance, when there is subject extraction from a relative (2) or when there is adjunction to a complement (3).

(2) Complementizer obligatoriness in relatives

a. The coat [$_{CP}$ **that** *t* doesn't fit him] might fit me.

b. *The coat [$_{IP}$ *t* doesn't fit him] might fit me.

[4] The distinction between VP and IP is reduced here to IP for purely expository reasons; see Grimshaw (1997a).

(3) Complementizer obligatoriness in complements

a. I think [$_{CP}$ **that** on him, no coat looks good *t*].

b. *I think [$_{IP}$ on him, no coat looks good *t*].

In some other cases, the complementizer is obligatorily *absent* — for example, when there is subject extraction from a complement (4).

(4) Complementizer absence

a. *Which coat do you know [$_{CP}$ **that** *t* doesn't fit]?

b. Which coat do you know [$_{IP}$ *t* doesn't fit]?

Suppose that the functional distinction between an embedded CP and an embedded IP is their specification for the feature [SUB] (for *subordination*) — CPs are specified as [+SUB] and IPs are specified as [–SUB].[5] Suppose further that an embedded clause may be freely specified in the input as [+SUB] or as [–SUB]. To regulate the disparity between input and output in terms of the two values this feature, we must have the following faithfulness constraint.

(5) FAITH[SUB]: The output value of [SUB] is the same as the input value.

3. ANALYSIS

3.1 ESSENTIALS

If there are no relevant markedness constraints ranked higher than FAITH[SUB] that distinguish a particular pair of CP and IP forms, FAITH[SUB] ensures that the faithful output candidate for each type of input embedded clause is the optimal candidate in its candidate set, and hence a grammatical option. The input embedded clause specified as [+SUB] will surface as a [SUB]-faithful CP, and the one specified as [–SUB] will surface as a [SUB]-faithful IP. The effect will be

[5] The [SUB] feature might be completely dependent on the structurally-defined property of being an embedded clause, explaining the universal lack of (declarative) complementizers in matrix clauses.

the optionality of a complementizer, as in the examples in (1). (MARK stands for any and all markedness constraints that militate against either the CP or IP form in these cases.)

T1. Complementizer optionality: FAITH[SUB] ≫ MARK

Input: [+SUB]	FAITH[SUB]	MARK
a. ☞ CP		(*)
b. IP	*!	(*)

Input: [–SUB]	FAITH[SUB]	MARK
a. CP	*!	(*)
b. ☞ IP		(*)

On the other hand, if the output structure of a particular form is such that a higher-ranked markedness constraint distinguishing the contrasting CP and IP forms is relevant, then the result is neutralization of the contrast. This neutralization can be in favor of the CP form as in T2, resulting in the obligatory complementizer effect in (2) and (3), or in favor of the IP form as in T3, resulting in the complementizer absence effect in (4). (MARK-XP stands for some markedness constraint that militates against the XP form in each of these cases.)

T2. Complementizer obligatoriness: MARK-IP ≫ FAITH[SUB]

Input: [+SUB]	MARK -IP	FAITH[SUB]
a. ☞ CP		
b. IP	*!	*

Input: [–SUB]	MARK -IP	FAITH[SUB]
a. ☞ CP		*
b. IP	*!	

T3. Complementizer absence: MARK-CP ≫ FAITH[SUB]

Input: [+SUB]	MARK -CP	FAITH[SUB]
a. CP	*!	
b. ☞ IP		*

Input: [–SUB]	MARK -CP	FAITH[SUB]
a. CP	*!	*
b. ☞ IP		

In the following subsections we make some explicit claims as to the actual content of the schematic constraints MARK, MARK-IP and MARK-CP to account for the particular cases exemplified in (1) – (4). These constraints are the same ones employed by Grimshaw (1997a) in her account of the same set of data; the major difference here is their necessary ranking with respect to the new constraint FAITH[SUB], required by our approach to optionality. We begin in the middle, with complementizer obligatoriness.

3.2 COMPLEMENTIZER OBLIGATORINESS …

3.2.1 … IN RELATIVES

Recall from (2), repeated below in (6), that subject extraction from a relative induces the obligatory presence of the complementizer.

(6) Complementizer obligatoriness in relatives

a. The coat [$_{CP}$ **that** *t* doesn't fit him] might fit me.

b. *The coat [$_{IP}$ *t* doesn't fit him] might fit me.

In Grimshaw's account, this is because subject traces in relative clauses potentially run afoul of the constraint T-GOV, demanding that traces be governed (Déprez 1994). Relative clauses (in English) are adjoined structures and are thus not governed. The subject trace in (6b) is thereby also ungoverned, violating T-GOV. On the other hand, the subject trace in (6a) is governed by the complementizer *that*, satisfying the constraint.

It should be quite clear how T-GOV naturally takes the place of MARK-IP in T2 to explain the obligatory complementizer effect in (6), as shown in T4. The rank of T-GOV above FAITH[SUB] explains why the particular configuration of subject extraction from a relative clause requires a complementizer. If the input effectively lacks one (that is, if it is specified as [–SUB]), the low-rank of FAITH[SUB] relative to T-GOV means that the optimal output is going to violate FAITH[SUB] and be a less-marked CP, rather than the [SUB]-faithful but more-marked IP.

T4. Complementizer obligatoriness in relatives: T-GOV ≫ FAITH[SUB]

Input: [+SUB] relative clause with subject extraction	T-GOV	FAITH[SUB]
a. ☞ The coat [$_{CP}$ **that** *t* doesn't fit him] might fit me.		
b. The coat [$_{IP}$ *t* doesn't fit him] might fit me.	*!	*

Input: [–SUB] relative clause with subject extraction	T-GOV	FAITH[SUB]
a. ☞ The coat [$_{CP}$ **that** *t* doesn't fit him] might fit me.		*
b. The coat [$_{IP}$ *t* doesn't fit him] might fit me.	*!	

3.2.2 … IN COMPLEMENTS

Now recall from (3), repeated below in (7), that adjunction to a complement also requires presence of the complementizer. Again, following Grimshaw's account, adjunction to the highest node of an embedded clause violates PURE-EP (McCloskey 1992, Doherty 1993).

(7) Complementizer obligatoriness in complements

a. I think [$_{CP}$ **that** on him, no coat looks good *t*].

b. *I think [$_{IP}$ on him, no coat looks good *t*].

The presence of the higher complementizer *that* in (7a) means that the highest node of the complement (here, CP) is not adjoined to, satisfying PURE-EP. In (7b), with no complementizer, the highest node of the complement (here, IP) *is* adjoined to, violating the constraint. All that remains to be said is that PURE-EP, like T-GOV, dominates FAITH[SUB], as shown in T5.[6]

T5. Complementizer obligatoriness in complements: PURE-EP ≫ FAITH[SUB]

Input: [+SUB] complement clause with adjunction	P URE -EP	FAITH[SUB]
a. ☞ I think [$_{CP}$ **that** on him, no coat looks good *t*].		
b. I think [$_{IP}$ on him, no coat looks good *t*].	*!	*

Input: [–SUB] complement clause with adjunction	P URE -EP	FAITH[SUB]
a. ☞ I think [$_{CP}$ **that** on him, no coat looks good *t*].		*
b. I think [$_{IP}$ on him, no coat looks good *t*].	*!	

The ranking of PURE-EP above FAITH[SUB] explains why adjunction to a complement clause requires a protective complementizer. If the input lacks one (if it is specified as [–SUB]), the low rank of FAITH[SUB] relative to PURE-EP means that the optimal output is going to violate FAITH[SUB] and be a protected CP, rather than the [SUB]-faithful but impure IP.

[6] The full form of Grimshaw's PURE-EP also rules out movement into the head of a subordinate clause (see Rizzi & Roberts 1989, McCloskey 1992), which is irrelevant to our immediate concerns here

3.3 COMPLEMENTIZER ABSENCE

Unlike relative clauses, complement clauses are complements (to verbs), and are hence lexically governed. Subject traces in complements satisfy T-GOV whether there is a complementizer or not. However, recall from (4), repeated below in (8), that a complementizer is ungrammatical here, unlike subject traces in relative clauses.

(8) Complementizer absence

a. *Which coat do you know [$_{CP}$ **that** *t* doesn't fit]?

b. Which coat do you know [$_{IP}$ *t* doesn't fit]?

This is because the subject trace in (8a) violates T-LEX-GOV, demanding that traces not only be governed but *lexically* governed (Déprez 1994).[7] If T-LEX-GOV also dominates FAITH[SUB], then given a choice between an IP with a lexically-governed subject trace and a CP with a nonlexically-governed trace, T-LEX-GOV prefers the former, at the expense of FAITH[SUB].

T7. Complementizer absence: T-LEX-GOV ≫ FAITH[SUB]

Input: [+SUB] complement clause with subject extraction	T-LEX-GOV	FAITH[SUB]
a. Which coat do you know [$_{CP}$ **that** *t* doesn't fit]?	*!	
b. ☞ Which coat do you know [$_{IP}$ *t* doesn't fit]?		*

Input: [–SUB] complement clause with subject extraction	T-LEX-GOV	FAITH[SUB]
a. Which coat do you know [$_{CP}$ **that** *t* doesn't fit]?	*!	*
b. ☞ Which coat do you know [$_{IP}$ *t* doesn't fit]?		

The relative ranking of T-GOV and T-LEX-GOV is irrelevant here, since they make partially overlapping rather than conflicting demands. T-GOV is satisfied by both lexical and nonlexical government, so it fails to distinguish the forms in (8) and the work is left entirely up to

[7] Subject traces in English relatives uniformly violate T-LEX-GOV because realtives are adjuncts. This raises the question of whether a lexical governor could be inserted to satisfy both T-GOV and T-LEX-GOV in relative clauses with subject extraction, instead of the nonlexical governor that, perhaps even satisfying FAITH[SUB]. Some constraint militating against lexical insertion of this sort must dominate T-LEX-GOV and FAITH[SUB], forcing their violation in this case. This constraint could be Grimshaw's (1997a) FULL-INT, a kind of faithfulness constraint.

the conflict between T-LEX-GOV and FAITH[SUB] in T7.

3.4 COMPLEMENTIZER OPTIONALITY

Any markedness constraint that prefers CPs to IPs or vice-versa in the contexts that the complementizer is optional must be dominated by FAITH[SUB] in order for the optionality to be possible. The assumption in Grimshaw (1997a) is that no such constraints exist, and that optionality emerges as a consequence of the optimality of two indistinguishable structures. But, there is at least one constraint in Grimshaw's system that does distinguish the forms in question: HD-RT, demanding rightmostness of a head in its projections, militates against the CP candidate relative to the IP candidate. This and any other similar constraints must be outranked by FAITH[SUB] in order to prevent them from changing input [SUB]-specifications, as shown in T8.

T8. FAITH[SUB] ≫ HD-RT

Input: [+SUB] embedded clause		FAITH[SUB]	HD-RT
a. ☞	The coat [$_{CP}$ **that** he always wears *t*] doesn't fit him. I think [$_{CP}$ **that** the coat doesn't fit him].		*
b.	The coat [$_{IP}$ he always wears *t*] doesn't fit him. I think [$_{IP}$ the coat doesn't fit him].	*!	

Input: [–SUB] embedded clause		FAITH[SUB]	HD-RT
a.	The coat [$_{CP}$ **that** he always wears *t*] doesn't fit him. I think [$_{CP}$ **that** the coat doesn't fit him].	*!	*
b. ☞	The coat [$_{IP}$ he always wears *t*] doesn't fit him. I think [$_{IP}$ the coat doesn't fit him].		

Given that constraints like HD-RT do exist, then something like FAITH[SUB] must exist to account for the optionality of the complementizer in these forms. Note that it is possible that HD-RT does not exist in English and other languages with the opposing constraint HD-LFT being dominant: as Grimshaw (1997b) has argued, the direct opposition of alignment constraints like HD-LFT and HD-RT completely inactivates the lower-ranked of the two (modulo the way that it can emerge to prevent optionality, as just shown above). HD-LFT and HD-RT can thus be seen as different parametric settings of the same universal constraint schema. Since English requires HD-LFT to be dominant for independent reasons (see Grimshaw 1997a: 406-409), HD-RT needn't be

posited and thus won't be in the way to prevent complementizer optionality.

The elimination of HD-RT does not, however, change the difficult-to-reconcile fact that *any* constraint distinguishing the candidates in free variation will subvert Grimshaw's (1997) tied-candidate approach to optionality. In fact, this argument applies to other one-input/many-outputs approaches to optionality, in particular to Pesetsky's (1998) tied-constraint approach. Pesetsky's definition of a constraint tie crucially allows for a constraint to distinguish candidates that would otherwise tie. Advocates of this approach, like advocates of Grimshaw's, must deny the existence of such constraints applying to the cases where a tie is desired.

3.5 SUMMARY

Complementizers in English embedded clauses are only optionally present, except under certain conditions when they are either obligatorily present or obligatorily absent. The optionality itself is due to the purely functional nature of the values of the [SUB] feature, its arbitrary specification in the input, and the faithfulness constraint FAITH[SUB]. When imposed upon by conflicting markedness constraints such as T-GOV, PURE-EP, and T-LEX-GOV, FAITH[SUB] gives way and there is loss of optionality in just those contexts that the markedness constraints are sensitive to.

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