Coaxing operators out of hiding: Contiguity Theory and the 'hard nuts'*

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SUMMARY

This squib concerns itself with a puzzle in a corner of English grammar; the operator involved in *tough*-movement, which must normally be null, may be overt under special circumstances discussed by Huddleston (1971), Berman (1974), Grimshaw (1975), and Chomsky (1977). I show that the conditions determining when this operator may be pronounced may be derived from more general conditions posited by Richards (2016) on independent grounds.

RÉSUMÉ

Cet article s'intéresse à une curiosité ésotérique de la grammaire anglaise : l'opérateur impliqué dans le mouvement tough, qui doit habituellement être nul, peut se concrétiser en certaines circonstances élaborées par Huddleston (1971), Berman (1974), Grimshaw (1975) et Chomsky (1977). Je montre que les conditions déterminant quand cet opérateur peut se prononcer pourraient dériver de conditions plus générales postulées indépendamment par Richards (2016).

1 HIDING OPERATORS

Chomsky (1977) discusses examples like those in (1) (and see Huddleston 1971, Berman 1974, and Grimshaw 1975 for earlier discussion):

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(1) a. This is a pleasant room [**in which** to work]
b. This is an easy violin [**on which** to play sonatas]

For Chomsky, the boldfaced phrases in (1) form part of an argument that *tough*-movement involves what we would now call A-bar movement of an operator. In (1), Chomsky suggests, the operator in question is overt.

This suggestion raises the question of why these operators can be overt in (1), but not in examples like (2):

(2) a. *This room is pleasant [**in which** to work]
b. *This violin is easy [**on which** to play sonatas]

Ordinary *tough*-movement examples like the ones in (2) cannot have overt operators in them. What is it about the examples in (1) which allows operators to appear?

The examples in (1) are instances of what Berman (1974) named the 'hard nut' construction; in this construction, an adjective that can take an infinitival complement modifies a noun, and the infinitive appears in postnominal position:

(3) a. a *difficult* person *to deal with*
b. an *easy* pet *to clean up after*
c. a *hard* nut *to crack*

One thing we should pause to make certain of is that the infinitives in (1) are in fact associated with the adjectives modifying the nouns. English does, after all, have infinitival relative clauses:

(4) a. a room [**in which** to work]
b. a violin [(***which**) to play sonatas on]

Moreover, the infinitives in (1) share with the infinitival relatives in (4) the property of banning overt DP operators and allowing overt PP operators:[1]

(5) a. a pleasant room [**in which** to work]
b. a pleasant room [(***which**) to work in]

Perhaps the examples in (5), then, simply involve a noun modified both by an adjective and by an infinitival relative, with no particular connection between the adjective and the infinitive?

O'Flynn (2008) offers an argument against this possibility. She notes that infinitival relatives are unlike *tough*-infinitives in allowing gaps in subject position:

(6) a. I'm looking for a problem [*to deal with* __]
b. I'm looking for a person [__ *to deal with you*]
(7) a. John is difficult [*to deal with* __]
b. *John is difficult [__ *to deal with you*]

[1] I will not offer an account of this restriction in this squib. See Richards (2010) for one proposal.

The infinitives that appear in examples like (5), she points out, pattern in this regard with *tough*-infinitives, banning subject gaps:

(8) a. He is a *difficult* person [*to deal with* __]
b. *He is a *difficult* person [__ *to deal with you*]

O'Flynn concludes, I think correctly, that the infinitives in such examples are indeed *tough*-infinitives, and not infinitival relatives.

Having established this, we can return to the question in (1)-(2), repeated here as (9)-(10); why can *tough*-infinitives have overt operators just in the 'hard nut' construction, and not in cases of ordinary *tough*-movement?

(9) a. This is a pleasant room [**in which** to work]
b. This is an easy violin [**on which** to play sonatas]
(10) a. *This room is pleasant [**in which** to work]
b. *This violin is easy [**on which** to play sonatas]

In the next section I will try to connect the contrast in (9)-(10) with another contrast of a similar kind, and propose an explanation for both.

2 CONTIGUITY THEORY

In Richards (2016), I propose universal conditions on the relation between syntax and phonology. The conditions are meant to account for a number of generalizations about different kinds of movement, and certain kinds of adjacency requirements. In general, the idea is that cross-linguistic differences are to be attributed to phonological parameters rather than syntactic ones. There are, for example, universal conditions on the prosody of wh-questions, which are met in different ways in different languages depending on independently observable differences in the prosodic systems of those languages; consequently, some languages require overt wh-movement and others do not, not because of an abstract syntactic feature or property of a feature, but because of how a universal prosodic condition interacts with language-particular prosodic properties.

One of the conditions I posit has the consequence in (11):

(11) **Selectional Contiguity**
If a head X selects a head Y, X and Y must be linearly adjacent.

In Richards (2016) I try to derive (11) from more general conditions, in ways that I will not try to summarize in this squib. (11) is taken to constrain Spellout domains, which is part of an account for some of its apparent counterexamples. Consider (12), for example:

(12) I think [**that** Mary **will** win the prize]

In (12), there are heads on either side of the subject *Mary* which select each other (perhaps the boldfaced C and T), but they are not linearly adjacent, in violation of (11). In this particular case, the status of C as a phase head will save the sentence; C triggers Spellout of its complement TP, and C and T are therefore not in the same Spellout domain, with the consequence that (11) does

not apply to them.

I use the condition in (11) to derive a variety of facts, which I will not try to fully review here; interested readers can see Richards (2016) for further discussion. One set of facts that I relate to the condition in (11) are discussed by Haider (1990, 2004), and have to do with conditions on extraposition in German. Haider points out, first of all, that it is possible in German under certain circumstances to extrapose complement clauses to the right of the verb:

(13) [*Gesagt,* ***wie es funktioniert***] hat er dem Kollegen leider nicht
said how it works has he the.DAT colleague.DAT unfortunately not
'[*said how it works*], he unfortunately hasn't __ to his colleague'

In (13), the complement clause *wie es funktioniert* 'how it works' has been extraposed to the right of the matrix verb *gesagt* 'said'. The resulting VP has also undergone movement, into the first position of the V2 matrix clause.

Haider points out that this second movement is a precondition for the first; if the VP does not front, extraposition to the right of the verb is impossible:

(14)*…daß er dem Kollegen leider nicht *gesagt,* ***wie es funktioniert*** hat
that he the.DAT colleague.DAT unfortunately not said how it works has
'…that he has unfortunately not said how it works to his colleague'

We can understand the ill-formedness of (14) as a consequence of the condition in (11); the heads *hat* 'has' and *gesagt* 'said' need to be adjacent, and extraposing the complement clause to a position between them breaks the adjacency relation between them.

In (13), by contrast, Selectional Contiguity between *hat* and *gesagt* has already been broken by whatever forces drive the creation of V2 order; we might imagine the derivation starting with movement of *hat* from its head-final underlying position into head-initial C, unavoidably breaking the adjacency relation between the two heads (and since the movement is driven by the phase head C, the heads in question will no longer be in a Spellout domain to which (11) can apply). Since Selectional Contiguity between *hat* and *gesagt* does not hold, there is no reason not to extrapose a complement clause between them, as is done in (13).

3 BACK TO THE 'HARD NUTS'

With this approach to Haider's data in mind, we can return to the problem of the 'hard nuts'. Why is an overt operator possible in (15b), but not in (15a)?

(15) a. *This violin is easy [**on which** to play sonatas]
b. an easy violin [**on which** to play sonatas]

We can think of the contrast in (15) as another version of the contrast identified by Haider. In (15a), there are heads on either side of the overt operator (perhaps *easy* and the embedded C) which are in a selection relation, and are constrained by the requirement of Selectional Contiguity; having an overt operator at the beginning of the embedded clause makes Selectional Contiguity impossible.

In (15b), by contrast, the infinitive has been extraposed away from the adjective *easy*, breaking the Contiguity relation between the adjective and the highest head in the infinitive. Consequently, since the adjective and the beginning of the infinitive are no longer in a Contiguity relation, an overt operator can appear with impunity at the beginning of the infinitival clause.

4 CONCLUSION

This squib has been an exploration of contrasts like those in (15) above; why are operators able to be overt in some contexts, but required to be covert in others? To the extent that the account given above is compelling, it invites us to consider this kind of question in a variety of other domains. We might hope, for example, to arrive at a principled explanation for why certain types of operators are reliably null cross-linguistically (for instance, the operator involved in the creation of parasitic gaps). Conversely, we will want to be sure that Selectional Contiguity does not rule out examples like (16):

(16) I don't know [**which violin** to play sonatas on]

Since Selectional Contiguity constrains selection relations between heads, one possible account of the well-formedness of (16) would say that the verb *know*, in the relevant sense, selects for a question, and that this question can be supplied either by an interrogative complementizer or by a wh-phrase.

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