Anti-locality and subject extraction

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In many languages, $\overline{\text{A}}$-extraction of local subject arguments behave differently from the extraction of other arguments, for example in triggering specialized morphosyntactic processes or being subject to additional restrictions. I argue that many such interactions are due to an anti-locality constraint on movement, which bans movement which is too short. Subject extraction is often distinguished due to the high canonical position of subjects in their clauses (e.g. Spec,TP), making their movement to the clause edge (e.g. Spec,CP) uniquely in danger of violating the Spec-to-Spec Anti-Locality constraint. Concretely, three subject extraction asymmetry behaviors are discussed and analyzed: complementizer-trace effects, anti-agreement effects, and the Highest Subject Restriction on optional resumption. In each case, we observe that the special behavior associated with subject extraction (a) can be obviated by increasing the distance of movement, (b) also applies to exceptionally high non-subjects, and (c) does not correlate with other subjecthood properties. These facts are straightforwardly explained by the anti-locality-based approach to these asymmetries, but are challenging for alternative accounts.

Contents

1 Introduction

Many languages of the world morphosyntactically differentiate the $\overline{\text{A}}$-extraction of subjects from the $\overline{\text{A}}$-extraction of non-subject arguments. In this paper, I argue that many such asymmetries are due to the fact that subjects canonically occupy a high structural position in the clause (e.g. Spec,TP), together with a general ban on movement that is "too short." In particular, suppose movement is generally constrained by an *anti-locality* constraint, blocking movement of the subject from its canonical position (Spec,TP) to its $\overline{\text{A}}$-landing site (Spec,CP), in (1a). This will result in an outright ban on subject extraction or (more likely) force a language to use an alternative strategy to extract the subject argument. In contrast, non-subjects would not be affected by such a ban because non-subjects have a lower base position (1b), making their movement to Spec,CP not "too close."

(1) **Anti-locality may block movement from canonical subject position:**

    a. <u>Movement from Spec,TP to Spec,CP is "too short":</u>

        * ... [$_{CP}$ *subject* [$_{TP}$ _____ ...

    b. <u>But movement to Spec,CP from lower may be long enough:</u>

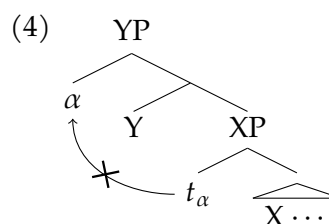   ✓ ... [$_{CP}$ *non-subject* [$_{TP}$ ... [... _____

For concreteness, in this paper, I consider the anti-locality constraint in (2) and schematized in (4) below. Assuming no intervening functional projections, movement of the subject directly from Spec,TP to Spec,CP in (1a) is blocked by this constraint.

(2) **Spec-to-Spec Anti-Locality:**

    (Deal, 2019: 408, based on Erlewine, 2016: 431)

    Movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.

(3) Movement from position α to β *crosses* γ if and only if γ dominates α but does not dominate β.

(4)

This particular anti-locality constraint has been adopted in a range of recent work, including Bošković 2016; Douglas 2016, 2017; Amaechi and Georgi 2019; Deal 2019; Issah and Smith to appear.[1] The idea that various subject/non-subject extraction asymmetries are due to an anti-

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[1]The constraint was originally stated by Erlewine (2014, 2016) as applying specifically to $\overline{\text{A}}$-movement, but Deal 2019 argues that the constraint also holds of A-movement, giving the "generalized" formulation adopted here in (2). In all cases that we discuss here, however, the relevant movement steps will be $\overline{\text{A}}$-movement.

    Here I set leave aside the question of the deeper motivation for this constraint (2), but refer the interested reader to Bošković 2016 for one explanation from considerations of Labeling. I also only consider extraction asymmetries

locality constraint on movement has also been argued for based on other formulations of anti-locality, for example in Schneider-Zioga 2007 and Cheng 2006.[2]

A subject extraction asymmetry which is due to the anti-locality constraint in (2) will show a range of diagnostic properties. I summarize these properties in (5):

(5) **The anti-locality signature of subject extraction asymmetries:**

Suppose a particular behavior α is canonically associated with the extraction of subjects, but not of non-subjects. If this behavior α is due to Spec-to-Spec Anti-Locality (2), we may expect to observe:

a. obviation of α when additional material is added above the subject position,

b. the application of α to the extraction of non-subjects that are exceptionally high, and

c. no correlation of α with other subjecthood properties such as case.

I briefly sketch the logic behind these predictions in turn. Suppose subject extraction triggers the behavior α because movement from its canonical position (Spec,TP) to Spec,CP violates Spec-to-Spec Anti-Locality. First, if additional material above the above the canonical subject position reflects the presence of an additional projection between TP and CP, its addition should make movement from Spec,TP to Spec,CP exceptionally licit, obviating the special behavior α (5a).

Second, we expect that a behavior α canonically associated with subject extraction will also apply to the extraction of non-subjects if they are exceptionally high in the clause, as their extraction may then be in danger of violating Anti-Locality (5b). The Anti-Locality constraint in (2) is not sensitive to the identity of the moved constituent. Its frequent association with subjects is only due to subjects' canonically high position in the clause. By this same token, the

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which are arguably due to the organization of the CP clause edge, i.e. concentrating on the effects of Spec-to-Spec Anti-Locality between CP and the immediately lower projection (generally TP).

[2]Many other authors over the past two decades have also proposed constraints against movement which is too local, although differing in the specific configurations that are targeted. Pesetsky and Torrego 2001 and Abels 2003 argue against movement from Compl,XP to Spec,XP (*Comp-to-Spec*), which is not relevant for our discussions here; see also Kayne 2005. Saito and Murasugi 1999 argue against the adjunction of Spec,XP to XP (*Spec-to-Adj*). Saito and Murasugi 1999; Bošković 1994, 1997, 2005 then propose that movement must cross at least one phrase, which unifies Comp-to-Spec and Spec-to-Adj; see also Boeckx 2009. Grohmann 2003 proposes a ban against movement within certain domains of the clause, which is the constraint invoked in Schneider-Zioga 2007 and Cheng 2006. See Grohmann 2011 for a review of formulations from the 90's and 2000's.

Here I focus only on the Spec-to-Spec Anti-Locality in (2) and do not intend to adjudicate whether or not any of these other forms of anti-locality are indeed enforced in grammar. As the reader can verify, these other forms of anti-locality do not make the positive predictions that Spec-to-Spec Anti-Locality makes throughout this paper, making them inadequate (or less adequate) for accounting for the range of subject extraction asymmetries discussed here.

anti-locality approach to subject extraction asymmetries predicts no sensitivity to other subjecthood properties such as being a nominal in a particular morphological case or having been in a local relationship with T/Subject (5). These properties distinguish the anti-locality approach to subject extraction asymmetries from some recent alternative approaches such as that in Pesetsky and Torrego 2001, Rizzi 2006, Deal 2017.

In this paper, I survey three different types of subject extraction asymmetry behavior in languages of the world: complementizer-trace effects in §2, anti-agreement effects in §3, and Highest Subject Restrictions on optional resumption in §4. In each section, I present an analysis for the subject extraction asymmetry behavior based on Spec-to-Spec Anti-Locality and then discuss further details regarding these behaviors in different languages. We will see that these behaviors indeed show the properties in (5) that make them characteristic of a configurational, anti-locality-based restriction.

2   Complementizer-trace effects[3]

We begin by discussing *complementizer-trace effects*, where long-distance subject extraction requires a particular variant of embedded complementizer morphology. By way of example, consider the English *that*-trace effect contrast in (6) below. Perlmutter 1968 observes that English long-distance subject extraction requires the declarative complementizer local to the gap to be the null rather than *that*, in (6a).[4] In contrast, long-distance extraction of non-subjects imposes no restriction on the choice of complementizer (6b). The requirement for there to be no overt complementizer is a quirk particular to subject extraction.

(6)   **The English *that*-trace effect:**   (Perlmutter, 1968: 214)

   a.   Who did he say [$_{CP}$ (***that**) ___ hid the rutabaga]?

   b.   What did he say [$_{CP}$ (**that**) Laura hid ___]?

Interestingly, this exact same interaction — an optional (overt or null) embedded complementizer, which must not be present specifically in the case of subject extraction — is observed in other languages as well. Examples include varieties of Arabic (Kenstowicz, 1983, 1989) and a subset of Scandinavian languages (see e.g. Lohndal, 2009), exemplified below:

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[3]Some of the arguments presented in this section are also discussed in Erlewine 2017, but with a different analysis. See footnote 8.

[4]David Pesetsky (Facebook, January 31, 2016) notes that the effect is also observed in passing by Fillmore (1963: 221).

(7) **Complementizer-trace effect in Levantine Arabic:** (Kenstowicz, 1989: 264)

    a. ʔayy   bint Fariid kaal [CP (***innu**) ___ ištarat l-fusṭaan]?
       which girl Fariid said   that   bought the-dress
       'Which girl did Fariid say bought the dress?'

    b. ʔayy   fusṭaan Fariid kaal [CP (**innu**) l-bint ištarat   ___]?
       which dress Fariid said   that   the-girl bought
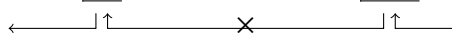   'Which dress did Fariid say that the girl bought?'

(8) **Complementizer-trace effect in Swedish:** (Boef and Franco, 2012)

    a. Jag känner mannen [RC (som) du hoppas [CP (***att**) ___ kommer hit]].
       I   know man.the   SOM you hope   that   comes   here
       'I know the man that you hope will come here.'

    b. Jag känner mannen [RC (som) du hoppas [CP (**att**) Maria ska träffa ___
       I   know man.the   SOM you hope   that Mary will meet
       imorgon]].
       tomorrow
       'I know the man that you hope Mary will meet tomorrow.'

There are also languages which exhibit a related similar subject extraction asymmetry, whereby a different form of complementizer is used specifically when the local subject is extracted. Here I concentrate on cases with the null/overt complementizer alternation as in (6–8) above, but I will also briefly touch on such cases in section 2.5 below. See Pesetsky 2017 for a recent overview of complementizer-trace effects.

    I argue that many such complementizer-trace effects are due to Spec-to-Spec Anti-Locality.[5] In all of these languages where the declarative complementizer may generally be pronounced or not, it is notably the unpronounced option which is chosen in the case of subject extraction. I suggest that this direction of the asymmetry is indicative of an important structural difference. The overt declarative complementizer reflects the projection of CP independent of TP, as in (9a). I assume that long-distance movement proceeds successive-cyclicly through intermediate Spec,CP due to phase impenetrability (Chomsky, 1973, 2008). Extraction of the subject from its Spec,TP position to the Spec,CP phase edge position will violate Spec-to-Spec Anti-Locality (9a), as also discussed in Bošković 2016.

(9) **Complementizer-trace effects due to anti-locality:**

    a. * ... [CP ___ *that/innu/att* [TP ____ ...

                                                                                   ⇒ movement too short!

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    [5]Douglas 2016, 2017 also presents an account of English *that*-trace effects based on Spec-to-Spec Anti-Locality, which attempts to also derive the so-called anti-*that*-trace effect whereby the *that* complementizer is obligatory in English subject relatives. The details of Douglas's proposal differs substantially from my own here in the details of English CP structure assumed. I refer the interested reader to Douglas's own work.

b. $\checkmark$ ... $[_{\text{CTP}}$ ____ ...

$\Rightarrow$ ok with no overt complementizer

I propose that the embedded clauses with no overt complementizer in these languages lack distinct C and T layers and are instead headed by a head which bundles the two heads C and T. Following Martinović 2015 and Erlewine 2018, I refer to this head as *CT*.[6] This bundled CT head functions as a phase head.[7] The bundled CT head allows for a subject to move to its canonical position (the specifier of TP) while also satisfying the need to be in the specifier of the phase head in order to move into the higher phase (9b). This proposal explains the observed asymmetry across a wide range of languages where null complementizers allow for local subject extraction but overt complementizers do not.[8]

With this basic proposal in place, in the rest of this section I present four sets of facts regarding complementizer-trace effects which support the anti-locality approach.

2.1 Complementizer-trace effects and inversion

The first argument for the anti-locality based approach to complementizer-trace effects comes the observation that null subject languages do not exhibit complementizer-trace effects. This is illustrated from Italian in (10). This correlation between the null subject parameter and the lack of complementizer-trace effects is robust. Gilligan 1987 shows, with a 100-language sample, that the general availability of postverbal subjects entails the lack of complementizer-trace effects.

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[6]See Hsu 2016, 2017 for recent, more general discussion on the bundling and splitting of functional heads, with review of related previous literature. Specifically for C and T, what I refer to as "bundling" may also be thought of as the result of the failure of C-T inheritance (Chomsky, 2008) to take place; see especially Ouali 2008; Legate 2011; Aldridge 2017 for previous proposals of this form.

[7]Following Bošković 1997, Ishii 2004 proposes that *that*-less complement clauses in English are not phases, lacking a CP projection and then allowing non-successive-cyclic movement, as part of his account of *that*-trace effects. However, a prediction of this account is that movement generally will not be successive-cyclic through *that*-less clause edges, and therefore moved constituents will not reconstruct there for binding. This prediction is false, as verified by the fact that *herself* can be bound by *Keely* equally well in (i) with and without an overt complementizer on the embedded clause.

(i)   [Which picture of herself$_i$] does Keely$_i$ think [(that) Ted likes ___]?   (modified from Barss, 1986: 25)

[8]See also Erlewine 2017 for an alternative analysis which is also compatible with the anti-locality motivation presented here. In brief, Erlewine 2017 proposes that null complementizers are special in allowing for exceptional movement from Spec,TP, precisely as they are unpronounced, under a Cyclic Linearization approach to successive cyclicity requirements (Fox and Pesetsky, 2005).

(10) **No complementizer-trace effect in Italian:** (Rizzi, 1982: 117)

Chi credi   [CP che verrà ___]?
who believe.2SG   that will.come
'Who do you believe will come?'

Rizzi 1982 proposes that in null subject languages, there is not a need to fill the preverbal subject position,[9] allowing for $\overline{\text{A}}$-extraction of the subject directly from a base position, as illustrated in (11). Movement from this lower position is not in danger of violating Spec-to-Spec Anti-Locality, and therefore does not result in the complementizer-trace effect interaction in (9). This explains the correlation between the null subject parameter and the lack of complementizer-trace effects.

(11) **No complementizer-trace effects in null subject languages:**

$\checkmark$ ... [CP ___ che/... [TP ∅ ...

Even in a language without null subjects, such as English, if the EPP can be satisfied through alternative means, the subject can be extracted across an overt complementizer by moving directly from its predicate-internal position.

This effect can also be observed in English, for subjects with weak quantifiers which are compatible with the *there*-construction. Rizzi 2006 presents the contrast in (12), arguing that the subject skips the canonical Spec,TP position in (12b), allowing for grammatical subject extraction across a complementizer.[10]

(12) **Avoiding anti-locality by skipping Spec,TP:** (Rizzi, 2006: 124)

a. * What do you think [CP ___ that [TP ___ is [Pred ___ in the box]]]?

b. $\checkmark$ What do you think [CP ___ that [TP there is [Pred ___ in the box]]]?

Rizzi 2006 and Rizzi and Shlonsky 2007 attribute the contrast in (12) to the subject position — Spec,TP here but Spec,SubjP for Rizzi and Shlonsky — being a "criterial" position from which further movement is disallowed. But the logic of of subject extraction across a complementizer being exceptionally available by skipping its high, canonical position applies equally to our anti-locality based account in (9) as well. Evidence from the following section will, however, lead us to abandon the "Criterial Freezing" account.

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[9]The subject position in such cases can be thought of as filled by an empty element, or it could be that these languages have a weak EPP, requiring no specifier of TP. See e.g. Roberts 2010 for discussion.

[10]Lohndal (2009: 216) observes that Danish uses the expletive pronoun *der* for the same function, facilitating subject extraction across its complementizer *at*.

2.2 Obviation by high adverbs

The second argument for the anti-locality approach to complementizer-trace effects comes from obviation by high adverbs. As noted in Bresnan 1977 and later discussed in Culicover 1993, the addition of an adverb between *that* and the subject trace position obviates the English *that*-trace effect.[11]

(13) ***That*-trace effect obviated by adjuncts:**   ((a–b): Bresnan, 1977; (c): Culicover, 1993)

    a. Who did she say [CP ___ that ***(tomorrow)** ___ would regret his words]?

    b. Which doctor did you tell me

                  [CP ___ that ***(during an operation)** ___ had had a heart attack]?

    c. Robin met the man [RC {that/who} Leslie said

         [CP ___ that ***(for all intents and purposes)** ___ was the mayor of the city]].

Similar adverb obviation effects are also attested in Swedish. Recall from example (8) above that long-distance subject extraction across the overt complementizer *att* is generally ungrammatical. This effect disappears when a high adjunct is introduced, as observed through the contrast in (14):

(14) **Adjunct obviation in Swedish:**   (Löwenadler, 2012: 214–215)

    a. * Jag pratar om   Peter, som jag misstänker [CP **(*att)** ___ måste gå på mötet].
       I   talk   about Peter who I   suspect   that   must go to meeting

      'I talk about Peter who I suspect must go to the meeting.'

    b. ? Jag pratar om   Peter, som jag misstänker [CP att **under rådande**
       I   talk   about Peter who I   suspect   that under current
      omständigheter måste gå på mötet].
      circumstances   must go to meeting.

      'I talk about Peter who I suspect under the current circumstances must go to the meeting.'

Adverb obviation is also observed in German, as in (15):[12,13]

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[11]Yusuke Imanishi (p.c.) asks whether the overt complementizer *that* is obligatory in such cases. It is not, as verified experimentally by Sobin (2002); see discussion there on page 544. This behavior is also noted by Pesetsky and Torrego (2001: 410 note 37), as it is counter to the predictions of their theory.

[12]Note that, in earlier literature, German has been described as not exhibiting complementizer-trace effects, but Bayer and Salzmann 2013 (and other works cited there) argue that a robust complementizer-trace effect *does* exist in German, but with other factors sometimes obscuring the effect. The German complementizer-trace effect will be discussed again below in §2.4.

[13]The moved DP in (15) is a dative experiencer, *wem*. As noted by Bayer and Salzmann (2013), the complementizer-trace effect in (15) thus poses a challenge for accounts of complementizer-trace effects which specifically make reference to the movement of nominative case targets, such as in Pesetsky and Torrego 2001. Additional challenges to such theories also come from the discussion of locative inversion, below.

(15) **Adjunct obviation in German:**   (Bayer and Salzmann, 2013: 281)

Wem   glaubst du, [CP dass ?*(**beim Busfahren**) ___ schlecht wird]?
who.DAT believe you   that   at.the bus.riding   nauseous becomes
'Who do you think will become nauseous during the bus ride?'

But not all adjuncts have this obviation effect. Rizzi (1997: 311) notes that it is only *high* adjuncts that obviate the complementizer-trace effect, attributing this observation to Kinsuke Hasegawa. This is illustrated with the contrast between the epistemic adverb *fortunately* and the manner adverb *quickly* in the English (16) below.

(16) **Obviation only by higher adverbs:**   (Brillman and Hirsch, 2016: 78)

a.   Who did John say [CP ___ that [AdvP **fortunately** [TP ___ ran to the store]]]?

b.   * Who did John say [CP ___ that [TP ___ [AdvP **quickly** [vP ran to the store]]]]?

Both the obviation of complementizer-trace effects by adjuncts and the fact that this is limited to structurally high adjuncts is explained by the Spec-to-Spec Anti-Locality approach to complementizer-trace effects, sketched in (9) above. Let us assume that the introduction of the relevant adjuncts in (13) and (16) involve the projection of additional functional structure between TP and CP (Cinque, 1999). As also noted in Bošković 2016, the addition of this extra functional material makes movement from Spec,TP directly to Spec,CP no longer violate Spec-to-Spec Anti-Locality, allowing for the use of the overt complementizer projecting a CP independent of TP. See also Browning 1996 for an earlier proposal which similarly attributes adverb obviation effects to the projection of additional structure.

(17) **Explaining adverb obviation of complementizer-trace effects:**

a. <u>Obviation by high adverb:</u>

$\checkmark$ ... [CP ___ that [AdvP $\boxed{\text{adverb}}$ [TP ____ ...

b. <u>No obviation by lower adverb:</u>

* ... [CP ___ that [TP ____ ... [AdvP $\boxed{\text{adverb}}$ ...

In contrast, such adverb obviation data present a challenge for a range of other approaches to complementizer-trace effects. For Rizzi and Shlonsky's approach to subject extraction asymmetries, briefly described in the previous section, material in "criterial" positions — including the subject position of Spec,TP, described as Spec,SubjP there — are unable to move out. The addition of higher material should not affect this status of the subject position being "criterial."[14] The interaction is also not predicted under other, less fine-grained anti-locality con-

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[14]See Rizzi 2014: 32ff for some discussion of adverb obviation and Criterial Freezing. In brief, Rizzi proposes there that the projection of an adverb allows for the introduction of an expletive which satisfies the EPP (Subject Criteria), allowing for the subject to skip its canonical position.

straints such as the "prolific domains" approach of Grohmann 2003. For Grohmann, clauses are organized into three domains — roughly, the extended CP, extended TP, and theta domain — and movement must cross between these domains. If the ungrammaticality of the original complementizer-trace violation (as in (9a) above) is due to Grohmann's anti-locality, moving within a single domain, it is unclear how the addition of an optional functional projection will make the movement now proceed across two different domains.

2.3 Locative inversion

The third argument for the anti-locality approach to complementizer-trace effects comes from locative inversion. Recall that the anti-locality approach to subject extraction asymmetries is purely configurational: its logic will apply to other arguments which are in an exceptionally high position in the clause, rather than specifically being tied to any other subjecthood properties. Bresnan (1977: 186) observes that locative PPs in *locative inversion* constructions (18) are also subject to complementizer-trace effects when fronted. This contrast is observed in (19): example (19a) involves $\overline{\text{A}}$-movement of the PP from the clause-initial locative inversion position, which requires a null complementizer. In contrast, the same PP can be extracted across an overt complementizer in (19b) where locative inversion did not take place.

(18) **Locative inversion:**

[PP In these villages] can be found the best examples of this cuisine.

(19) ***That*-trace effects triggered by extracted locative inversion PPs:** (Bresnan, 1994: 97)

 a. It's [PP in these villages] that we all believe

 [CP ___ **(*that)** ___ can be found the best examples of this cuisine].

 b. It's [PP in these villages] that we all believe

 [CP ___ **(that)** the best examples of this cuisine can be found ___].

There are broadly two families of analyses to the structure of locative inversion.[15] One approach is to take the locative PP to truly function as the subject in (18), and therefore occupy Spec,TP. With the locative PP in Spec,TP, the same approach to complementizer-trace proposed here in (9) would apply to these locative inversion PPs as well. This Spec,TP approach for locative inversion is suggested by Pesetsky and Torrego (2001: 407–408 note 20), but runs counter to the overall intuition of their analysis, that complementizer-trace effects specifically affect the extraction of arguments receiving nominative case.[16]

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[15]See Salzmann 2011 and Diercks 2017 for recent overviews and discussion.

[16]Their analysis is further challenged by complementizer-trace effects triggered by the extraction of non-nominative phrases, more generally, as we also observed in (15) above.

An alternative approach to locative inversion proposes that locative PPs are not in Spec,TP, but rather in a higher topic position. The examples in (20) and (21) from Stowell 1981 show that locative inversion is unavailable in various environments that disallow topics.

(20)   **No locative inversion in clauses that disallow topicalization:**   (Stowell, 1981: 272)

    a.   i.   * [That this book, you should read ___] is obvious.

          ii.   * I don't believe John's claim [that this book, you should read ___].

         iii.   * It shocked me [that this book, Bill liked ___].

    b.   i.   * [That [$_{PP}$ in the chair] was sitting my older brother] is obvious.

          ii.   * ...John's claim [that [$_{PP}$ in the chair] was sitting my older brother].

         iii.   * It shocked me [that [$_{PP}$ in the chair] was sitting my older brother].

(21)   **No locative inversion in certain nonfinite clauses:**

    a.   * I expect [$_{nonfinite}$ for [$_{PP}$ on this wall] to be hung a picture of Leonard Pabbs].[17]

    b.   * I anticipated [$_{nonfinite}$ [$_{PP}$ on this wall] being a picture].

    c.   * I believe [$_{nonfinite}$ [$_{PP}$ down the hill] to have rolled a ball].

              ((a–b): Aissen, 1975: 10 in Bresnan, 1994: 108; (c): Stowell, 1981: 271)

Such data argues against the complementizer-trace effects generally being limited to movement from Spec,TP to Spec,CP. If locative PPs are in a topic position (e.g. Spec,TopicP) projected above TP, movement from Spec,TopicP to Spec,CP must then be subject to complementizer-trace effects.

The anti-locality approach to complementizer-trace effects can explain the effects with locative inversion in (19), even if this higher position for locative inversion is adopted. Suppose the high topic position (TopicP) is only projected when necessary to host a topic, such as in locative inversion constructions.[18] With a PP moved to Spec,TopicP above the subject in (22a), movement of the locative PP from Spec,TopicP to Spec,CP will violate Spec-to-Spec anti-locality. Instead, the projection of a bundled C and Topic head — *CTopic* below — will allow for locative inversion and also put the locative PP at the edge of the embedded clause, at the cost of disallowing an overt complementizer.

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[17]Bresnan 1994 follows Aissen 1975 in also reporting a *for*-less version of (21a) as ungrammatical, and Stowell 1981 reports a similar *for*-less example to be ungrammatical as well: *I expect in the room to be sitting my older brother*. However, in my own judgment, the *for*-less examples are grammatical, clearly contrasting from their ungrammatical *for*-full variants.

[18]I assume with Rizzi 1997: 314–315 and Erlewine 2016: 475 that functional projections are only projected in the clausal spine if they contribute to the interfaces, either morphophonologically, interpretationally, or by hosting material such as specifiers. This view of clause structure is also present in the notions of the "functional sequence (fseq)" in Starke 2001 and the "hierarchy of projections" in Adger 2003. See also Bošković 2016: 42 fn. 28 for discussion of this proposal.

(22) **Complementizer-trace effects with locative inversion:**

    a.   * ... [CP ___ *that* [TopicP (PP) [TP ...

    b.   ✓ ... [CTopicP (PP) [TP ...

2.4 Yiddish prefield extraction

The fourth and final argument for the anti-locality approach to complementizer-trace effects comes from the behavior of complementizer-trace effects in Yiddish as described in Diesing 1990. Yiddish allows for embedded V2 clauses with an overt complementizer *az*, as in (23) below. Following Diesing, I assume the V2 verb is in T (her Infl), with the prefield — here, the italicized 'wine' — in Spec,TP.

(23) **Yiddish embedded V2:**   (Diesing, 1990: 44)

    Ir zolt   visn zayn, mayne libe kinderlekh, [CP az [TP *vayn* ken [VP men makhn
    you should know be   my   dear children   that   wine can   one make
    fun   troybn oykh]]].
    from grapes also
    'You should know, my dear children, that one can make wine from grapes also.'

Yiddish exhibits complementizer-trace effects targeting the extraction of material in the embedded prefield, not specifically subject arguments. Consider first the examples in (24). In this minimal pair, it appears that Yiddish exhibits a complementizer-trace effect whereby non-subjects but not subjects can be extracted from embedded clauses with *az*.

(24) **A complementizer-trace effect in Yiddish:**   (ibid.: 71)

    a.   Vos hot er nit gevolt [CP ___ az [TP *mir* zoln   [VP leyenen ___]]]?
        what has he not wanted   that   we should   read
        'What did he not want us to read?'

    b.   * *Ver* hot er moyre [CP ___ az [TP ___ vet [VP kumen]]]?
        who has he fear   that   will   come
        Intended: 'Who is he afraid will come?'

However, upon further inspection, what is specifically banned is not subject extraction across *az*, but rather extraction from the prefield — following Diesing, in Spec,TP, and in italics here — across the complementizer *az*. This is observed in two ways. First, in (25), we see that object extraction across the complementizer *az* is also ungrammatical if the object first occupied the prefield position, leaving a gap in Spec,TP.[19]

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[19]Hadas Kotek (p.c.) notes that the ungrammaticality of (25) also teaches us that the position here labeled Spec,TP has an EPP feature; i.e. movement of *vos* skipping the Spec,TP position must also be ungrammatical.

(25) **Ungrammatical object extraction from prefield:**   (ibid.: 71)

* *Vos*   hot er nit gevolt [$_{CP}$ ___ az [$_{TP}$ ___ zoln   mir leyenen ___]]?
what has he not wanted   that   should we read
Intended: 'What did he not want us to read?' (cf 24a)

Second, subject extraction itself becomes grammatical across the complementizer *az* if another constituent occupies the embedded prefield (Spec,TP). This is observed in (26):

(26) **Grammatical subject extraction with prefield object:**   (ibid.: 74)

Ver hot er nit gevolt [$_{CP}$ ___ az [$_{TP}$ *ot di bikher* zol   [$_{VP}$ ___ leyenen]]]?
who has he not wanted   that   PRT the books should   read
'Who did he not want to read the books?'

As noted by Branigan (2005), the complementizer-trace effect in Yiddish thus cannot specifically be about subject properties such as nominative case, contra Pesetsky and Torrego 2001. Instead, it is specifically about movement from the closest, embedded specifier position — here labeled Spec,TP — to Spec,CP.

Finally, I note that similar facts are described for German, which has traditionally been described as a language without complementizer-trace effects. Works such as Bayer and Salzmann 2013, however, have argued that German does have such effects, but they are less obvious due to embedded clauses in German not being V2, unlike Yiddish, and the availability of middle-field scrambling, among other factors. One example where the effect is clear was reproduced above in (15). Another is reproduced in (27):

(27) **A complementizer-trace effect with German topic extraction:**[20]

(Bayer and Salzmann, 2013: 282 from Salzmann, Häussler, Bader, and Bayer, 2013: 150)

a.   * *Gestern*   finde ich nicht, [$_{CP}$ ___ dass [$_{TopP}$ ___ hätte   getanzt werden
yesterday find I   not   that   had.SUBJ dance   become
sollen]].
should.
Intended: 'As for yesterday, I don't think that people should have danced.'

b.   Gestern   finde ich nicht, [$_{CP}$ ___ dass [$_{TopP}$ *dort* [___ hätte   getanzt werden
yesterday find I   not   that   there   had.SUBJ dance   become
sollen]]].
should.
'As for yesterday, I don't think that people should have danced there.'

The offending extraction here is of *gestern* 'yesterday' to the matrix prefield position. Bayer & Salzmann argue that *gestern* must have moved from the immediately post-*dass* position in (27a)

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[20]Here, SUBJ = subjunctive. I thank Martin Salzmann (p.c.) for clarifying discussion of their analysis of these examples.

— which they call Spec,TopP[21] — leading to ungrammaticality. The addition of *dort* in this topic position, however, allows for *gestern* to have moved directly from a lower position in the grammatical (27b). As Bayer & Salzmann conclude, the complementizer-trace effect in German "has nothing to do with subjecthood but is instead related to the highest clausal position" (p. 280), from which movement to Spec,CP would violate Spec-to-Spec Anti-Locality.[22]

2.5 Summary

I have argued here that complementizer-trace effects should be analyzed as due to Spec-to-Spec Anti-Locality, as recently also proposed in Bošković 2016. We have seen that the approach to complementizer-trace effects developed here is able to explain a number of peculiarities of these effect. Because movement of subjects from Spec,TP across an overt complementizer to Spec,CP is banned by anti-locality, we predict obviation of the effect by the addition of high functional material such as high adverbs. In contrast to other approaches to complementizer-trace effects, the anti-locality approach is purely configurational: it is not tied specifically to other subjecthood properties such as nominative case or being specifically in Spec,TP. Therefore, this approach to the effect successfully extends to complementizer-trace effects in locative inversion and with Yiddish embedded V2 clauses.[23] I furthermore presented a new analysis for *that*-less complement clauses and their equivalents, based on the bundling of function projections C and T into a single head (Martinović, 2015; Erlewine, 2018; Hsu, 2017; see also footnote 6 above).

We have concentrated here on the analysis of complementizer-trace effects where the complementizer varies between null and pronounced variants. As noted in the introduction to this section, there are also complementizer-trace effects where subject extraction triggers the use of a distinct complementizer instead. Examples include the well-studied French *que/qui* alternation or the similar Nupe *gànán/ʼán* alternation described in Kandybowicz 2006, 2009. Preliminary evidence suggests that such alternations are also amenable to an anti-locality-based account. For French, see Taraldsen 2002 and Rizzi and Shlonsky 2007 for analyses which are very close to Rizzi's (1982) analysis for Italian subject extraction in (10–11) above, where sub-

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[21]Hadas Kotek (p.c.) suggests that the relevant position in Yiddish — labeled Spec,TP here above and Spec,IP in Diesing 1990 — might also be associated with topichood properties, bringing the analyses of Yiddish and German discussed here even closer together.

[22]Another line of work argues that complementizer-trace effects — and many of their behaviors reviewed here — are due to a PF problem with the prosodic phrasing of complementizers followed by empty material (e.g. Kandybowicz, 2006, 2009; Sato and Dobashi, 2016). Although space constraints prohibit a full discussion of these approaches here, I note the existence of contrasts in Dutch and German which appear to argue against such approaches in full generality. See the discussion in Bayer and Salzmann 2013: 285 and in note 20 on page 321.

[23]See also Postal 2004 and Bruening 2010: 51–52 for an additional argument that the English *that*-trace effect cannot specifically be a fact about subject extraction.

jects are exceptionally allowed to skip their canonical, high position (Spec,TP) with *qui* but not *que*. For Nupe, Kandybowicz shows that the complementizer alternation exhibits obviation by high adverbs, similar to what I discussed in section 2.2 above, suggesting that an anti-locality constraint may underly this alternation as well. I will leave the evaluation of anti-locality-based approaches to these and other complementizer-trace effects for future work.

3   Anti-agreement effects

The next extraction asymmetry behavior which I discuss is anti-agreement effects. *Anti-agreement* refers to the disappearance of regular ϕ-agreement with an argument which is $\overline{\text{A}}$-extracted (Ouhalla, 1993). See Baier 2018 for a recent overview. A classic example comes from the Northern Italian dialect of Fiorentino, discussed in Brandi and Cordin 1989. Fiorentino exhibits subject agreement with both preverbal clitics and inflection on the tensed verb.

(28)   **Preverbal subjects in Fiorentino are agreed with:**   (Campos, 1997: 93)

Le ragazze **l' hanno** telefonato.
the girls   3pl has.3PL phoned
'The girls called.'

However, there is no agreement with *wh*-fronted subjects, with the verb and preverbal clitic realizing default third singular masculine features. This is a specific quirk of subject extraction; subject agreement is unaffected by non-subject extraction.

(29)   **No agreement with *wh*-fronted subjects:**   (Brandi and Cordin, 1989: 124–125)

Quante   ragazze {*le hanno, ✓gli   ha}   parlato con te?
How many girls   3pl has.3PL 3sgm has.3SGM spoken with you
'How many girls spoke with you?'

Brandi and Cordin relate the anti-agreement in (29) to the fact that postverbal subjects — possible when the subject is focused (their footnote 6) — are also not agreed with, as seen in (30). Based on this observation, and following Rizzi's (1982) analysis of subject movement in standard Italian, they propose that $\overline{\text{A}}$-moved subjects in Fiorentino do not move through Spec,TP, but rather $\overline{\text{A}}$-move directly from postverbal base position, foregoing full agreement.[24]

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[24]For Brandi and Cordin, the realization of default (third singular masculine) agreement is due to the preverbal subject position being filled by an expletive *pro*. Suñer 1992 shows that the agreement facts in Fiorentino and the related Trentino dialect are more complex, warning against attributing anti-agreement with *wh*-subjects to a non-agreeing postverbal base position. For example, she shows that first and second-person postverbal subjects continue to agree with the preverbal clitic and auxiliary. However, such facts are not necessarily incompatible with the approach presented here based on Brandi and Cordin. For example, postverbal subjects may still agree, but not fully — in this case, only with local persons — reminiscent of other languages such as Arabic or Icelandic where T

(30) **No agreement with postverbal subjects:** (ibid.: 115)

{***Le hanno,** $\sqrt{}$**Gl′ ha**} telefonato delle ragazze.
3pl has.3PL 3sgm has.3sGM telephoned some girls
'Some girls called.'

What is left open by this analysis is why the subject cannot to move to the preverbal subject position to control full agreement, followed by movement to Spec,CP. As noted by Erlewine (2016: 471–472), the explanation could be a constraint such as Spec-to-Spec Anti-Locality (2). I schematize the logic of this anti-locality-driven approach to anti-agreement effects in (31) below.

(31) **Anti-agreement due to anti-locality:**

   a. T agrees with the subject in Spec,TP:

     [$_{TP}$ *subject* ●━● T [$_{vP}$ ... ___ ...

   b. Movement of subject from Spec,TP to Spec,CP is ungrammatical:

     * [$_{CP}$ *subject* C [$_{TP}$ ___ ●━● T ... [$_{vP}$ ... ___ ...

                                     ⇒ movement too short (2)

   c. Movement of subject to Spec,CP instead skips Spec,TP:

     $\sqrt{}$[$_{CP}$ *subject* C [$_{TP}$ T(no agreement) ... [$_{vP}$ ... ___ ...

                                       ⇒ anti-agreement

Suppose (full) subject-verb agreement correlates with movement of the subject to a high position in the clause, Spec,TP (31a). Subsequent movement to Spec,CP would violate Spec-to-Spec Anti-Locality (31b). Instead, as Brandi and Cordin propose for Fiorentino, a language may have the option of exceptionally moving the subject directly from its VP-internal base position to Spec,CP, skipping the agreeing Spec,TP position (31c). This allows the subject to be extracted without violating anti-locality, but forgoing full agreement with the verb.[25]

In the remainder of this section, I highlight two sets of facts regarding anti-agreement effects in a range of languages which are naturally accounted for under the anti-locality ap-

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agrees fully with preverbal goals but only partially with postverbal goals. What is important for the logic here is that full agreement, for example with third person plurals, is not available for postverbal subjects. I leave a further investigation of these facts for future work, here using the basic Fiorentino pattern and Brandi and Cordin's analysis to illustrate the anti-locality approach to anti-agreement.

[25]Recall that Rizzi 1982 first proposed the idea that subject extraction can proceed in a null subject language by skipping its high, Spec,TP position, in order to explain the lack of complementizer-trace effects in Italian; see (11) above. However, unlike Fiorentino, standard Italian continues to agree with postverbal and skipping subjects, so we do not observe anti-agreement in that case. See Rizzi and Shlonsky 2007 for further discussion. See also Schneider-Zioga 2007 for a similar "skipping" derivation of anti-agreement effects in Kinande, but based on substantially different clause structure assumptions.

proach to anti-agreement: first, Ouhalla's Generalization regarding languages where negation does or does not obviate anti-agreement and, second, the existence of ergative languages with anti-agreement effects targeting intransitive subjects and transitive objects, i.e. absolutive arguments, as a natural class.

I should also note, however, that there are examples of anti-agreement effects which appear to be not amenable to the anti-locality-based approach sketched in (31) above. For example, Baier (2018: 30) notes that "there are clear examples of languages [with anti-agreement] where ϕ-agreement is not parasitic on movement to a specifier in an anti-local configuration with Spec-CP," making the first step of the account (31a) not apply. See for example Baier 2017's discussion of Tarifit Berber. Particularly challenging are cases of anti-agreement targeting arguments which in fact do not undergo movement, such as with $\overline{\text{A}}$-bound pronouns presented in Baier and Yuan 2017. Here I highlight the existence of anti-agreement effects which do exhibit signatures of an anti-locality-driven interaction, as in (5), leaving open the possibility that anti-agreement effects in some other languages will require an alternative explanation.

3.1 Obviation by negation and Ouhalla's generalization

The first piece of evidence supporting the anti-locality based explanation to anti-agreement effects come from the effect of negation on anti-agreement. In his pioneering work on anti-agreement, Ouhalla 1993 notes that in some languages, the addition of negation can obviate anti-agreement. Consider the Breton examples in (32). (32a) shows that *wh*-moved subjects do not exhibit agreement with the verb, resulting in default third singular agreement. However, by adding negation to the sentence in (32b), the expected subject agreement reappears, obviating anti-agreement.

(32) **Breton:** (Borsley and Stephens, 1989: 418, 424–425)

    a. Petore paotred a {*__lenn-ent__, ✓__lenn-e__} al levrioù?
       which boys   C   read-3PL, read-3SG the books
       'Which boys read the books?'

    b. Petore paotred [ne] {✓__lenn-ent__, *__lenn-e__} ket al levrioù?
       which boys   NEG read-3PL, read-3SG} NEG the books
       'Which boys did not read the books?'

However, Ouhalla also notes that there are languages where the addition of negation does not affect anti-agreement. An example comes from Turkish. In Turkish subject relatives, the relativized verb is unable to exhibit plural agreement with the subject (33), which is optionally available in regular SOV clauses. Here, the addition of negation does not obviate anti-agreement as seen in (33b).

(33) **Turkish:** (Ouhalla, 1993: 484, 500)

    a. [$_{RC}$ hoca-yi   gör-en-(**ler**)] öğrenci-ler
        lecturer-ACC see-PART-(*PL) student-PL

      'the students who saw the lecturer'

    b. [$_{RC}$ hoca-yi   gör-￼me￼-yen-(**ler**)] öğrenci-ler
        lecturer-ACC see-NEG-PART-(*PL)   student-PL

      'the students who did not see the lecturer'

This and other data led Ouhalla to the generalization in (34):

(34) **Ouhalla's (1993) Generalization:**

    The addition of negation obviates anti-agreement if and only if negation is syntactically higher than the agreement controller.

Descriptively, we see that negation involves a high head *ne* in Breton above the locus of subject agreement (in addition to a lower particle *ket*), whereas negation is in a structurally lower position in Turkish (33b), closer to the verb root.

    Ouhalla's Generalization is further supported by the effects of two different negators in Welsh, which was not discussed in Ouhalla 1993.[26] The Welsh copula has a special non-agreeing "relative" form (*sy* be.REL) used in subject extraction constructions. This is illustrated in (35). (35a) shows the agreeing copula, which cannot be used in the subject cleft in (35b).

(35) **Welsh (Celtic):** (Borsley, Tallerman, and Willis, 2007: 130–131)

    a. Dinas hardd **yw**   Caerdydd.
       city   beautiful be.PRES.3SG Cardiff

      'Cardiff is a beautiful city.'[27]

    b. Caerdydd {$^✓$**sy**, ***yw**}   'n ddinas hardd.
       Cardiff   be.REL, be.PRES.3SG PRED city   beautiful

      'It's Cardiff that is a beautiful city.'

Welsh has two different negators, *na(d)* and *ddim*, which differ in register and in their structural heights; see e.g. Borsley, Tallerman, and Willis 2007: 79 for discussion. In (36), we introduce these two different negators in subject extraction constructions. In (36a), we add the colloquial negator *ddim* which is structurally lower than the copula and it does not obviate anti-agreement. That is, the copula in (36a) must be the "relative non-agreeing" form *sy*. In contrast, in (36b–c) the structurally higher literary negator *na(d)* is added which precedes the copula. Here, we observe that the relative form is no longer used and instead the full agreeing form of the copula is

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[26]I thank Miriam Nussbaum (p.c.) for discussion of Welsh facts.

[27]The *yw* form is also special in that occurs in $\overline{\text{A}}$-fronting constructions, as opposed to the default PRES.3SG copula, *mae*. Example (36b–c) below shows that this copula nonetheless exhibits subject agreement: *yw* is the third singular form and *ydynt* is the third plural form.

introduced. The structurally higher negator obviates anti-agreement but the structurally lower negator does not, supporting Ouhalla's Generalization (34).

(36) **Welsh subject *wh*-questions:**   (Borsley et al., 2007: 139–140)

    a. <u>Low *ddim* negator (colloquial) ⇒ non-agreeing copula:</u>

       Pwy **sy** | ddim | yn   gwybod am   y   gân adnabyddus hon?
       who be.ʀᴇʟ ɴᴇɢ   ᴘʀᴏɢ know.ɪɴꜰ about the song well.known this
       'Who doesn't know about this well-known song?'

    b. <u>High *na(d)* negator (literary) ⇒ agreeing copula:</u>

       Pwy | nad | **yw**   'n   gwybod am   y gân adnabyddus hon?
       who ɴᴇɢ be.ᴘʀᴇꜱ.3ꜱɢ ᴘʀᴏɢ know.ɪɴꜰ about the song well.known this
       'Who doesn't know about this well-known song?'

   c. <u>Copula after high *na(d)* showing subject agreement:</u>

       Pa   rai | nad | **ydynt**   yn   addas?
       which ones ɴᴇɢ be.ᴘʀᴇꜱ.3ᴘʟ ᴘʀᴇᴅ suitable
       'Which ones are not suitable?'

This obviation of anti-agreement by high negation but not low negation echoes the obviation of complementizer-trace effects by high adverbs but not low adverbs in section 2.2. In fact, one example of complementizer-trace obviation was by the addition of negation in Swedish, in (14). Under the anti-locality approach to complementizer-trace effects and anti-agreement effects, this pattern is not accidental. Both subject extraction behaviors are reactions to the subject's canonical position being too close to the edge of the clause, bearing out prediction (5a) from the introduction.

Ouhalla's Generalization (34) is predicted by the anti-locality approach to anti-agreement schematized above (31). Suppose sentential negation reflects the presence of an additional functional head. If this functional head is structurally higher than the position of agreeing subjects, its addition will increase the distance between the subject position (Spec,TP) and its $\overline{\text{A}}$-landing site (Spec,CP). This allows subjects to first occupy its agreeing position and then $\overline{\text{A}}$-extract without violating Spec-to-Spec Anti-Locality (37a). In contrast, the projection of negation in a lower position will not affect the fact that the subject cannot be extracted to Spec,CP through the agreeing Spec,TP position without violating Spec-to-Spec Anti-Locality.

(37) **Deriving Ouhalla's Generalization:**

    a. <u>High negation allows for movement through Spec,TP, obviating anti-agreement:</u>

       $\checkmark$ [$_{CP}$ *subject* C [$_{NegP}$ | NEG | [$_{TP}$ ___ •—• T ... [$_{vP}$ ... ___ ...
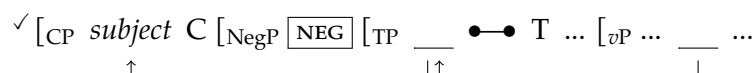
b. Low negation doesn't affect anti-agreement:

$$* [_{CP} \textit{subject } C [_{TP} \underline{\quad} \bullet\!\!-\!\!\bullet T \ ... \ [_{NegP} \boxed{NEG}] \ ... \ [_{vP} ... \ \underline{\quad} \ ...$$

$\Rightarrow$ movement too short!

Ouhalla's Generalization (34) is thus naturally derived by the anti-locality approach to anti-agreement, and can in turn be taken as evidence for this approach.

3.2   Absolutive anti-agreement

A second argument for the anti-locality approach to anti-agreement comes from anti-agreement effects in non-nominative-accusative languages. In sketching this approach to anti-agreement in (31) above, I assumed that T agrees with transitive subjects and intransitive subjects in Spec,TP, following the analysis of Brandi and Cordin 1989 and further discussion in Ouhalla 1993. But the logic of anti-agreement (31) would apply equally to other sets of arguments which canonically move to Spec,TP and concurrently agree with the verb.

An example of such a pattern of anti-agreement comes from Karitiâna (Tupian; Brazil). The verb in Karitiâna agrees with transitive objects (38a–c) and intransitive subjects (38d–e) — i.e. absolutive arguments. There is generally no agreement with transitive subject. There is no case marking on nominals.

(38) **Absolutive agreement in Karitiâna:** (Storto, 1999: 121, 157)

a. An **y**-ta-oky-t   yn.
    2sg 1sg-DECL-kill/hurt-NFUT 1sg
    'You will hurt me.'

b. Yn **a**-ta-oky-j   an.
    1sg 2sg-DECL-kill/hurt-IRR 2sg
    'I will hurt you.'

c. Taso **∅**-na-oky-t   boroja.
    man 3-DECL-kill/hurt-NFUT snake
    'The man killed the snake.'

d. **Y**-ta-opiso-t   yn.
    1sg-DECL-listen-NFUT 1sg
    'I listened.'

e. **A**-ta-opiso-t   an.
    2sg-DECL-listen-NFUT 2sg
    'You listened.'

f. **∅**-naka-hỹryɟa-t i/taso.
    3-DECL-sing-NFUT he/man
    'He/the man sang.'

Karitiâna furthermore exhibits absolutive-aligned extraction asymmetries, including anti-agreement with extracted absolutive arguments. Transitive subject extraction does not affect object agreement, as seen in (39a). In contrast, *wh*-movement of transitive objects and intransitive subjects takes the form of what Storto refers to as a cleft, reflected by the addition of the copula *-mon* in (39bb–c). (I return to the derivation of these structures below.) In these cases, the agreement morpheme is replaced by an invariant *i-* or *ti-* prefix, instantiating an instance of absolutive-aligned anti-agreement.

(39)   **_Wh_-questions in Karitiâna:**   (ibid.: 159, 194)

    a. <u>Transitive subject:</u>

        Morã **y**-sokõ'i?
        who   1sɢ-tie.up
        'Who tied me up?'

    b. <u>Transitive object:</u>[28]

        Mora-mon an   ti-hit-∅   taĵ-ty?
        who-cop   2sg ᴛɪ-give-ɴꜰᴜᴛ knife-ᴏʙʟ
        'Who did you give the knife?'

    c. <u>Intransitive subject:</u>

        Mora-mon i-hyryp?
        who-cop   ɪ-cry
        'Who cried?'

Anti-agreement also affects other $\overline{\text{A}}$-constructions, which do not underlying involve clefting. Focus fronting of transitive objects is particularly interesting, as it involves what Hale and Storto 1996 calls "eccentric agreement": in these cases, the verb bears the _ti-_ marker from (39b) above, together with exceptional agreement with the transitive subject, which is otherwise never agreed with. See (40). This too is an instance of anti-agreement, as the canonical agreement target — the transitive object — loses its verbal agreement due to its movement.

(40)   **Transitive object fronting, with exceptional subject agreement:**   (ibid.: 163)

    'Ep **aj**-ti-pasagngã-t ajxa.
    trees 2pl-ᴛɪ-count-ɴꜰᴜᴛ 2pl
    'Trees, you all are counting.'

    As noted by Erlewine (2016: 472–473), these absolutive-aligned anti-agreement effects in Karitiâna can also be explained by the anti-locality approach to anti-agreement. Storto (1997, 1998) proposes that absolutive arguments move to Spec,TP in Karitiâna, i.e. that Karitiâna is a "raising ergative" language (Bittner and Hale, 1996a,b).[29] Subsequent movement of an absolutive argument from Spec,TP to Spec,CP will violate Spec-to-Spec Anti-Locality. In contrast, the movement of transitive subjects is not in danger of violating Spec-to-Spec Anti-Locality, leading

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[28]The goal argument of the ditransitive 'give' verb here is the object, with the theme being an oblique (Storto, 1999: 194 fn. 77).

[29]The agreeing, absolutive argument is generally in a postverbal position as in (38) and therefore Karitiâna word order by itself does not reflect this EPP requirement on T. See Storto 1997, 1998 for discussion.

  Ergativity in Karitiâna is reanalyzed in Storto 1999, but I believe the facts discussed there which motivate the reanalysis are also compatible with the analysis for anti-agreement presented here, with the logic in (31). I leave this fuller discussion of Karitiâna for future work.

to no change in agreement. Absolutive agreement may proceed by skipping the agreeing position — schematized in (31c) above — with T then exceptionally agreeing with the transitive subject in the case of object focus fronting as in (40).[30]

The asymmetry observed in Karitiâna *wh*-questions also highlights an additional point. Recall that Karitiâna transitive object and intransitive subject *wh*-questions (39b–c) appear with a copular morpheme. Storto analyzes these structures as clefts involving nominalization of the verb, which explains their lack of agreement.[31] According to this view, there is no agreement because the verbs in (39b–c) are nominalized, not simply because their extracted arguments bypassed Spec,TP due to anti-locality, as sketched in (31). But at the same time, we can also ask what necessitate this nominalization/clefting strategy, i.e. why transitive objects and intransitive subjects cannot be *wh*-moved directly from their regular positions. *Wh*-movement without this clefting strategy is possible for transitive subjects (39a), and also with the extraction of obliques (see Storto 1999: 200ff). Here again, the canonical high position of absolutive arguments, in Spec,TP, together with Spec-to-Spec Anti-Locality, explains why these arguments cannot be extracted regularly, forcing an alternative derivation to be invoked. Even though the precise mechanism underlying why agreement disappears is different than what is sketched in (31) above, the key factor that explains the interaction may still be the anti-locality constraint on movement.

3.3 Summary

In this section, we described a basic approach to anti-agreement effects driven by anti-locality. If verbal agreement with certain arguments correlates with the movement of that argument to a structurally high position (Spec,TP), that argument may be unable to agree with the verb and simultaneously be $\overline{\text{A}}$-extracted to Spec,CP. Moving from Spec,TP to Spec,CP would violate Spec-to-Spec Anti-Locality, assuming no intervening functional projections. Instead, these languages have the exceptional option of $\overline{\text{A}}$-extracting the subject directly from a lower base position, skipping the agreeing Spec,TP position, or otherwise follow a different derivational strategy which also avoids this violation, as discussed briefly for Karitiâna above. We saw in this section that

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[30]We could also imagine an ergative language where it is the transitive subject (the ergative argument) that is associated with an exceptionally high position. This was Erlewine's proposal for Kaqchikel (Mayan; Guatemala) in Erlewine 2016, where the Spec-to-Spec Anti-Locality constraint in (2) was initially motivated. However, this analysis of Kaqchikel has since been contested; see Henderson and Coon 2018. Here we set aside whether or not anti-locality indeed is the right explanation for the extraction asymmetry observed in Kaqchikel. See also Levin 2018 and Coon, Baier, and Levin 2019 for more recent work on this extraction asymmetry in Mayan languages.

[31]Storto 1997 describes *-mon* as a case-licensing variant of C, which is also compatible with the general anti-locality approach here. If we suppose that movement to Spec,TP is necessary for case-licensing of absolutive arguments but anti-locality forces extracted absolutive arguments to skip Spec,TP, they will require an alternative case-licensor when extracted. I thank Kenyon Branan (p.c.) for also raising this possibility.

the addition of additional higher functional material can obviate anti-agreement, but not lower (Ouhalla's Generalization), as it increases the structural distance between the agreeing Spec,TP position and Spec,CP, and also that this approach to anti-agreement effects is not limited in its application to nominative-accusative languages with nominative anti-agreement.

4 Highest Subject Restrictions on optional resumption

The third and final subject extraction asymmetry considered will come from the behavior of optional resumptive pronouns in Hebrew and Irish and their so-called *Highest Subject Restriction* (HSR). Consider the Hebrew and Irish object relatives in (41) and (42) below.[32] The relative clause here can have a gap in the object position or a corresponding accusative pronoun.

(41) **Hebrew object relative:**   (Borer, 1984: 220)

ha-yeled [$_{RC}$ še= Rina 'ohevet (**'oto**)].
the-boy   that Rina loves   acc.3sgm
literally 'the boy that Rina loves (him)'

(42) **Irish object relative:**[33]   (McCloskey, 2002: 189)

a. an ghirseach [$_{RC}$ a ghoid na síogaí ___]
   the girl   aL stole   the fairies

b. an ghirseach [$_{RC}$ a-r   ghoid na síogaí **í**]
   the girl   aN-past stole   the fairies her

   literally 'the girl that the fairies stole away (her)'

In contrast, local subject relatives cannot utilize resumption, although long-distance subject relatives can. This effect — called the Highest Subject Restriction (HSR) — is again illustrated for Hebrew and Irish in turn. The local subject relatives in (43a) and (44a) must use the gap strategy, whereas both gapped and resumptive relatives are possible in the long-distance subject relatives in (43b) and (44b).

(43) **Hebrew local and non-local subject relatives:**   (Borer, 1984: 244, 247)

a. Highest subject relative:

   Ha-'arie [$_{RC}$ še= (***hu**) taraf   'et ha-yeled] barax.
   the-lion   that 3sgm devoured acc the-boy   escaped
   literally 'The lion that he devoured the boy escaped.'

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[32]I thank Hadas Kotek (p.c.) for extensive discussion of the Hebrew facts here.

[33]Following a common convention in this literature, the glosses *aL* and *aN* reflect complementizers triggering different morphophonological processes. See discussion in McCloskey 2001b. The *aL* complementizer is used for gapped relatives whereas *aN* is involved in relatives with resumptive pronouns, as will be discussed below.

b. Embedded subject relative:

ha-'iš [RC še= Xana 'amra [CP še= (**hu**) 'ohev 'arayot]
the-man that Hannah said that 3sgm loves lions

literally 'the man that Hannah said (he) loves lions'

(44) **Irish local and non-local subject relatives:**

a. Highest subject relative:

   i. an fear [RC a bhí ___ breoite]   ii. * an fear [RC a raibh **sé** breoite]
      the man aL was ill   the man aN was he ill

      'the man that was ill'   literally 'the man that he was ill'

      (Ó Baoill and Maki, 2012: 361)   (McCloskey, 2002: 201)

b. Embedded subject relative:   (McCloskey, 2002: 201)

an fear [RC a-r shíl muid [CP go raibh **sé** breoite]]
the man aN-PAST thought we C was he ill

literally 'the man that we thought he was ill'

In this section, I argue that the HSR on resumption observed in (43–44) is best accounted for by the Spec-to-Spec Anti-Locality constraint on movement (2). Here I consider only resumptive pronouns in non-island contexts,[34] and I furthermore concentrate on constructions as in (41) and (42) where there is apparent optionality between the use of a resumptive pronoun or a gap. I follow Bianchi 2004 and Sichel 2014 in analyzing this apparent optionality as reflecting two different derivations. This difference is motivated by various semantic differences, discussed in detail in Bianchi 2004 and Sichel 2014. For example, the amount relatives in (45) disallow resumptive pronouns, even though they are object relatives which otherwise allow optional resumption as in (41–42) above.

(45) **Amount relatives disallow resumptive pronouns:**

a. ha-merxak [RC še= ani racti (***'oto**) lifney šana]
   the-distance that I ran ACC.3sgm before year

   'the distance that I ran a year ago.'   (Hebrew: Sichel, 2014: 662)

b. an méid ama [RC a chuir mé amú (***é**)]
   the quantity time.GEN a[35] put I out it

   'the time that I wasted'   (Irish: Bianchi, 2004: 80)

Following Sichel 2014, I identify the two relevant structures as head-raising and head-external relatives. In head-raising derivations as in (46a), the lower copy of the movement chain is sub-

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[34]So-called "intrusive" pronouns which appear inside islands (Sells, 1984) exhibit very different semantic and reconstruction behaviors (see e.g. Aoun, Choueiri, and Hornstein, 2001; Bianchi, 2004), and arguably result from very different derivations, so I set them aside here.

[35]In relation to footnote 33 above, neither Bianchi nor Sichel identify the complementizer in this example as *aL* or *aN*.

ject to an Economy constraint, forcing complete deletion — realization as a trace — if possible. In contrast, the pronoun in the head-external derivation in (46b) can always be pronounced. In situations where the lower copy in (46b) cannot be completely deleted for morphological reasons — for example, when the pivot is the object of a preposition, as I discuss below for Hebrew — both structures (46a) and (46b) yield relative clauses with resumptive pronouns, resulting in an obligatory resumptive pronoun with two possible underlying derivations.
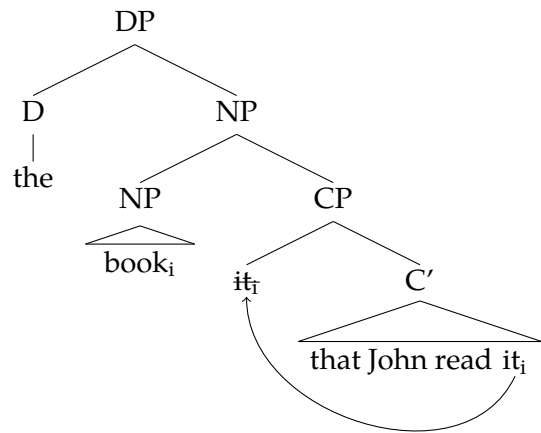
(46)　**The two sources behind apparently optional resumptives:**

(based on Sichel, 2014: 657)
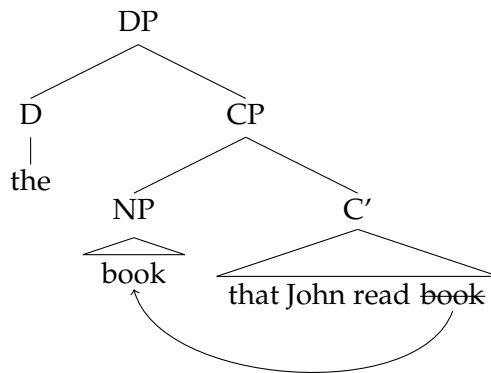
　　a.　Head-raising:　　　　　　　　b.　Head-external with movement:

The two different derivations account for semantic differences between resumption and gaps in optional resumption contexts, such as the contrast in (45) above. I refer the interested reader to Bianchi 2004 and especially Sichel 2014 for discussion of these semantic properties and how they are explained by the two derivations.

Here I specifically propose that the resumptive pronoun must covertly move to the edge of the relative clause CP in order to establish its binding relationship with the external head noun, but is not allowed to be pronounced in this Spec,CP position.[36] This is illustrated in (46b) above. This movement of the resumptive pronoun will be crucial for deriving the HSR. If the resumptive pronoun is too close to the edge of the clause, it cannot move to Spec,CP to satisfy the derivation in (46b) without violating Spec-to-Spec Anti-Locality. This logic is schematized in (47):

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[36]Sichel 2014 considers a few different variants of the head-raising derivation, but generally discusses the head-external derivation as not involving movement. However, she clearly acknowledges that this is not the only possibility, on page 677: "Given the facts considered so far, we simply cannot tell whether pronouns are compatible with this structure [with movement of the resumptive pronoun] or not. For simplicity, I will assume that they are not, and that an optional pronoun is confined to a nonmovement head-external RC." What I describe as a head-external derivation with movement in (46b) could also be thought of as a matching structure as in Sichel's (39), with the highest copy of the chain in Spec,CP deleted under identity with the matching head noun, and a lower position in the chain necessarily being pronounced as a pronoun.

(47) **Highest Subject Restriction due to anti-locality:**

    a. <u>Subjects are generally high, e.g. in Spec,TP:</u>

       [$_{TP}$ NP/*pro* ...

    b. <u>Moving from Spec,TP to Spec,CP is too short:</u>

       * ... [$_{CP}$ NP/*pro* [$_{TP}$ ____ ...

    c. <u>Subjects can skip Spec,TP, but then cannot realize a pronoun there:</u>

       ✓ ... [$_{CP}$ NP/~~pro~~ [$_{TP}$ ∅ ...   ⇒ Highest Subject Restriction

The derivations in (47b,c) reflect the CPs in both head-raising and head-external derivations, in (46) above. In a local subject relative, the head noun/pronoun must skip the canonical Spec,TP subject position. In the head-external derivation (46b), then, it will be impossible for a resumptive pronoun to be pronounced in its high subject position. This derives the HSR. In contrast, in a head-raising derivation, normally only the highest copy of the NP in Spec,CP is pronounced, so we are unable to detect whether the high canonical subject position is skipped or not. The effect of anti-locality is thus observed only in relative clauses with resumption, because the resumptive pronoun explicitly reflects the position from which an element moved to the edge of the clause.

As we saw with complementizer-trace and anti-agreement effects above, this anti-locality based approach to the HSR predicts that the HSR is not specifically a constraint that affects all and only highest subjects. Instead, it bans a particular structural configuration: movement of the highest specifier under CP (regularly Spec,TP) to Spec,CP. We thus predict obviation by the addition of intervening material (48a), as well as the extension of HSR effects to other arguments that are exceptionally high in the clause (48b). We will see that both predictions are borne out in Hebrew, in section 4.1, followed by evidence of obviation (48b) in Irish in section 4.2.

(48) **Predictions of the anti-locality account to the HSR:**

    a. <u>Additional material can obviate the HSR:</u>

       ✓ ... [$_{CP}$ NP/*pro* [$_{XP}$ ... [$_{TP}$ ____ ...

    b. <u>The HSR also applies to other exceptionally high arguments:</u>

       * ... [$_{CP}$ NP/*pro* [$_{XP}$ ____ [$_{TP}$ DP$_{subject}$ ...

4.1 Hebrew

We first take a closer look at Hebrew relative clauses with resumption, starting with some apparent exceptions to the HSR. As noted in Borer 1984 and Shlonsky 1992, Doron 1982 observes that fronting another constituent to the edge of a relative clause allows for grammatical highest subject relatives with resumption. This is illustrated in the examples in (49).

(49) **Grammatical highest subject resumptives with intervening material:**

    a. ha-ʾiš   [RC še= [rak ʾal   kesef] (**hu**) xošev]
        the-man   that only about money 3sgm thinks
        'the man that thinks only about money'   (Borer, 1984: 247)

    b. ha-ʾiš   [RC še= {ʾetmol,   ha-šavuʾa še=avar}   (**hu**) pagaš ʾet Dina]
        the-man   that yesterday the-week that=passed 3sgm met   ACC Dina
        'the man that {yesterday, last week} met Dina'   (Hadas Kotek, p.c.)

Assuming that the fronted constituents in (49) are hosted by a dedicated functional projection such as FocusP, the fronted material in (49) has the effect of increasing the structural distance between the preverbal subject position and Spec,CP. This allows for a pronoun to first occupy the canonical preverbal subject position — which I will refer to as Spec,TP — and then move to Spec,CP in a head-external derivation (46b), resulting in pronunciation of the resumptive pronoun in the preverbal position.

Highest subject resumptives can also be made grammatical by adding additional structure to the pronoun itself, rather than adding structure to the clausal spine. In (50), the focus particle *rak* 'only' is added to the subject *hu*. Again, the addition of *rak* adds another projection between the overt pronoun *hu*'s overt position and its covert landing site, making this movement possible, even with no additional material between the TP and CP projections.

(50) **Grammatical highest subject resumptive with focus particle:**   (Hadas Kotek, p.c.)

    [?] ha-ʾiš   [RC še= [rak **hu**] ʾohev ʾarayot]
        the-man   that only 3sgm loves lions
        literally 'the man$_i$ that only *he$_i$* loves lions'

Yet another way to increase the distance between a subject pronoun and the relative clause edge is to put them in a postverbal position. Consider the examples in the local subject relative clauses in (51). These examples involve a high register V2-like inversion structure, where another constituent is fronted to the preverbal position, leaving the subject postverbal. In this case, resumption is allowed.

(51) **Grammatical postverbal highest subject resumptives:**   (Hadas Kotek, p.c.)

    a. ha-'iš   [RC še= 'et matana natan **hu**   le-Dina]
       the-man   that ACC present gave 3sgm DAT-Dina

    b. ha-'iš   [RC še= le-Dina natan **hu**   'et matana]
       the-man   that DAT-Dina gave 3sgm ACC present
      'the man that gave the present to Dina'

The subjects in (51) could be thought of as occupying either (a) a lower, VP-internal subject position or (b) their canonical Spec,TP position but with subsequent movement of the verb and another constituent to a higher position. In either case, the structural distance between the pronounced position of the subject relative pronoun and Spec,CP is increased, allowing for the necessary covert movement to Spec,CP without violating Spec-to-Spec Anti-Locality. These exceptions to the HSR in (49) and (51) are predicted by the anti-locality approach to the HSR, presented above.

    The anti-locality approach also predicts that the ban on resumption will also apply to other arguments at the high relative clause edge, right under its Spec,CP covert landing site. This prediction is borne out in the behavior of long-distance subject relatives with internal topicalization. Consider the following data. First, we note that resumptive pronouns can themselves be fronted within the relative clause, even long-distance. This is illustrated with a long-distance object relative with resumptive in (52). The {...} notation indicates that the pronoun *'oto* can be pronounced in any of the {...} positions.

(52) **Embedded fronting of object resumptive:**   (based on Borer, 1984: 250–251)

    ha-'iš   [RC še= {**'oto**}   Xana   'amra [CP še= {**'oto**}   Dalya ma'amina [CP
    the-man   that ACC.3sgm Hannah said   that ACC.3sgm Dalya believes
    še= {**'oto**}   Kobi pagaš {**'oto**}]]]
    that ACC.3sgm Kobi met   ACC.3sgm
    'the man that Hannah said that Dalya believes that Kobi met'

In the case of an embedded subject resumptive as in (43), repeated here in (53), fronting of the resumptive to the edge of the relative clause leads to ungrammaticality. See (54).

(53) **Embedded subject relative with resumption:**   = (43b), (ibid.: 247)

    ha-'iš   [RC še= Xana   'amra   [CP še= **hu** 'ohev   'arayot]
    the-man   that Hannah said.3SGF   that 3sgm loves.3SGM lions
    'the man that Hannah said loves lions'

(54) **Fronted embedded subjects are subject to the HSR:**   (ibid.: 250)

    * ha-'iš   [RC še= **hu** Xana   'amra [CP še= ___ 'ohev 'arayot]]
      the-man   that 3sgm Hannah said   that   loves lions
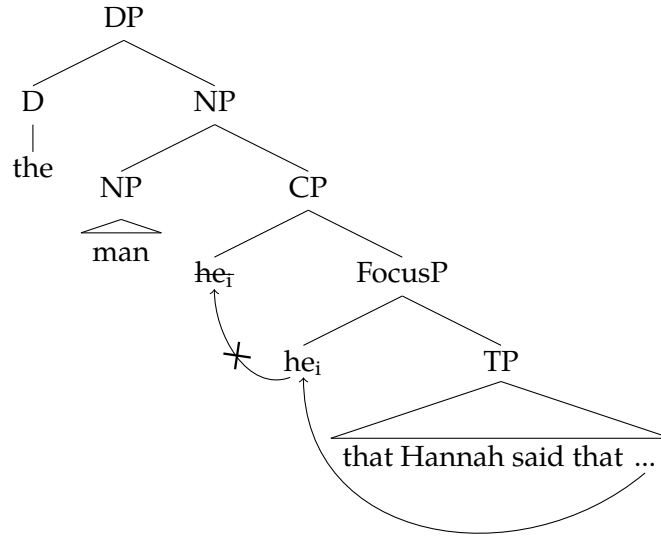   Intended: 'the man that Hannah said loves lions'

The data in (52–54) raise two questions. First, why is the internally-fronted subject resumptive pronoun in (54) ungrammatical? I propose that this ungrammaticality is the same effect as the HSR: resumptive pronouns are pronouns in a head-external derivation (46) which then necessarily move covertly to the relative clause edge Spec,CP. The structure in (54) would require fronting of the embedded subject pronoun to the high edge of the relative clause's highest clause, followed by covert movement to Spec,CP. This movement from Spec,FocusP to Spec,CP violates Spec-to-Spec Anti-Locality. This example shows that the HSR in Hebrew is not specifically a ban on resumptive pronouns for local subject extraction, in a manner predicted by the anti-locality approach to the HSR.

The second question that (52–54) raise is why this ban on high resumptives nonetheless only applies to subject pronouns (54) but not to object pronouns, as in (52). That is, the object resumptive *'oto* can be moved to the highest relative clause edge, preceding *Xana* in (52), unlike the subject resumptive *hu* in (54). I propose that this further subject/non-subject asymmetry is due to fact that subjects are the only nominals that are unambiguously preposition-less DP arguments in Hebrew. Pronouns in direct object position are generated with the DOM accusative marker *'et*, which in the examples here is realized together with the third singular masculine pronoun as *'oto*. Kotek 2014 shows that Hebrew *'et* is ambiguous between a preposition and a case marker. The availability of a prepositional parse for *'et* allows for the high fronted direct object relative resumptives as in (52).
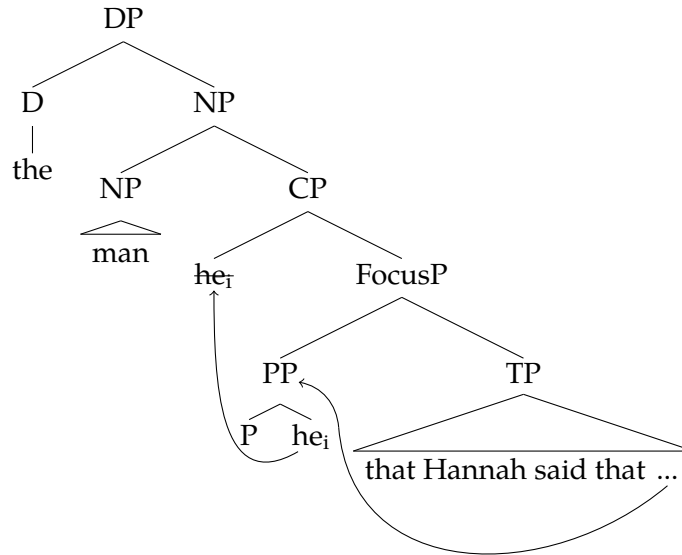
Consider the two head-external relative clause derivations in (55), following the derivation described in (46b) above, where the resumptive pronoun has been fronted to the edge of the relative clause's highest clause. The two derivations differ in whether or not the pronoun is bare or a prepositional object. For subject pronouns, there is no prepositional object option, and thus the only possibility would be the structure in (55a), where movement of the pronoun from its overt position to the relative clause edge violates Spec-to-Spec Anti-Locality. In contrast, object pronouns can be prepositional objects. Although the overt fronting within the relative clause moves the entire PP, as Hebrew has no option of preposition-stranding, covert movement of the pronoun to Spec,CP must be of the pronoun which matches the head noun, rather than the entire PP, as illustrated in (55b). Notice that this final movement step now crosses two maximal projections, PP and FocusP, and thus will not violate Spec-to-Spec Anti-Locality.

(55) **Two head-external relatives with pronouns in highest topic position:**

    a. <u>Bare pronoun:</u>

```
                    DP
                 ┌───┴────┐
                 D        NP
                 |     ┌───┴────┐
                the   NP        CP
                      |      ┌───┴────┐
                     man    he_i    FocusP
                                  ┌───┴────┐
                                 he_i      TP
                                      that Hannah said that ...
```

    b. <u>Pronoun in PP, e.g. with accusative *'et*:</u>

```
                    DP
                 ┌───┴────┐
                 D        NP
                 |     ┌───┴────┐
                the   NP        CP
                      |      ┌───┴─────┐
                     man    he_i     FocusP
                                  ┌────┴────┐
                                 PP         TP
                              ┌──┴──┐
                              P   he_i   that Hannah said that ...
```

In summary, we have seen that the Hebrew HSR exhibits the behaviors of an anti-locality-driven interaction: it is obviated by the addition of higher material and also applies to other, exceptionally high constituents. These behaviors are explained by optional resumptive pronouns being the result of a head-raising derivation (Sichel, 2014) with covert movement to the relative clause edge, as in (46b), with all movement being subject to Spec-to-Spec Anti-Locality. Along the way, we have established a new characterization for the Hebrew HSR as a ban on subject pronouns which are in the highest position inside the relative clause, rather than a ban specifically on local subject resumptive pronouns. The availability of object pronouns in this same high topic position also follows from the HSR's Spec-to-Spec Anti-Locality source, together with the independently motivated ambiguity of Hebrew accusative *'et* as a case marker or preposition (Kotek, 2014).

4.2 Irish

This anti-locality-based approach to the HSR on optional resumption is also motivated by data from resumption in Irish. $\overline{\text{A}}$-dependencies in Irish famously allow for both gapped and resumptive dependencies, correlating with the choice of local complementizer; see especially McCloskey 1990, 2001b, 2002. This optional resumption is subject to the HSR: in local subject $\overline{\text{A}}$-dependencies, only the gapped strategy is available.

I assume following the discussion in Bianchi 2004 and Sichel 2014 that relativization with optional resumption in Irish also involve two different derivations: head-raising and head-external with movement, as in (46). I furthermore assume that there is an underlying process of relativization in *wh*-constructions as well, again allowing both head-raising and head-external derivations.

Importantly, Ó Baoill and Maki 2012 shows that the addition of certain high adjuncts obviates the HSR. Consider (56) below. Here, the local subject relative 'the man who was supposedly ill' is grammatical with a resumptive pronoun, due to the addition of the conditional clause "if true," translated as 'supposedly.' Note that the relative clause in (56) contrasts minimally with (57), repeated from (44aii) above.

(56) **Grammatical local subject relative with conditional clause:** (Ó Baoill and Maki, 2012: 363)

  $^\checkmark$Tá [an fear [$_{RC}$ a   raibh **sé** breoite [más   fíor]] anseo anois.
  is   the man   aN was   he ill   if+COP true   here   now
  'The man who was supposedly ill is here now.'

(57) **Ungrammatical baseline local subject relative:** (McCloskey, 2002: 201)

  * an fear [$_{RC}$ a   raibh **sé** breoite]
  the man   aN was   he ill
  literally 'the man that he was ill'

Ó Baoill and Maki additionally present a range of other high adjuncts whose addition makes the resumptive strategy exceptionally available for highest subjects. Consider the baseline local subject *wh*-question in (58a), which is ungrammatical with resumption. The addition of high epistemic temporal and commitative adjuncts in (58b) makes the same resumptive dependency grammatical.

(58) **Adding epistemic, temporal, commitative adjuncts:** (ibid.: 363)

  a. * Cé   ar imigh **sé**?
     who aN left   he
     Intended: 'Who left?'

b. $\checkmark$Cé ar imigh **sé** {go hádhúil, is léir, is dócha, inné, trí lá ó shin,
who aN left he fortunately evidently probably yesterday three days ago

in am, le Máire}?
in time with Mary

'Who {fortunately, evidently, probably} left {yesterday, three days ago, in time,

with Mary}?'

This Irish data from Ó Baoill and Maki 2012 is also notable for the linear position of the additional material: in both (56) and (58), the additional material that obviates the HSR appears to the *right*, not linearly intervening between the resumptive pronoun and the edge of the clause. The contrasts here thus point to a *structural* source for the HSR, rather than a linear constraint, for example as has been proposed before for some complementizer-trace effects (see footnote 22).

This obviation of the HSR in Irish $\overline{\text{A}}$-dependencies is explained by the anti-locality approach to the HSR developed here. The addition of high adjuncts such as a conditional clause in (56) or the epistemic temporal and commitative adjuncts in (58) introduces additional functional material between TP and CP. This allows for the necessary covert movement of the subject pronoun from its canonical position (perhaps Spec,TP, but see discussion below) to Spec,CP without violating Spec-to-Spec Anti-Locality, allowing for grammatical local subject resumptive pronouns through the head-external derivation with movement in (46b).

A potential challenge for this account for the Irish HSR based on Spec-to-Spec Anti-Locality comes from the assumed canonical position for subjects in Irish. Irish is a VSO language which has traditionally been analyzed with the subject *not* moving to a high Spec,TP position. But here, note that McCloskey (2001a) presents a detailed discussion suggesting that subjects in Irish regularly *do* move out of their Spec,*v*P base position, to a higher position. It remains to be seen whether this derived subject position is indeed high enough to trigger a violation of Spec-to-Spec Anti-Locality with subsequent movement to Spec,CP. A possible solution involves the adoption of alternative formulations of anti-locality instead, which would block the movement of subjects from the canonical position in Irish to Spec,CP. See footnote 2 above for discussion of other anti-locality constraints on movement. Regardless of the precise assumptions regarding Irish subject positions and the relevant anti-locality constraint, however, the striking obviation facts from Ó Baoill and Maki 2012 presented here clearly support an anti-locality-based account for the Irish HSR, similar to what is proposed here.

4.3 Summary

In this section I presented evidence from Hebrew and Irish HSR effects, which show that these constraints on optional resumption also exhibit the signature of anti-locality-based interactions. HSR effects can be obviated by the addition of high structural material above the subject po-

sition, and the restriction also applies to embedded subjects in Hebrew when fronted to the highest clause-edge inside the relative clause. Here I presented a basic logic for HSR effects as following from Spec-to-Spec Anti-Locality, based on the analysis of optional resumption from Bianchi 2004 and Sichel 2014.

5   Conclusion

Subject extraction asymmetries have been a major focus of investigation in generative syntax over the past forty years. In this paper I've advocated that many of these subject extraction asymmetry behaviors have a common source: subjects are uniquely high in the clause (e.g. in Spec,TP), making their movement to the clause edge (e.g. Spec,CP) *too close*, violating an anti-locality constraint on movement. I developed and motivated anti-locality-based explanations for three of the most well studied subject extraction asymmetries — complementizer-trace effects, anti-agreement effects, and Highest Subject Restrictions on optional resumption — using the Spec-to-Spec Anti-Locality constraint on movement (Erlewine, 2016; Bošković, 2016; Deal, 2019; a.o.).

If a particular subject extraction asymmetry is due to anti-locality, we predict it to exhibit a particular signature. These predicted properties are repeated here in (59):

(59)   **The anti-locality signature of subject extraction asymmetries:**   =(5)

Suppose a particular behavior α is canonically associated with the extraction of subjects, but not of non-subjects. If this behavior α is due to Spec-to-Spec Anti-Locality (2), we may expect to observe:

a.   obviation of α when additional material is added above the subject position,

b.   the application of α to the extraction of non-subjects that are exceptionally high, and

c.   no correlation of α with other subjecthood properties such as case.

Each of the subject extraction behaviors studied here bears out these predictions, in various languages. Complementizer-trace effects are famously obviated by the addition of structurally high adjuncts, and also apply to non-subjects such as PPs in locative inversion and Yiddish pre-field constituents. Anti-agreement effects are also famously obviated by high negation, but not low negation, as observed by Ouhalla (1993), and also extends to transitive objects in languages where they are exceptionally high. The Highest Subject Restriction on optional resumption in Hebrew and Irish is also sensitive to obviation by higher material, with Hebrew fronting examples also showing the importance of the overt position of resumptive pronouns, not simply local subject status. Along the way, I offered concrete analyses for each of these effects based

on Spec-to-Spec Anti-Locality, which may be thought of as example interactions for other extraction asymmetries as well.

Note that I do not claim that all such subject extraction asymmetries are necessarily due to anti-locality. For example, Baier 2017 argues that anti-agreement effects in Tarifit Berber are not amenable to an analysis in terms of anti-locality in the manner I described in section 3. Alternative analyses also exist for other case studies presented here as well, and it is further possible that some of these phenomena have different sources in different languages.[37] But we've seen here that anti-locality *does* appear to be the right motivation for a number of subject extraction asymmetries in the world's languages. The existence of subject extraction asymmetries with this signature suggests that a constraint such as Spec-to-Spec Anti-Locality is necessary in diverse languages of the world.

Ultimately, the anti-locality approach must be evaluated individually for different extraction asymmetries in different languages. To this end, however, the nature of the anti-locality approach advocated for here has a natural methodological advantage. Baier (2017) notes that "these theories are *fragile*, in that they are very sensitive to minor differences in clause structure, both within a single language and crosslinguistically" (p. 368, emphasis his). This "fragility" is, of course, what is borne out but the various obviation facts documented above, for complementizer-trace effects, anti-agreement effects, and the HSR: the addition of just one high projection changes the treatment of the subject extraction, as predicted by Spec-to-Spec Anti-Locality. This "fragility" makes it easy to determine whether or not a particular extraction asymmetry should be attributed to the effects of such an anti-locality constraint. This point is also made by Deal (2019): "As a theoretical matter, I suggest we should welcome this aspect of the theory: fragility means straightforward falsifiability, which is a virtue" (p. 408 fn. 27). I wholeheartedly agree.

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[37] Many prominent alternative proposals attribute such asymmetries to other "subjecthood" properties, such as a relationship with T/Subj (Pesetsky and Torrego, 2001; Rizzi, 2006) or their morphological case (Deal, 2017), and the behaviors documented here appear less straightforward. Explaining the apparent anti-locality signature of these behaviors, highlighted here, poses a challenge for these approaches.

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