

Middles and Anti-locality: a generalized approach

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1 Introduction

It has been proposed that constraints on too-local movement, called Anti-locality constraints (Abels 2003, Grohmann 2003, Bošković 2007, Erlewine 2014), are responsible for observed asymmetries in subject vs. object \bar{A} extraction. Erlewine (2014) demonstrates this for a particular kind of subject-object asymmetry in Kaqchikel.

Kaqchikel transitive verbs have an ergative-absolutive agreement pattern that cross references both the subject and the object. This agreement pattern is preserved in object *wh*-questions but not subject *wh*-questions. For subject questions, agreement with the subject is blocked and the verb is instead marked with what is called an *Agent-focus* morpheme (this morpheme is unavailable in the object *wh*-questions).

- (1) a. Iwër x-Ø-u-tëj ri wäy ri a Juan.
yesterday COM-O_{3sg}-S_{3sg}-eat the tortilla Juan
“Yesterday Juan ate the tortilla.”
- b. Achike x-Ø-u-tëj /*x-Ø-tj-ö ri a Juan?
what COM-O_{3sg}-S_{3sg}-eat /*COM-O_{3sg}-eat-**AF** Juan
“What did Juan eat?”
- c. Achike x-Ø-tj-ö /*x-Ø-u-tëj ri wäy?
who COM-O_{3sg}-eat-**AF** /*COM-O_{3sg}-S_{3sg}-eat the tortilla
“Who ate the tortilla?”

Erlewine shows that this asymmetry disappears when there is another maximal projection between TP and CP. In (2), we see that the adverb *actually* causes the verb to recover subject agreement. His insight is that the occurrence of Agent Focus is related to the structural proximity of a subject in Spec TP and its target position Spec CP.

- (2) Achike **kanqtzij** x-Ø-u-tëj /*x-Ø-tj-ö ri wäy?
who actually COM-O_{3sg}-S_{3sg}-eat /*COM-O_{3sg}-eat-**AF** the tortilla
“Who actually ate the tortilla?”

Erlewine assumes that adverbs are projected on the clausal spine (Cinque 1999), rather than within a phrase. With this assumption he formulates the following constraint:

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

\bar{A} -movement of a phrase from the Specifier of XP must cross a maximal projection other than XP.

This constraint rules out subject movement from Spec TP to Spec CP unless there is another maximal projection between them. When there is no intervening material present, a derivation must be chosen in which the subject moves directly from its base generated position (Spec *vP*) to Spec CP. Due to the fact that the subject never stops in Spec TP, there is no subject agreement on the verb.

(4) **Short \bar{A} -movement of transitive subjects triggers AF:**

a. $*[_{CP} \text{ subject } C [_{TP} \text{ } ___ \dots]$



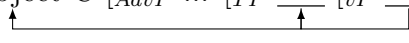
b. $\checkmark[_{CP} \text{ subject } C [_{TP} \dots [_{vP} \text{ } ___ \dots]]]$



No subject agreement

When an adverb is merged between Spec TP and Spec CP, subject movement from Spec TP to Spec CP is allowed, so the subject may move to Spec TP first. This derivation allows subject agreement to be reflected on the verb.

(5) $\checkmark[_{CP} \text{ subject } C [_{AdvP} \dots [_{TP} \text{ } ___ [_{vP} \text{ } ___ \dots]]]]]$



Subject agreement

Brillman and Hirsch (2015) have extended this analysis to explain English that-trace effects, another subject-object \bar{A} -extraction asymmetry. Object extraction out of embedded clauses allows the embedded complementizer *that* to be pronounced. Conversely subject extraction out of embedded clauses does not allow pronunciation of *that*.

(6) a. What does Gromit think (that) Wallace ate?

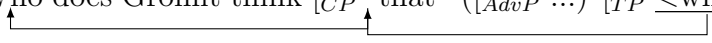
b. Who does Gromit think (*that) ate the pineapple?

They show that inserting an adverbial phrase like *for all intents and purposes* ameliorates the effect and allows pronunciation of *that*.

(7) Who does Gromit think (that) for all intents and purposes ate the pineapple?

Brillman and Hirsch propose that this effect is the result of subjects having to undergo too local movement from the embedded Spec TP to embedded Spec CP. When an intervening projection makes this movement step sufficiently anti-local, the effect goes away. Objects do not show this effect because they move from the embedded Spec *vP* to Spec CP, which is sufficiently anti-local.

(8) $[_{CP} \text{ Who does Gromit think } [_{CP} \text{ that } *([_{AdvP} \dots) [_{TP} \text{ } ___ \text{ who } ___ \text{ ate the pineapple?}]]]]]$



Without further discussing their proposal for how the embedded subject moves to the matrix clause, we see that Anti-locality constraints capture these \bar{A} phenomena. A concern we might have about the validity of such a constraint is that it appears to be limited to \bar{A} -movement. Trying to extend this constraint to A-movement must confront

an obvious difficulty, namely that subjects raise to Spec TP from Spec vP , which appears to violate this constraint.

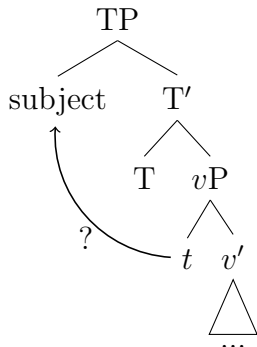


Figure 1: A-movement of the subject to Spec TP from Spec vP should violate Spec-to-Spec Anti-locality if it were applicable to A-movement.

Nonetheless, Deal (2017) proposes that we do in fact see Anti-locality effects for A-movement in Nez Perce. In Nez Perce applicative unaccusatives, the theme argument raises over the applicative argument to receive ergative case assignment. She argues that the theme must move across the applicative argument here because the applicative argument is trapped in Spec ApplP; movement from Spec ApplP to Spec vP is too short.

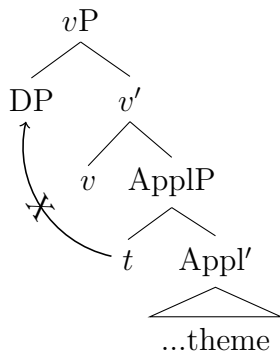


Figure 2: The applicative argument cannot escape the vP so the theme raises instead.

In this paper I will argue in favor of Deal’s proposal that Anti-locality effects are visible in A-movement, with cross-linguistic evidence from middles.

A long surprising fact about English is that in addition to active and passive sentences, there is also a third construction, canonically called the “middle construction”, which has a passive-like interpretation and obligatory adjuncts. By “passive-like interpretation”, I mean that the subjects of these clauses are interpreted as internal arguments of the verb.

- (9) a. Bureaucrats bribe *(easily).

- b. This book reads *(quickly).
- c. Beautiful landscapes photograph *(well).

In this paper I will argue that the modification requirement in these constructions is related to another fact, namely that these constructions also disallow *by*-phrases. I will refer to this fact as the *by*-phrase constraint.

- (10) a. Bureaucrats bribe easily (*by lobbyists).
- b. This book reads quickly (*by skilled readers).
- c. Beautiful landscapes photograph well (*by even amateur photographers).

Many other languages also have a third, passive-like construction in addition to active and standard passive constructions. Not all of them have a modification requirement as English does, but they all uniformly show the *by*-phrase constraint. For example Icelandic has such a construction, which is also canonically referred to as the middle, but it does not have an apparent modification requirement.

- (11) Hundurinn drap-st (*af logreglunni)
the.dog.NOM killed-MID by the.police
“The dog got killed.” (Sigurðsson 1989:268)

Lastly, in many languages these constructions are more restricted than standard passives in terms of what kinds of predicates can participate. The types of predicates that can form this third construction vary from language to language. I will ultimately show that these facts are another manifestation of the modification requirement, and can be explained by the same means.

- (12) a. *Grapes eat easily.
- b. Grapes are easily eaten.

I have thus far been careful not to confidently call any of these constructions the “middle construction” because of the semantic connotations typically associated with middles. The literature has frequently attributed specific semantics to English middles (namely that they are generic), but not to Icelandic middles, leading to some debate about what a true middle is. For the purposes of this paper I will refer to all constructions with 1) a passive-like interpretation, and 2) a *by*-phrase constraint, as middles. In some cases I will additionally show that previous claims about the semantics of middles do not all extend to the full range of facts.

In this paper I will show that we can trace the above varying cross-linguistic restrictions on middle formation to the absence of an agent in these clauses. We will derive the typology of modification requirements in middles cross-linguistically by making reference to 1) the amount of morphology that a language has in its middle, and 2) the movement patterns of subjects in that language. A central feature of the analysis is that A-movement is sensitive to Anti-locality constraints, which have previously been attributed mainly to \bar{A} -movement. Due to the absence of an agent projection in middles, objects are unable

to escape through the edge of vP because that movement step is too local, resulting in obligatory adjuncts or other projections to license movement.

The structural representation of middles that I will present includes a v head that does not select for an external argument, but defines an intermediate landing site for the object as it moves to subject position. This two step derivation will correctly predict certain positional requirements on the possible modifiers that license middles.

Since unaccusatives are also agent-less clauses, this account will also make predictions for the movement patterns of objects in unaccusative clauses. These predictions will be discussed after the analysis of middles has been presented more fully.

This analysis suggests a modified view of subject movement from Spec vP to Spec TP. In section 3.4, I motivate with evidence from ellipsis the existence of a Voice head above the external argument that is the locus of active/passive voice (Collins 2005, Merchant 2007). This Voice head is present in active/passive sentences, but not in middles, and allows subjects to raise to Spec TP without violating Anti-locality.

2 The Middle Construction

Languages differ in whether and how they form a middle. Amongst those languages that have a middle construction, some have a middle with no distinct morphology on the verb of any kind, some insert a reflexive clitic, and some have a “middle” morpheme. We have seen that English middles are morphologically null and have a modification requirement. The modification requirement will be more fully explored in the next section, but immediately clear is that it can take many forms.

- (13) a. Bureaucrats bribe easily.
b. Pianos play like harpsichords (because they both have keys, etc.).
c. The bread won’t cut (even though I thawed it).

Romance languages realize their middles with a reflexive clitic. This construction is sometimes called the “reflexive-marked passive”. Romance languages appear to have a weaker modification requirement than English, if any at all.

- (14) a. *Spanish*
este edificio **se** construyo (*por el rey) (en el año 1800)
this building REFL build.PERF by the king in the year 1800
“This building was built in 1800.”
b. *French*
Cette histoire **se** raconte (facilement) (*par/de Jean)
this story REFL tell easily by Jean
“This story can be told easily.” (Gross 1975:102)

Icelandic has a purely morphological middle, whose morphology is known to have evolved from a reflexive clitic. Icelandic has no apparent modification requirement. Other languages like Norwegian and Russian also have morphological middles known to have evolved from a reflexive, with varying modification requirements.

- (15) Hundurinn drap-st (*af logreglunni)
the.dog.NOM killed-MID by the.police
“The dog got killed.” (Sigurðsson 1989:268)

For languages like French and English, the middle construction has been claimed to have specific semantics, namely that middles are always generic (Condoravdi (1989), Fagan (1991), Ackema and Schoorlemmer (2006)). However this doesn’t seem to be a feature of middles more generally (see Icelandic and Spanish). Furthermore a closer look suggests that episodic middles are also possible in English.

- (16) a. The bread cut with a single stroke of the knife.
b. Those bureaucrats didn’t bribe so quickly this time around.

- c. (referring to rescued baby raccoons) “...they tamed so well so easily...” (https://www.youtube.com/watch?v=1t_ZoMxmYRE)

Lastly middles in all of these languages differ from unaccusatives in Levin’s (1993) words by “having an understood but unexpressed agent”. This can be seen by the fact that *all by itself* phrases can attach to unaccusatives but not middles. Unaccusative events are truly external argument-less while middle events have a logical external argument that is not the subject of the middle clause.

- | | |
|---|--|
| (17) Inchoative Unaccusatives | (18) Middles |
| a. The ice melted (easily/all by itself). | a. The bread cut *(smoothly) (??all by itself). |
| b. The cup broke (quickly/all by itself). | b. This book reads *(pretentiously) (??all by itself). |

The role of this understood agent in middles merits further investigation. As we have seen, middles cannot overtly represent an agent via a *by*-phrase. However they can host experiencer subjects introduced by *for*-phrases, much like tough predicates and gerund nominalized predicates (which also disallow *by*-phrases).

- (19) a. Bread cuts easily for/*by someone with the right knife.
 b. Cutting bread is easy for/*by someone with the right knife.
 c. For/*by someone with the right knife, bread is easy to cut.

We might conclude from these facts that all of these clause types, namely gerund nominalized predicates, tough predicates, and middles, are alike in that they are syntactically agent-less. The fact that agents are still semantically present, or “understood” in Levin’s terms, is a reflection of the fact that all verbs which participate in middle formation are also passivizable, and not members of the unaccusative class. In other words, these verbs all logically require an external argument, so these clause types must have a semantic mechanism for introducing one when the syntax doesn’t.

We can further show the lack of an agent in middles with the unavailability of purpose clauses in the following examples. While regular passives can control the subject of a purpose clause with an overtly or covertly projected *by*-phrase, middles appear unable to do so¹.

- (20) English
 a. The bread was cut quickly to placate the impatient customers.
 b. *The bread cut quickly to placate the impatient customers.
- (21) Norwegian
 a. all maten ble spist for å hindre sløsing
 all food-def was eaten for inf prevent waste
 “The food was eaten to prevent waste.”

¹Many thanks to Johannes Norheim for the Norwegian judgments!

- b. *all maten spistes for å hindre sløsing
all foot-def eat-MID for inf prevent waste
intended: “The food was eaten to prevent waste.”

This is a somewhat controversial test for agentivity given examples like *The thermostat is on low to save money*, which has no plausible agent in the matrix clause (Williams 1985). However further probing this concern reveals a more general contrast between stative and eventive clauses of these sorts in whether they can host purpose clauses. We see in (22b) that an eventive unaccusative matrix clause does not support a purpose clause, contrasting with the stative example in (22a). Similarly we see such a contrast in eventive vs. stative middles as well (though more fine-grained tests that differentiate purpose/rationale clauses may prove that the middles are a different case).

- (22) a. The thermostat is on low to save money. (Subject of purpose clause is controlled by contextually salient subject)
- b. ??/# The thermostat turned off to save money. (*The thermostat* controls the subject of the purpose clause)
- c. ?This type of bread cuts easily to save time and energy.
- d. *The bread cut quickly to placate the impatient customers.

The assumption that imperfective clauses are structurally richer than perfective clauses (Laka 2006) may help us understand these facts. Perhaps what is licensing the purpose clauses in (22a,c) is not a structurally represented agent in middles, but rather something independently introduced by the imperfective structure (either an impersonal subject, or an expanded contextual domain for potential subject controllers). In this way, we can proceed in taking (20,21) as additional support for the claim that middles are syntactically agent-less, with apparent counterexamples to the validity of this test being independently licensed by imperfective structure.

Still puzzling is that the lack of an agent should correlate with so many differences between passives and middles. Here we will focus on two striking differences: 1) the modification requirement, and 2) the different restrictions on which predicates can participate in middles vs. passives. Ultimately I will argue that these facts are related by constraints on movement of the internal argument through the edge of the verbal domain to subject position.

2.1 The modification requirement: English

We have seen that languages differ in whether their middle has modification requirements, with English being a striking example of a language with a strong requirement for modification. It has been frequently noted in the literature that the modification requirement for middles takes many forms. The most common types of “modification” include manner adverbs, negation, and modals. English may use any of these elements in its middle. Since these elements are not all modifiers, I will henceforth refer to them as *facilitators*², in the sense that they facilitate or enable middle formation.

²Thanks to Naomi Francis for helping me coin this term!

- (23) a. That potato peeled *(easily).
 b. That potato didn't peel. (..even though I just sharpened the peeler!)
 c. That potato should peel, the others look gnarly but this one is very smooth.

A fact that has received far less attention in the literature is that not all verbs behave like *peel* in English. While verbs like *peel* may use any of the above facilitators to license middles, verbs like *read* can only form middles with low adverbs. We see this illustrated in examples (24-25), contrasting verbs like *peel/cut* and *read*. I will describe the following two types of facilitation requirements in English as the “Weak” and “Strong” restrictions respectively.

(24) Weak Restriction

- | | |
|---|----------------------|
| a. The bread cut easily/quickly/like molasses. | ✓ <i>Low adverb</i> |
| b. The bread should/might/will cut. (...I thawed it yesterday) | ✓ <i>Modal</i> |
| c. The bread didn't cut. | ✓ <i>Negation</i> |
| d. A: I told you it would be hard to cut bread with a fork.
B: But the bread <i>did</i> cut! | ✓ <i>Verum focus</i> |

(25) Strong Restriction

- | | |
|---|----------------------|
| a. The book read easily/quickly/like a play. | ✓ <i>Low adverb</i> |
| b. *The book should/might/will read. | * <i>Modal</i> |
| c. *The book didn't read. | * <i>Negation</i> |
| d. A: I told you, books are for using as pillows, not reading!
B: *But the book <i>did</i> read! | * <i>Verum focus</i> |

Both categories contain many verbs; a preliminary investigation of English verbs and their corresponding requirements is summarized in the table below³.

³Individual speakers sometimes vary in how they categorize these verbs. There is also a strong judgment fatigue effect, which makes it difficult to ask any particular speaker about many verbs back to back. The verbs in this table are not meant to be comprehensive.

Weak	Strong
cut	read
peel	bribe
stuff	test
wash	photograph
erase	shelve
scorch	wear
mix	store
spread	prepare
stain	salt
wear-out	iron
polish	befriend
squeeze	fill
knead	cure
bread?	destroy
shell	saddle

Before addressing the nature of the different categories of verbs, what is interesting about this pattern is that the weak/strong distinction appears to be characterized by a divide between high and low facilitators, with high facilitators including negation, modals, and verum focus, while low facilitators are restricted to VP-level adverbs. These verbs can be argued to *only* care about the positions of these facilitators given that the facilitators do not form a natural semantic class of any kind.

Further investigation shows that inclusion of both a high and low facilitator can rescue some verbs that don't typically form middles at all. Several native speakers that I have consulted note a striking contrast between single vs. double facilitation for verbs such as *steal* and *defeat*⁴.

- (26) a. *Those diamonds steal easily.
b. *Those diamonds don't steal.
c. ?Those diamonds don't steal easily.
d. *Roger Federer defeats easily.
e. *Roger Federer doesn't defeat.
f. ?Roger Federer doesn't defeat easily.

I have shown that there are four types of predicates in English with respect to the facilitation requirement: 1) those that can be licensed by either a low or a high facilitator, 2) those that require a low facilitator, 3) those that require *both* a low and a high facilitator, and 4) those that can't be licensed at all. The most easily identifiable class of verbs in the last category are stative verbs, which can never form a middle in English.

⁴In response to this data, some people have asked me if this might be an entirely prosodic effect, with no direct correlate to the syntax of the construction. I don't know what such a model of grammar would look like, but if there were such an effect at play here, I would expect it to uniformly affect all verbs. However, only some verbs become grammatical middles with the addition of extra modification while others are unrescuable (e.g. **My house doesn't own easily*).

- (27) a. *Algebra doesn't know easily.
b. *Houses don't own easily.

The fact that middles are sensitive to facilitator position hearkens to Erlewine's and Brillman and Hirsch's demonstrations that adjuncts can ameliorate Anti-locality. We will now see how this works, and how this perspective helps us unite the modification requirement and the restrictions on which verbs can participate in middle formation.

3 Analyzing middles with Anti-locality

In what follows, I offer an analysis of the English facts that we have seen. After the proposal has been clarified, we will see how it can be extended to cross-linguistic patterns. There are a number of moving parts in this analysis. First I motivate a structural representation of middles that includes a *v* head above the root, which does not introduce an external argument. Second I motivate a derivation in which the object undergoes two movement steps on its way to subject position from its base position as the complement of V. The first movement step takes the object to the edge of the verbal domain (for phase reasons or an EPP property on *v*), and the second step is a response to a higher φ probe. Anti-locality (Abels 2003, Grohmann 2003, Bošković 2007, Erlewine 2014) and the size of the moving objects will allow us to map the facilitation requirement onto this derivation.

Throughout my discussion of the proposal, I will be assuming that external arguments are typically introduced in Spec *v*P in English. The basic proposal is agnostic about whether external arguments are introduced in Voice or *v*. However further investigation of the differences between transitive subjects and middle subjects will suggest that transitive clauses additionally have a Voice head like that proposed by Collins (2005), Merchant (2007), etc., while middles do not. This Voice head is the locus of active/passive voice, but does not introduce external arguments. The middle, being neither active nor passive, does not have such a head, though we will see evidence for a *v* head above the root. Until this view of Voice is motivated in section 3.4, transitives will be assumed to look like middles in having a *v*P but not a VoiceP.

3.1 Structure

I have motivated a view of middles as syntactically agent-less clauses, but have not yet discussed what heads such a clause structure contains. Here I will argue that middles are structurally richer than unaccuatives (i.e. they are not restructuring predicates), with at least one verbal head above the root⁵. I will later propose that this verbal head is a flavor of *v* that fails to introduce an external argument.

We have two types of evidence that middles contain a higher verbal head. The first is auxiliary selection. Languages with an unergative/unaccusative distinction for auxiliary selection differ in which auxiliary they select for in middle formation. While some languages like Dutch prefer the unergative auxiliary to the unaccusative one, Romance selects for the unaccusative one.

(28) a. Dutch

Dit soort vlees heeft/*is altijd gemakkelijk gesneden.
this type meat has/is always easily cut

“This type of meat has always cut easily.” (Ackema and Schoorlemmer 2006)

b. Italian

⁵Here I assume that unaccusative structure is a bare VP with no additional verbal heads such as *v*P or VoiceP.

Le camici-e si sono lavat-e facilmente. (*...si
the.F.PL shirt(F).PL REFL be.3PL washed-F.PL easily (...REFL
hanno lavat-o...)
have.3PL washed-M.SG...)

“The shirts washed easily.” (p.c. Stan Zompi)

If we take unergative auxiliary selection in middles to be indicative of transitive clause structure and unaccusative auxiliary selection to be indicative of restructuring or unaccusative clause structure, Dutch and Romance appear to be giving us contradictory evidence. However previous analyses of Romance reflexives suggest that clauses with reflexive clitics are not impoverished at all, but rather *derived* unaccusatives (Marantz 1984, Sportiche 2013), which tricks auxiliary selection into choosing an unaccusative auxiliary.

The reflexive clitic is claimed to absorb the external theta role in the clause, allowing the internal argument to move over it. For there to be an external theta role in these clauses in the first place, the clause should underlyingly have transitive structure. We therefore conclude that middles in these languages (and others by extension) have transitive structure in the sense that they do not look unaccusative.

We have additional evidence that middles are structurally richer than a bare VP from the fact that the adverb always appears post verbally in middle formation in English. This implies that there is a higher position that the verb moves to.

- (29) a. This book reads quickly.
b. *This book quickly reads.

Crucially, the post verbal appearance of the adverb shouldn’t only be attributed to a rightward-specifying adverb because we can include a complement PP and show that the adverb need not appear sentence finally. This complement PP can be reduced to contain pronouns, showing that it isn’t right dislocated due to heaviness in these examples, but is truly in a complement position.

- (30) a. This story tells easily to small children/them.
b. This story tells to small children/them easily.
c. Small packages send more quickly to France’ than France’’.
d. Small packages send to France’ more quickly than France’’.

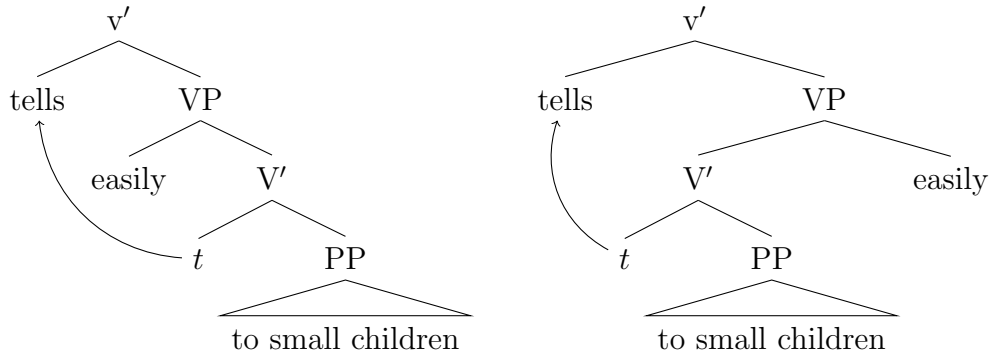


Figure 3: Rightward vs. leftward adverb yields both possible orders in English. Leftward *easily* is crucial to deriving (30a).

We have now established that middles have a verbal projection above the VP. I have also claimed that this projection, which I call the *middle*-flavor of *v*, differs from transitive *v* in that it does not introduce an external argument. In the next section I will motivate Spec *v*P as a landing site for the object on its way to subject position (i.e. Spec TP in English).

3.2 Derivation

Now that we have a proposed structure for English middles, we discuss how the object appears sentence initially. I assume that the object arrives in subject position via movement, as opposed to being externally merged there⁶. I regard this assumption as the null hypothesis, as the object is interpreted as the complement of the verb. Taking a movement analysis for granted, we ask what the derivation should look like.

In the previous section, based on evidence from adverb position, I motivated the existence of a head above VP that the verb moves to. We now focus on the obligatory nature of V to *v* movement in middles, which contrasts with optionality of V movement in transitive clauses⁷.

- (31) a. This story tells easily.

⁶Canonical tests for object origin such as quantifier stranding don't all appear to be relevant for passives, unaccusatives and middles (e.g. **The cakes were eaten all*, **The ice melted all*, **The bread cut easily all*. However evidence from resultative middles could show us that objects do indeed originate low on the assumption that resultatives can't be subject-oriented. *The sheets washed clean*, *The shirt ironed flat*, etc. I call these examples middles because grammaticality is contingent on the presence of the resultative particles, which shows the signature of English's facilitation requirement for middles.

⁷Here I assume that the optionality in adverb position in transitive clauses is derived by optionality of movement of V to *v* (Koizumi 1995). It has been noted that some adverbs show scopal differences in these different positions in transitive clauses, leading some to wonder if the optionality can actually be traced to adverb position rather than verb position. In the present examples, I use the adverb *easily*, which doesn't yield different interpretations in these positions, and note that the feature of interest here is the locality requirement between the verb and its object.

- b. *This story easily tells.
- c. I told the story easily (to them).
- d. I easily told the story (to them).

One approach to this difference between middles and transitives is to stipulate that the middle flavor of *v* has a property that requires V to move to it. Another interpretation is that this is a reflection of the fact that verbs can't be separated from their complements by adverbs. Notice that in (31c) (repeated in (32)), when the verb moves, the object must front over the adverb as well (potentially to Spec VP).

- (32) a. I **told the story** quickly (to them).
 b. *I **told** quickly **the story** (to them).

If we imagine that the internal argument moves through Spec *v*P on its way to subject position, the obligatory nature of V to *v* movement in middles could simply be thought of as the verb's desire to stay in close proximity to its internal argument within its case domain, namely within the *v*P⁸.

We will see evidence from the nature of the facilitation requirements in English and French that intermediate movement to Spec *v*P is indeed the right trajectory for the internal argument in middles. I therefore propose that a *v* head that does not select for an externally merged element can have either of two properties in this analysis: 1) it can demarcate a phase edge, which the object must move through before it can move to Spec TP, or 2) transitive *v*'s selectional requirement for a nominal is reflected on middle *v* as an EPP property instead of an external search, which requires internal merge of the only argument in its scope. In either case, *v*P constitutes an intermediate landing position for the object, but does not introduce any external argument structurally in the derivation.

Returning to the facilitation requirements described in section 2.1, we recall that the facilitators fall into two categories: those which are merged low (low adverbs), and those which are merged between the edge of the verbal domain and Spec TP (negation, verum focus, modals, etc.). I argue for Anti-locality constraints on movement in these contexts, which reveal the facilitation requirement to be a reflection of the movement steps that the object undergoes. First the object moves to the edge of the verbal domain, and then it moves to Spec TP in English. If one of those steps is too local, a facilitator must be inserted at the relevant place in the syntax.

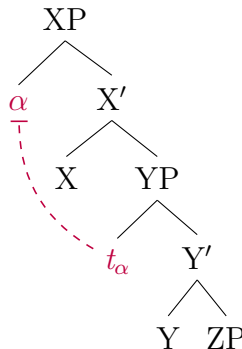
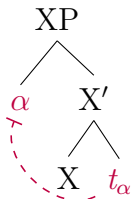
In summary, I propose that what differentiates middles from their transitive correlates is: the head that normally introduces an externally merged argument in transitive sentences instead merges with the internal argument in middle formation. The internal

⁸This hearkens to Richards' (2016) contiguity theory, in which such locality requirements are described in much more depth. An interaction between his selectional contiguity between V and the DP, and probe-goal contiguity between *v* and the DP could yield this result pending our assumptions about phase spell-out. He shows that these requirements need to hold within a phase; I traced this movement to *v*P's status as a case domain, but it could also be a phase. It appears that some speakers have obligatory V to *v* movement in object wh-questions too, noting a contrast in adverb placement for the following: *What did Mary (??completely) read (completely)?* (focusing the adverb or D-linking the subject can sometimes resolve the contrast, I leave this now to future investigation).

argument then moves to Spec TP to satisfy T's phi probe. The various types of facilitation requirements follow as a result of restrictions on that movement chain.

Various versions of Anti-Locality have been proposed in the literature (Abels 2003, Grohmann 2003, Bošković 2007, Erlewine 2014); I will concentrate here on the two versions illustrated below:

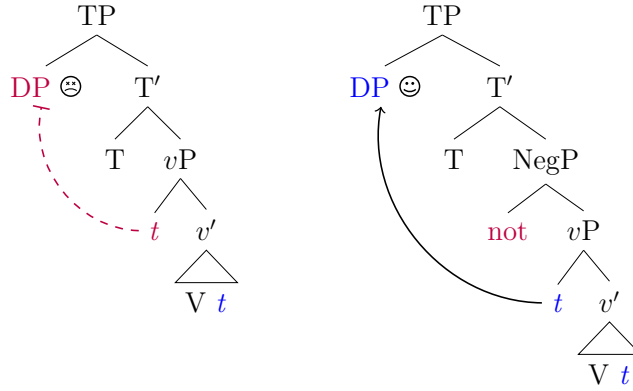
<p>Comp-to-Spec Anti-locality (Abels 2003): movement of the complement of a head X must cross a head other than X</p>	<p>Spec-to-Spec Anti-locality (Erlewine 2016⁹): movement of a phrase in the Specifier of YP must cross a maximal projection other than YP</p>
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These types of constraints were originally proposed to explain constraints on \bar{A} -phenomena, but here I will show that they can and should be extended to A-movement as well. In this paper I will ultimately unite the above two notions of Anti-locality and describe their interaction with head movement in the verbal domain to yield the facilitation patterns in middle formation that we see.

Replacing XP and YP with TP and v P shows us precisely why negation and modals could facilitate middle formation for verbs that follow the weak facilitation requirement. In the absence of an intermediate phrase, movement from Spec v P to Spec TP should violate Erlewine's Spec-to-Spec Anti-locality, but the presence of such a phrase ameliorates the Anti-locality effect and licenses movement. A straightforward problem for this account arises with subjects of transitive or unergative clauses, which appear to undergo this movement. I will return to this problem in section 3.4.

⁹Revised; the original proposal specifically referenced \bar{A} -movement.



Taking this idea as a starting point, let us see how we can derive the full typology of facilitation requirements. We have just seen that the high facilitators license movement of the object from vP to TP by introducing structure that prevents an Anti-locality violation. This leaves us with a question about the low facilitators. Why is it that they can license middles in the same way as the high facilitators for some verbs, even though they are merged lower in the structure? And why do some verbs require a low facilitator independently of whether there is a high facilitator present?

If it were the case that high and low facilitators were responses to different mechanisms, we would have a very hard time explaining their optionality for the weak facilitation requirement verbs (e.g. *cut*, *peel*, *etc.*), so I propose that these low elements also exist to ameliorate Anti-locality. However I propose that they do this for the first movement step in the derivation (i.e. from the complement of V to Spec vP) rather than the second step. In this way, I propose that the low facilitators help the derivation avoid Comp-to-Spec Anti-locality violations.

At this point in the discussion, it is not obvious why Anti-locality should be sensitive to movement from the complement of V to the specifier of vP , because it seems like there should be enough structure there to license movement without an adverb. I will later argue that this has to do with the fact that the verb moves as well. For the time being accommodate the idea that this movement step is too local for reasons that will be discussed after the mechanics have been clarified¹⁰.

¹⁰One way to keep this in mind is to adopt a notion of *crossing* that states:

Crossing: Movement from a position α to a position β crosses a constituent γ iff the highest instance of γ *c-commands* α but not β .

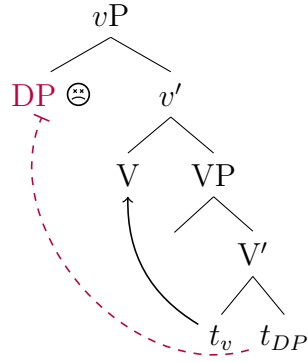


Figure 4: This step must be too local for the logic of this analysis to go through.

To reiterate, when the object moves from the complement of V to Spec vP , it is as if the object is moving to Spec VP, which it cannot do unless a facilitator is merged between the object's base position and its landing site.

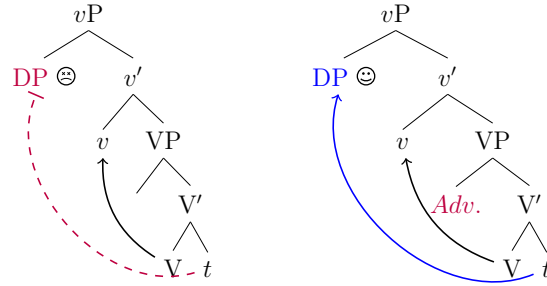


Figure 5: Movement from complement of V to Spec vP violates Anti-locality in the absence of an adverb.

Thus far we have seen how inserting a low facilitator such as an adverb can ameliorate Anti-locality and license movement of the internal argument to Spec vP . However, this is not the only way for a derivation to avoid Anti-locality violations. If the verb phrase has richer structure, for example if the object is further embedded, this structure will also allow the object to move without incurring Anti-locality violations. However this structure can only ameliorate Anti-locality if the DP sub-extracts out of this additional structure. Pied-piped structure will not have the same effect.

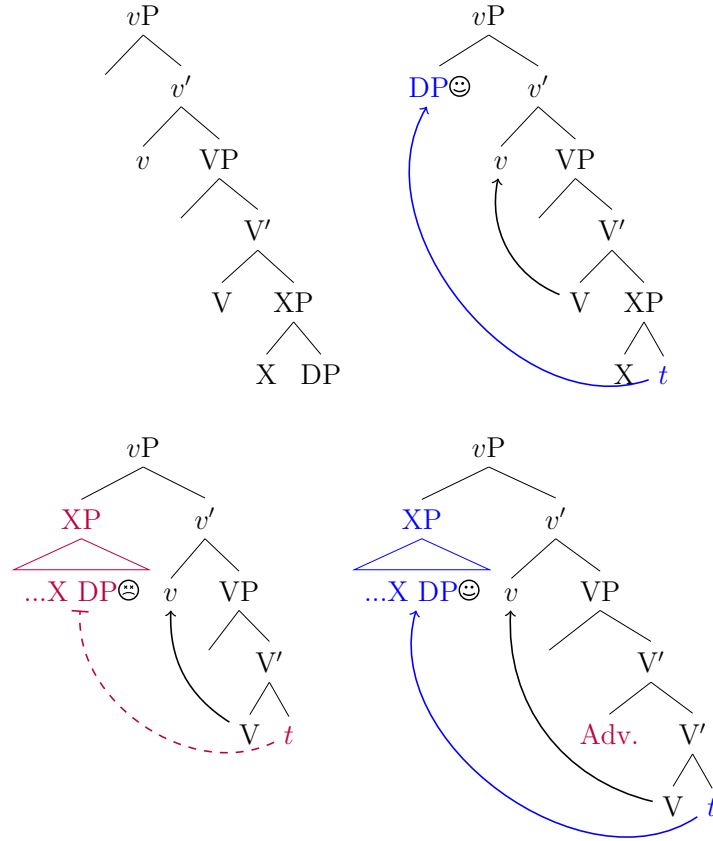
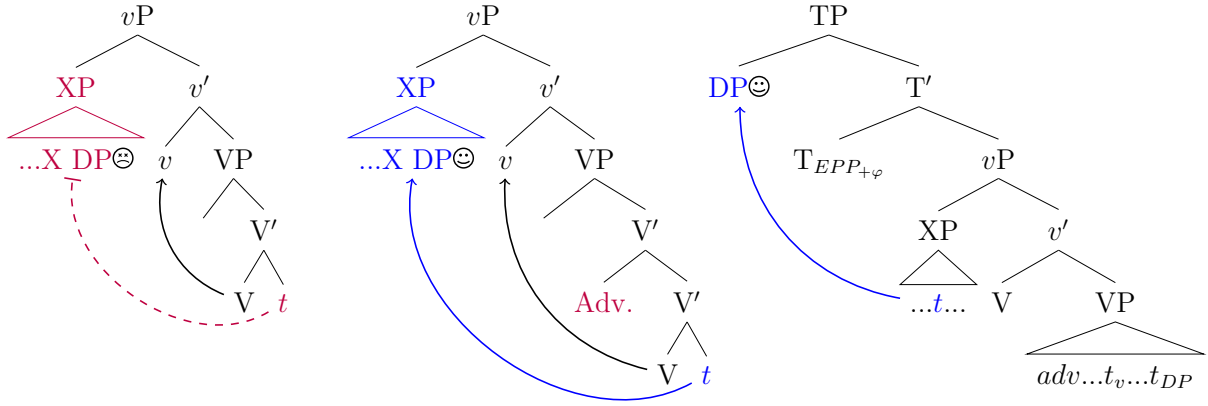


Figure 6: Anti-locality can be ameliorated by a facilitator or structure that further embeds the DP.

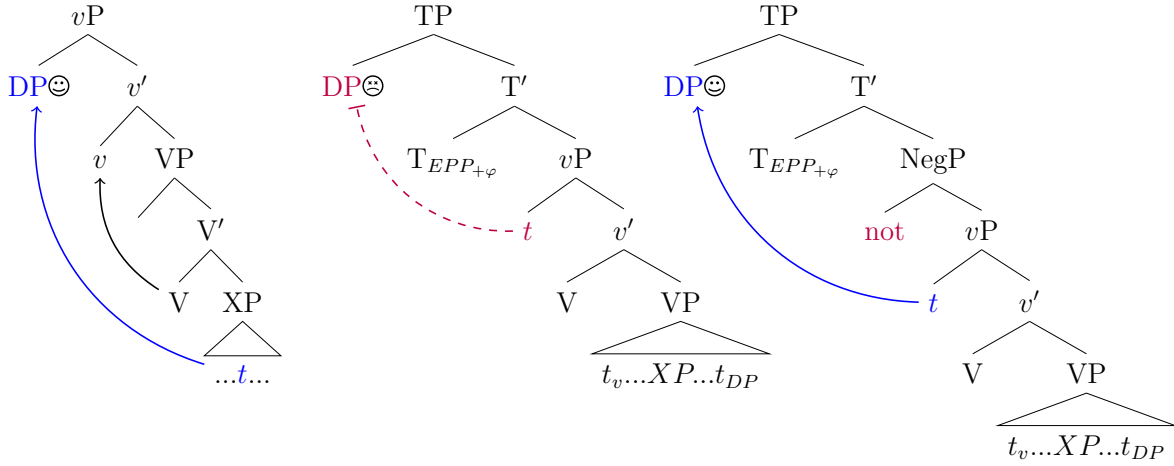
We have seen that some verbs require a low facilitator (i.e. an adverb), some require either a low or high facilitator (i.e. an adverb/negation/modal/emphasis), and some need both a low *and* a high facilitator. I will argue that the difference in facilitation requirement type follows as differences in the amount of structure that contains the internal argument. Recall that if the DP is further embedded, it can avoid a Comp-to-Spec Anti-locality violation by stranding its XP, but will incur a violation by pied-piping it.

If the DP avoids a Comp-to-Spec Anti-locality violation by stranding its XP in the first movement step, it will still require a higher facilitator to license movement to Spec TP. But if it pied pipes its XP in the first step, it can strand it at the second step to avoid a higher Spec-to-Spec Anti-locality violation. We therefore predict two options for a DP embedded in an XP: 1) it pied pipes its XP in the first step, requiring a low facilitator, but strands it at the second step, requiring no further facilitators (*The bread cuts easily*), 2) it strands its XP in the first step, requiring no low facilitator, but requires higher facilitators to license the second step (*The bread doesn't cut*).

Weak Facilitation Requirement (option 1, *the bread cuts easily*):

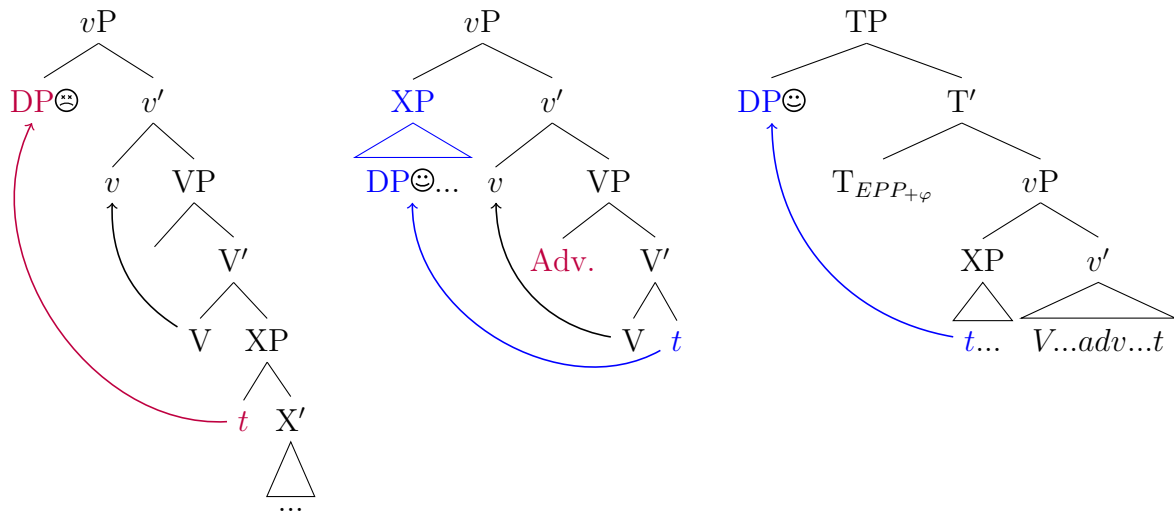


Weak Facilitation Requirement (option 2, *the bread doesn't cut*):



This analysis gives us an easy way to characterize the difference between verb-object pairs with the weak facilitation requirement and verb-object pairs with the *double* facilitation requirement (e.g. *those diamonds don't steal easily*); objects of weak facilitation requirement verbs are dominated by an XP , while objects of double facilitation verbs are not, meaning that they require facilitation at both points in the derivation. The optionality of pied piping the XP in the first movement step yields optionality in high/low facilitation.

Strong facilitation restriction verbs like *read* show a different pattern, namely that they require a low facilitator in the first step but not at the second step. Descriptively it is as though they have the option of stranding structure to ameliorate Anti-locality in the second step but not the first step. I argue that this is in fact the case. I propose that the difference between strong and weak verbs lies in whether the DP is merged as a specifier to an XP or the complement of that XP . DP complements of X have the option of stranding XP to avoid an Anti-locality violation in the first step, while specifiers of XP will be subject to a Spec-to-Spec Anti-locality violation if they strand XP in the first step.



Here a low facilitator will always be necessary to license the first movement step. However, if the DP chooses to pied-pipe its XP over a low facilitator in the first step, it can then strand it to avoid a later Spec-to-Spec Anti-locality violation. This is due to the fact that when XP is the specifier of vP , the DP must cross both XP and vP on its way to TP, which is sufficiently Anti-local. Therefore verb-object pairs with the strong facilitation requirement are derived differently from verb-object pairs with the weak restriction due to this change in DP position within the XP.

This analysis also affords us an explanation for the inability of stative verbs to form middles. I argue that stative verbs lack an enriched verbal structure, as do verbs with the double facilitation requirement, in that their objects are not further embedded. Statives are different from the double facilitation verbs in that they do not have a slot for modification by manner adverbs (thomason & Stalnaker 1973, Katz 2003).

- (33) a. *I cleverly own that house.
 b. *I easily know algebra.

In principle, stative verbs should have the double facilitation restriction, but since they cannot host low facilitators, their middles are never licensed.

A flow chart of the whole typology of facilitation requirements and how they interact with the presence or absence of an XP layer can be found in Figure 7. Further discussion of facilitators and how they interact with this proposal can be found in the appendix.

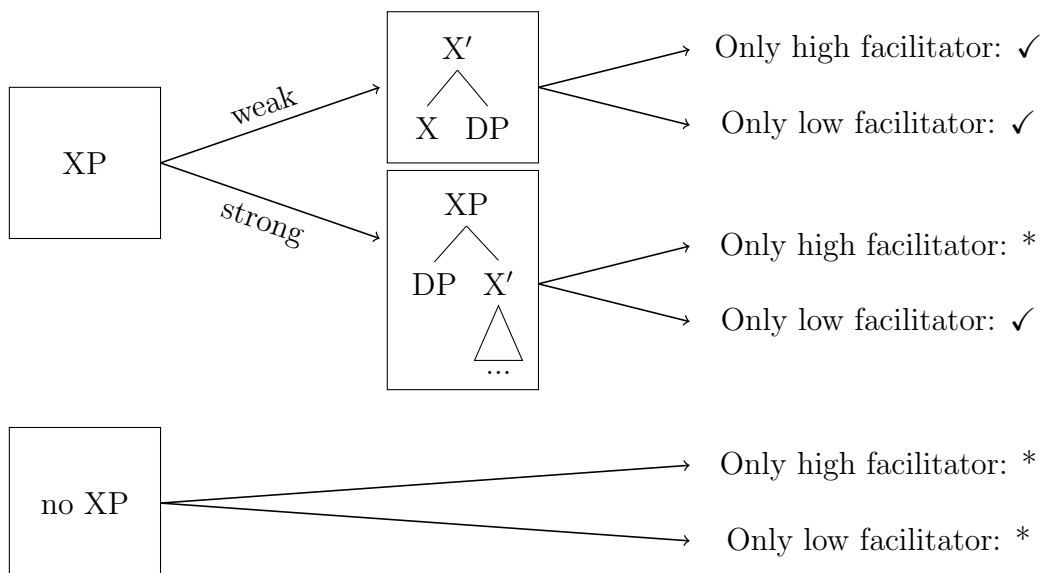


Figure 7: Whether a DP is embedded in an XP, and where the DP is merged in that XP derives the full typology of facilitation requirements we have seen. Stative verbs are in the “no XP” category but cannot host the required low facilitators, resulting in the impossibility of middle formation for stative verbs.

Stepping back from English, if in another language subjects either remain in situ (pro-drop languages) or move to Spec CP instead of Spec TP (V2 languages), we expect high facilitators to never be necessary¹¹. These languages are therefore predicted to have fewer restrictions on middle formation than English. If languages such as these additionally have another projection inherent to their middle, such as a reflexive morpheme or clitic, that element could act as an ever-present facilitator, thus eliminating the need for any other facilitation. We therefore predict Icelandic-like and Romance-like languages to have less restricted middles because they have a reflexive projection inherent to the construction.

3.2.1 Evidence for XP’s

At this point I have not yet provided empirical evidence for these XP’s. There is evidence in English that such a phrase is present, as seen by the contrast between different verbs of a similar class in middle formation. In the *kill* class of verbs, speakers note a contrast in middle formation between those verbs which are independent of killing mechanism and those which imply a specific mode of killing. Similarly for food preparation verbs, *make* is degraded in middle formation compared to a verb like *broil*.

¹¹German is a bit puzzling because it contains a postverbal reflexive pronoun in its middle (unusual compared to preverbal reflexive clitics elsewhere), but always requires low facilitators. As expected for V2 languages, high facilitators never license middles in German, but it is unclear why the reflexive pronoun doesn’t reduce German’s modification requirement by acting as a low facilitator. I leave this for future research.

- (34) a. ??/* Roaches kill easily.
b. Roaches poison easily.

- (35) a. ??/* This dish makes easily.
b. Salmon broils easily.

Hale and Keyser (2002) analyze verbs like *poison* as synthetic with the underlying structure *kill with poison*. They represent this structure as a verb *kill*, which takes a PP complement *DP with poison*. This DP is the specifier of the PP, as illustrated in 8.

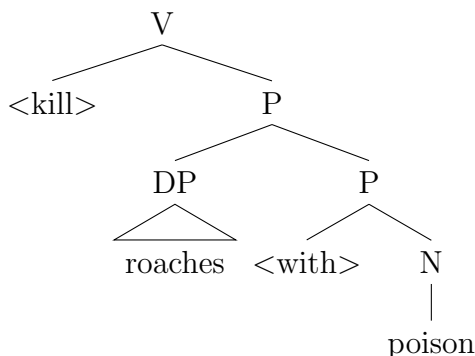


Figure 8: Structure for synthetic verbs in Hale and Keyser (2002). This is the XP structure that I argued for verbs with the strong facilitation requirement.

This is exactly the configuration we claimed for the class of verbs with the strong facilitation requirement, of which *poison* appears to be a member (**Roaches don't poison*). As a result, we expect all synthetic verbs to be available for middle formation, a claim that Hale and Keyser also make.

Indeed many verbs with the strong restriction can be argued to be synthetic, and can therefore be argued to have a structure like that of *poison/broil*. However this structure doesn't have to be unique to synthetic verbs, which leaves room for those members of the class which are not synthetic. The non-synthetic members of this class could contain other sorts of information in their XP's; some examples may include classifiers, covert instruments, telicity, etc.

An example of a non-synthetic verb with the strong restriction is *read*. *Read* is potentially an example of a verb whose XP contains information about telicity. *Read* is ambiguously either an activity or an accomplishment depending on what kind of temporal PP it takes. Such a PP could be inherent to the verb, giving the relevant XP structure.

- | | | |
|------|---------------------------------|-----------------------|
| (36) | a. I read the book in an hour. | <i>Accomplishment</i> |
| | b. I read the book for an hour. | <i>Activity</i> |

While we have identified some evidence of XP's that take DP specifiers, we have not yet identified evidence of XP's that take DP complements. However there may be some evidence from Icelandic that such a configuration can be overtly realized. In Icelandic I argue that this XP layer is quirky case.

A-movement of objects in Icelandic can either preserve quirky case on the raised object, or eliminate it depending on what type of clause the object moves out of. Eventive passives, so-called “quirky unaccusatives”, and ditransitive middles allow objects to keep their quirky case, while most unaccusatives, adjectival passives, and other middles cause the object to lose its quirky case. Here I will focus on the difference between passives and middles, though what I propose appears to generalize to the other clause types as well (the following data were taken from Svenonius (2006)). I argue that objects lose their quirky case shell if they are forced to sub-extract out of it to avoid Anti-locality violations. In this sense, quirky case is an XP of sorts that takes a DP complement.

Eventive passives host external arguments either overtly or covertly as *by*-phrases. They also allow objects to pied-pipe their quirky case, because the passive hosts enough structure for such movement to avoid Anti-locality violations.

(37) Passives

Dyrnum var lokað (af dyraverðinum) klukkan sjö
the.doors.DAT was closed by the.porter the.clock seven

“The doors were closed (by the porter) at seven o’clock.”

Middles typically force objects to lose quirky case because they lack enough structure to ameliorate Anti-locality, so the object is forced to strand its case layer. However if the object moves out of a ditransitive clause, it can retain its quirky case, due to fact that the ditransitive phrase further embeds the object as well.

(38) Middles

a. Við læsum dyrunum
we lock the.doors.DAT
“We are locking the doors.”

b. Dyrnar læsa-st
the.doors.NOM lock-MID
“The doors are locking.” (Hrafnbjargarson 2005)

c. Petur bauð mer vinnu
Petur offered me.DAT job.ACC
“Peter offered me a job.”

d. Mer bauð-st vinna
me.DAT offered-MID job.NOM
“I got the opportunity to get a job.” (Sigurðsson 1989:260)

To summarize, while in eventive passives the object can move across the *by*-phrase to avoid an Anti-locality violation, middles do not project this structure, thus limiting the object’s options for movement. Thus they are forced to use their quirky case layer as intervening structure, which they strand on their way to subject position. In the presence of a ditransitive clause, the object can pied pipe its quirky case shell because the ditransitive provides an extra overt XP layer around the DP to strand. If the object

has no choice but to strand quirky case, the case morphology becomes null without a phonological word to host it.

Svenonius has no examples of middles with other sorts of facilitators, but if this analysis is correct, we predict ditransitives not to be the only place where a fronted object retains its quirky case in middle formation. However further investigation of the Icelandic middle morphology is necessary to determine what facilitators are predicted to license movement of the object with its quirky case layer. Whether this morphology acts as a low or a high facilitator will determine which other structure we expect to license quirky case preservation.

Indeed we see additional support for this proposal from other clause-types in Icelandic. Unaccusatives and adjectival passives are both argued to be agent-less, and derived similarly to middles in Svenonius (2006). They both additionally show similar patterns to middles with respect to quirky case preservation. In particular while most unaccusatives show nominative subjects, there is a class of so-called “quirky unaccusatives” that show quirky case on the subject. The examples of these quirky unaccusative verbs from Svenonius (2006) are *finish* and *drive onto land*, which could both arguably be structurally richer verbs (one has an overt PP, and the other has a clearly resultative meaning).

(39) Unaccusatives

- a. Skipstjorinn sökkti skipinu
the.captain.NOM sank the.ship.DAT
“The captain sank the ship.”
- b. Skipið sökk
the.ship.NOM sank
“The ship sank.”
- c. Stormurinn rak batinn a land
the.storm.NOM drove the.boat.ACC on land
“The storm drove the boat onto land.”
- d. Batinn rak a land
the.boat.ACC drove on land
“The boat drifted onto land.”
- e. Jon lauk sögunni
Jon.NOM finished the.story.DAT
“Jon finished the story.”
- f. sögunni lauk
the.story.DAT finished
“The story ended.” (Zaenen and Maling 1984)

These data, which were presented in Svenonius 2006, all support a view of quirky case as an XP layer around the DP, which can be stranded when an object moves out of a structurally deficient clause. More data is needed to test the predictions of this hypothesis further.

This is not to say that quirky case is the only possible form of these XP's. To my knowledge the Icelandic middle does not require the object to have quirky case in transitive clauses, so I imagine that there are covert XP's in Icelandic as well, like in English. These XP's might be covert instrumental or resultative phrases for example.

A remaining puzzle is that ditransitive clauses seem to ameliorate Anti-locality effects for Icelandic but not for English.

- (40) a. *The library didn't give books. (cf. I didn't give the library books)
 b. *The library gave books easily. (cf. I gave the library books easily)
 c. *The library books gave easily. (cf. I gave the library books easily)

Following Deal (2017), we might have expected ditransitives to be categorically unavailable for middle formation due to the proximity of the applicative argument to Spec v P. All relevant facilitators merge too low to license this step, meaning the applicative argument should never be able to escape. Pied piping the ApplP is also not an option for the same reason; no facilitators exist that could license this step.

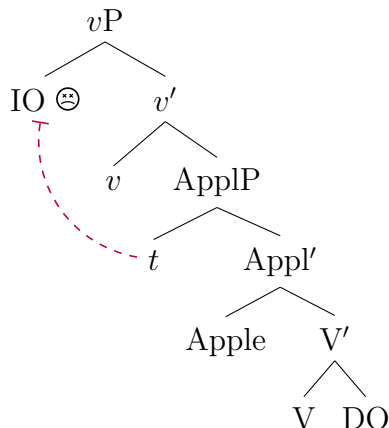


Figure 9: Ditransitive structure. The IO is too high, above any possible facilitators, and cannot move to Spec v P.

This view captures the English facts, though we would expect the Icelandic IO to be able (and in fact need) to strand quirky case in order for the ditransitive middle to be licensed, contrary to fact. However, our ditransitive example from Icelandic appears to pattern with the majority of Icelandic ditransitives in that it can have optional word order for its internal arguments. It has been shown that the Barss/Lasnik asymmetries (Barss and Lasnik 1986) can be repeated here to show that linear order tracks c-command relations in these examples faithfully¹². If the dative argument precedes the accusative argument, the dative argument has been shown to c-command the accusative argument. When the accusative argument linearly precedes the dative argument, the opposite has

¹²Zaenen et al. 1990, Holmberg and Platzack 1995, Jónsson 1996, and others have shown this through anaphor binding, quantifier-pronoun binding, NPI licensing, and wh-movement superiority.

been shown, namely that the accusative argument c-commands the dative one (Rezac 2001).

As a result, two different structures for Icelandic ditransitives have been proposed, one which involves an Applicative phrase, and one which has a V PP configuration with a null preposition (henceforth the *double object* configuration).

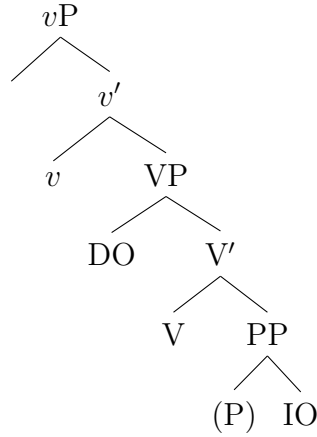


Figure 10: Structure of Icelandic double object constructions.

Treating the Icelandic ditransitive middles as underlying double object middles readily gives us the facts we see, if we allow the middle morpheme *-st* to act as a high facilitator. The IO first moves across a PP and DO to Spec *vP* in the first step, which is sufficiently anti-local to allow it to pied pipe its quirky case. The second step is licensed by the reflexive projection that gives us the middle verbal morphology. As a result, the IO is allowed to keep its dative case.

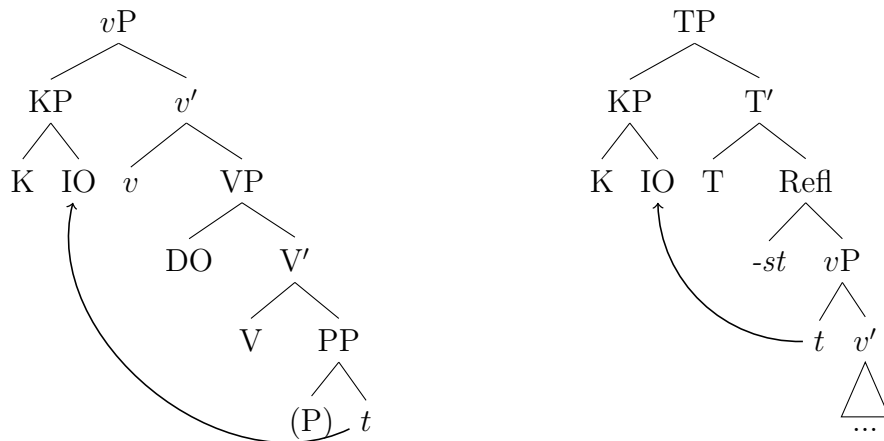


Figure 11: A derivation for Icelandic ditransitive middles in which the middle morphology is a high facilitator of sorts.

Looking now at English double object middles, we see that while they are marginally better than ditransitive middles, they are still significantly degraded¹³.

- (41) a. ??Libraries give books (easily) to (easily).
b. *Libraries don't give books to.

A possible explanation for the difference between English and Icelandic with respect to double object middles could be that English has an overt preposition in its double object construction. In general English seems to have an aversion to overt XP's in middles that contrasts with behavior in other languages. This behavior is not predicted on my account. For example, complements of overt PP's should be able to strand their prepositions in English to yield grammatical middles, contrary to fact¹⁴.

- (42) a. *Wallace doesn't depend on. (cf. I don't depend on Wallace)
b. *Wallace depends on easily. (cf. I depend on Wallace easily)
c. *Wallace on depends easily. (cf. I depend on Wallace easily)

However there appears to be some variation for different types of PP's in middles. For example, *?this phrase extracts from easily* and *?this table puts things on easily* are both judged to be marginally better than **Wallace depends on easily*, though still not fully acceptable. Additionally puzzling is that the marginally acceptable ones become completely unacceptable with just a high facilitator.

¹³Extracting the direct object from a double object construction is marginally better in English, though still not perfect: *?Books give easily to libraries*. However it is completely ungrammatical in the ditransitive case without a preposition: **Books give libraries easily*. It is not immediately clear why we should see this contrast, though we see this pattern reflected in passives as well. *The books were given to the libraries* vs. *??the books were given the libraries* (some dialects allow this).

¹⁴I made sure to choose complement PP's in these examples because adjunct PP's might have their own restrictions on extraction.

- (43) a. *This phrase doesn't extract from.
 b. *This table doesn't put things on.

These overt XP's take DP complements, and should therefore have the option of getting stranded in the first movement step, thus necessitating a high facilitator but not a low one. We therefore expect negation to license these middles but they do not. Additionally the marginally acceptable examples require the preposition to be pronounced in situ, despite the fact that they should have been pied piped to the edge of *vP*.

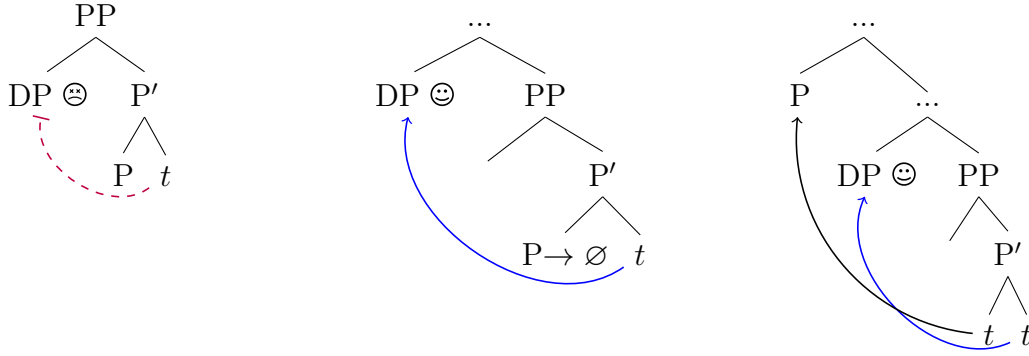
I won't decisively solve these puzzles in this paper, though I can offer some remarks. Firstly, given the relative rarity of preposition stranding cross-linguistically, there could be restrictions on extracting out of a PP that are more apparent in A-movement (which is more local) than \bar{A} -movement. Even in languages like Dutch that allow middles to target the objects of prepositions, there are restrictions on how it is done. Either an expletive is merged in subject position to create an "impersonal middle", or the preposition deletes when the object fronts.

- (44) a. het zit lekker in deze stoel
 it sits comfortably in this chair
 "It is comfortable to sit in this chair."
 b. deze stoel zit lekker
 this chair sits comfortably
 "This chair is comfortable to sit in." (Ackema and Schoorlemmer year, pg. 145-146)

Similarly in English pseudo-passives, there are locality restrictions between the verb and the preposition that are not as apparent in regular transitive clauses.

- (45) a. I (recently) talked (?recently) to Gromit (recently).
 b. Gromit was (recently) talked (*recently) to (recently).

On a view in which PP's are phases, a DP should never be able to strand a preposition because moving through Spec PP would yield a Comp-to-Spec Anti-locality violation. However if the preposition is null, or moves out of the PP as well, the nominal could move out of the PP without stopping in Spec PP due to the fact that the linearization confound is eliminated (Fox and Pesetsky (2005)).



If we additionally imagine that linearization statements can be rewritten if the original phase in which they were computed is completely vacated, then the object could in principle move past the preposition later, once both the object and the preposition were moved out of the PP. However this possibility is contingent on there being enough space for the preposition to move out of the PP as well. Whereas passives and object wh-questions may provide such space in English, middles are more impoverished and might not.

Lastly we have an independent fact that prepositions cannot be stranded at intermediate landing sites in English.

(46) (To) who(m) did you (*to) talk (to)?

This fact further constrains where the preposition can land, thus explaining the word order that we find in *?this phrase extracts from easily*. I leave remaining discussion points for future investigation.

3.3 What counts for Anti-Locality?

Until now I have simply stipulated that movement from the complement of V to Spec *vP* should violate a version of Anti-locality. In the following discussion I hope to explain why I think this is a principled claim, and I will also attempt to unify the Anti-locality statements from the literature into a more general statement about movement. At the end of the discussion, our theory of Anti-locality should be able to accommodate the inability of a constituent to move across two heads and no specifiers if one of those heads has moved to the other.

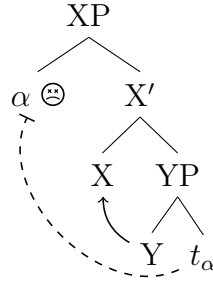
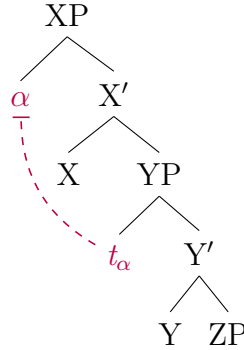
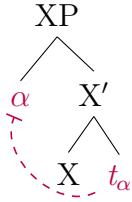


Figure 12: The tree we need to explain.

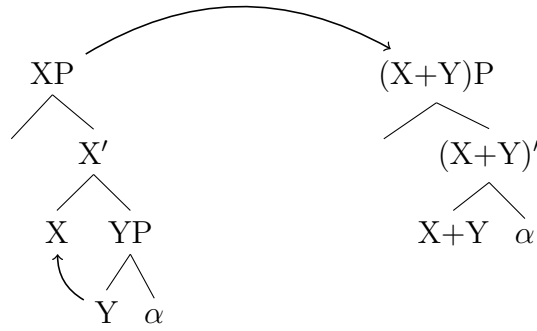
Let us revisit our two notions of Anti-locality. We see that Comp-to-Spec Anti-locality makes reference to the number of *heads* that a complement must cross, while Spec-to-Spec Anti-locality makes reference to *maximal projections*.

<p>Comp-to-Spec Anti-locality (Abels 2003): movement of the complement of a head X must cross a head other than X</p>	<p>Spec-to-Spec Anti-locality (Erlewine 2016): movement of a phrase in the Specifier of YP must cross a maximal projection other than YP</p>
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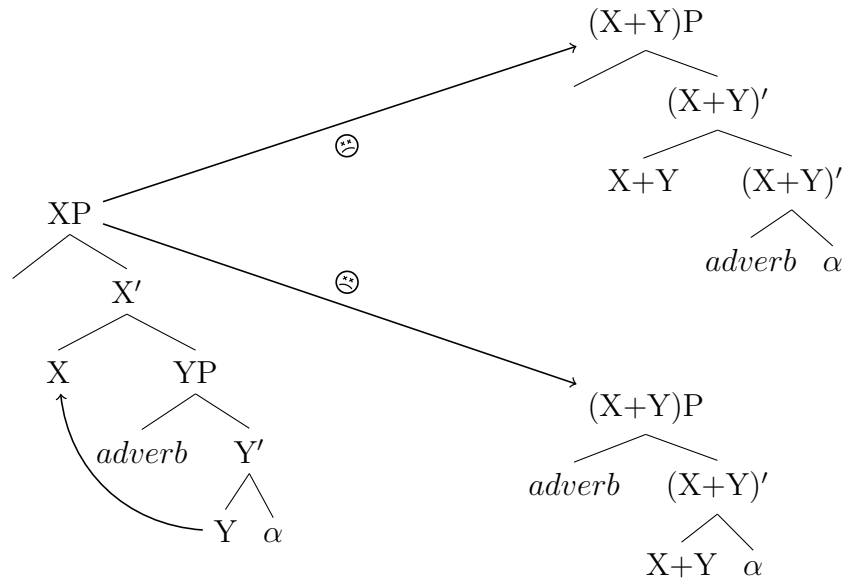


Comp-to-Spec Anti-locality predicts that the movement in 12 should be allowed because it crosses more than one head. However I will argue that since one of these heads moves to the other, the number of unique heads in the structure is reduced. I will therefore propose that *heads which form a head movement chain* do not ameliorate Anti-locality violations. I propose that when V moves to *v*, complex head formation effectively collapses the structure between them, so that the complement of V cannot move to Spec vP without a Comp-to-Spec Anti-locality violation. There are a few ways we can understand such a phenomenon, depending on our assumptions about head movement.

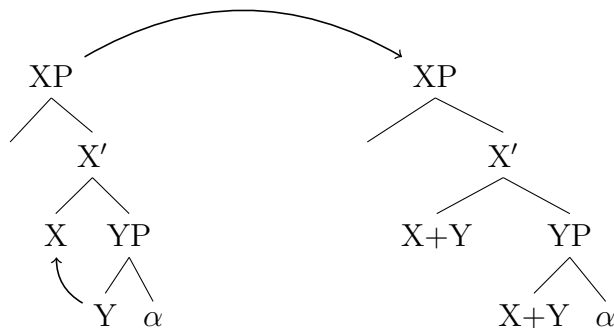
One option is that head movement is a literal structure-collapsing operation. On this proposal when two heads merge to form a complex head, they jointly define a new phrase with their joint label. The complement of Y (namely α) therefore becomes the complement of X+Y, which disallows movement of α to its specifier for reasons of Comp-to-Spec Anti-locality.



Merging a phrase somewhere in the clause will license movement of α to the specifier of $X+Y$. Additionally if that phrase is merged between X and Y , this structural collapse is predicted to be blocked for linearization reasons. If, for example, an adverb were merged above Y and below X , the resulting collapsed structure would be unable to order the adverb in such a way that would not contradict the base generated order $X > \textit{adverb} > Y$.



An alternative proposal is that head movement is a copying and lowering process in which the resulting complex head is reflected on both nodes (Gribanova and Harizanov (2018), Arregi and Pietraszczo (2018)).



On this account, if the internal argument is merged as the specifier of an XP complement to V (strong restriction verbs), movement of that DP to Spec *v*P should therefore trigger a Spec-to-Spec Anti-locality violation, because V moves to *v*. Likewise movement from the complement of V to Spec *v*P should trigger a Comp-to-Spec Anti-locality violation.

Until now I have been rather vague about what it means for a moving constituent to *cross* something else in the tree. However it is crucial to be precise about this term because it can determine what sorts of things can ameliorate Anti-locality. Erlewine provides a definition of *crossing* for Spec-to-Spec Anti-locality:

Crossing (from Erlewine 2016): Movement from position α to position β crosses γ iff γ dominates α but does not dominate β .

This definition of crossing makes reference to dominance rather than c-command, making it relevant to Spec-to-Spec Anti-locality, but not Comp-to-Spec Anti-locality. Comp-to-Spec Anti-locality requires a moving constituent to cross more than one head, but since heads never dominate phrases (they can only c-command them), this definition of crossing doesn't make sense. I will eventually posit a generalized Anti-locality constraint with a generalized notion of crossing that references c-command, but first let us focus on what predictions Erlewine's definition makes for Spec-to-Spec Anti-locality.

On this definition, heads, nominals, and adverbs that merge within a phrase but don't project on the clausal spine should not be suitable candidates to ameliorate Spec-to-Spec Anti-locality if they are a part of the same maximal projection as either the moving constituent or the landing site. We can see this illustrated in 13.

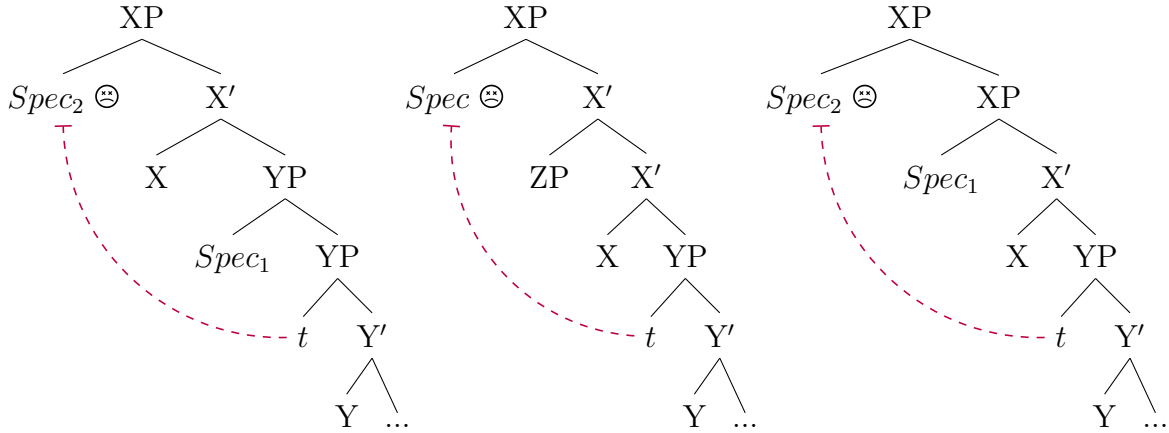


Figure 13: Erlewine’s definition of crossing predicts all of these movement steps to violate Spec-to-Spec Anti-locality.

We see that if a moving constituent is one of multiple specifiers, moving over another specifier of the same phrase should not license an otherwise illicit movement step. Similarly, moving from the specifier position of one phrase to a specifier position of the next highest phrase across another specifier or adverb merged *within* that phrase should not be licit either.

Throughout my analysis, I have been assuming that things like manner adverbs and *by*-phrases can ameliorate Anti-locality. However for Erlewine, this can’t be the case unless we can argue that these phrases either project on the clausal spine, or are accompanied by extra structure that do so, and can therefore count as dominating maximal projections.

I argue that our definition of crossing need not make specific reference to dominance. In fact redefining *crossing* to be about c-command relations fits nicely into the following proposed generalized Anti-locality constraint.

Anti-locality, revised: A moving constituent α must cross another constituent distinct from the closest X^0 that c-commands it. Movement from a position α to a position β crosses a constituent γ iff γ c-commands α but not β .

Crucial to this description is that any projection, whether it be a head, specifier, or adjunct, can ameliorate Anti-locality whether or not it itself projects on the clausal spine. Head movement involves an operation that reduces the number of unique heads in a clause, thus limiting the space of available landing sites for a moving constituent. This definition also does not apply specifically to any base position of the moving constituent, making it broadly applicable.

This description makes specific reference to *heads* rather than maximal projections. If we changed Anti-locality to target maximal projections rather than heads, we would fail to capture an asymmetry between complement extraction and specifier extraction that is both characterized in the literature and important to this analysis.

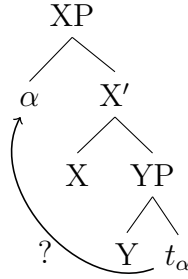


Figure 14: Movement from the complement of Y to Spec XP crosses two heads but only one maximal projection. This is a scenario where Y does not move to X.

On a definition of Anti-locality that requires a moving constituent to cross more than just a head, the movement in Figure 14 should be allowed. On a definition of Anti-locality in which a moving constituent must cross more than one *maximal projection*, this movement step should be illicit. Having Anti-locality make reference to heads allows us to capture the asymmetry between objects that merge as a complement to an XP and those that merge as specifiers, as referenced by Erlewine’s Spec-to-Spec Anti-locality.

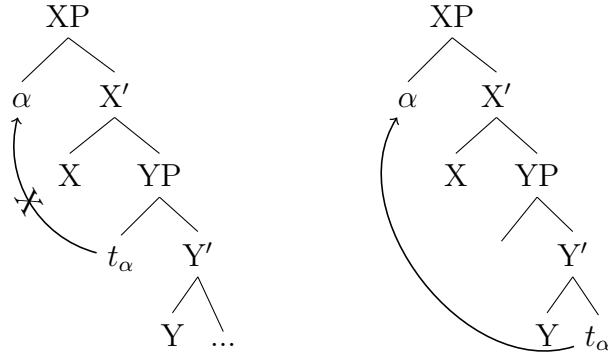


Figure 15: Specifiers of YP should follow Erlewine’s Spec-to-Spec Anti-locality constraint while complements of YP should not. This is characterized by a generalized Anti-locality constraint that makes no specific reference to what a moving constituent must cross. This approach also allows for the structure of XP-layers around DP’s to play a role in middle formation.

This generalized Anti-locality constraint combined with the proposal that head movement reduces the space of possible landing positions predicts that auxiliaries and modals shouldn’t license middles because they move to T. We know that at least some modals *can* license middles, contrary to this prediction. However it is less obvious whether *all* modals and auxiliaries do. The next section offers a more fine-grained look at auxiliaries and modals in middles.

3.3.1 Auxiliaries and Modals

To check whether an auxiliary or a modal can license a middle, we need to look at verbs with the weak facilitation requirement to see if auxiliaries and modals can act as high facilitators. Judgments vary on these but there seems to be a strong contrast between perfect *have* and progressive *be* in whether they can license a middle. Examples with an additional facilitator improve the perfect middles.

- (47) a. ??/*The bread has cut, now the feast may begin!
b. ?Please wait, your bread is cutting.
c. ?It's been a good week, the bread has been cutting!
- (48) a. ?The bread has finally cut, so we can start eating.
b. The bread has cut smoothly in the past, so it should now.
c. The bread hasn't cut well today, so we should get a better knife.

To account for the perfect/progressive contrast, I propose that the relevant difference between these auxiliaries is their position in the clause. There are two important assumptions here, which will be discussed below: 1) perfect *have* is merged higher than progressive *be*, and 2) based on evidence from subject *all* stranding, the crucial landing site for the object is above progressive *be* but below perfect *have*. Important to note is that I do not use *all* stranding data to motivate more landing sites for the object. I merely note that it shows us where the *lowest* possible landing site for the object might be, namely above *be*.

- (49) a. The teachers are all singing.
b. The teachers have (all) been (*all) singing.
c. The teachers must (all) have (all) been (*all) singing.

As we see in (49), subjects may strand *all* below in situ *have* but not below in situ *be*. If we conclude from this that subjects originate between *have* and *be* in these clauses, we can explain the *all*-stranding facts as well as the asymmetry between *have* and *be* in middle formation. One of the claims in this paper has been that objects move through subject position on their way to Spec TP in middles. By this reasoning, they should move *above* progressive *be* in the first step on their way to Spec TP. In this way, *be* acts as a *low* facilitator rather than a high one. By contrast, *have* is merged above the landing site and must be a high facilitator. Since it moves to T, it doesn't actually ameliorate the Anti-locality effect in this second step.

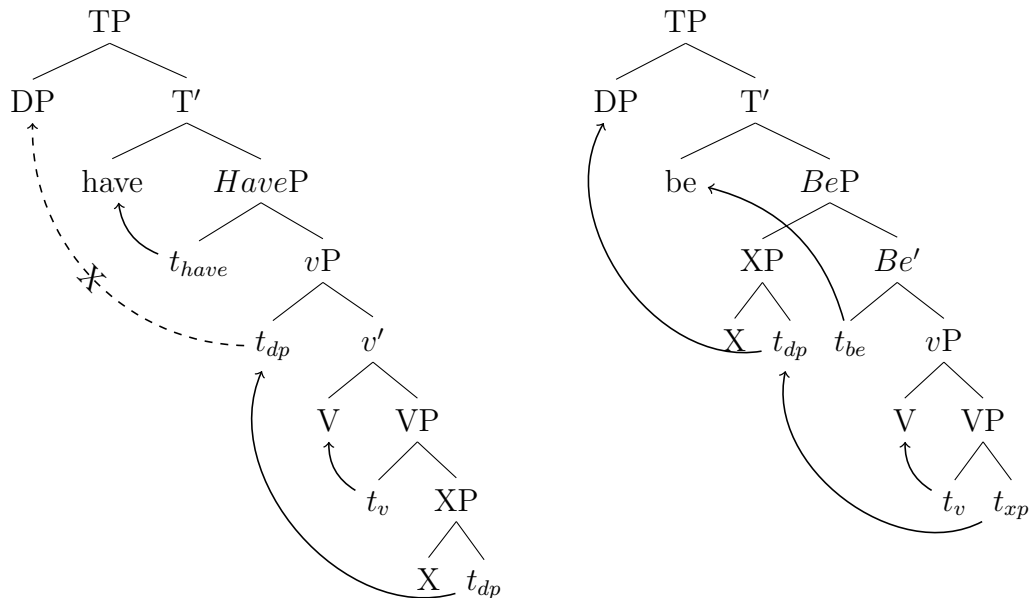


Figure 16: When *have* is the only facilitator present, the DP must strand its XP in the first movement step to avoid an Anti-locality violation. This now-bare DP cannot avoid an Anti-locality violation in the second step because *have* moves to T. When *be* is the only facilitator present, it acts as a low facilitator, allowing the DP to pied pipe its XP in the first step. The second step is then licensed by the DP's ability to strand its XP at the phase edge.

Now that we have established some facts about auxiliaries, this leaves us with a question about modals. Modals are merged even higher than *have* so they can never act as a low facilitator. Furthermore we assume they move to T as *have* does, meaning they shouldn't be effective high facilitators either. This contradicts the facts that we have seen, namely that at least some modals *do* license middles. Close inspection of the modals that do and do not license middles support a claim from Fagan (1991) that an underlying ability reading is a crucial component of these derivations.

Fagan's observation is that many middles can be paraphrased with an ability modal.

- (50) Blue sheets wash easily. (e.g. *Blue sheets can be easily washed.*)

Fagan subsequently claims that this ability reading is present in all true middles, with apparent counterexamples belonging to a separate class of constructions. For example, the following example would not be considered a true middle because it does not include an ability interpretation (though one is entailed by the assertion that the sheets were washed). Context: two sheets were washed together, but one was rolled inside the other resulting in different levels of cleanliness.

- (51) a. Sheet # 1 washed better than sheet # 2.

I would like to weaken this claim somewhat to allow for (51) to remain part of the middle paradigm. I claim instead that an underlying ability reading is always a *possible* component of a middle, but only obligatory in some cases. The cases where an ability reading is most obviously obligatory is in middles with overt modality (further discussion of modality in middles can be found in the appendix).

Let us look first at epistemic *should* and *must*. My previous examples with modality involve epistemic *should*. In a context where we are unsure about whether some loaf of bread will be cuttable, I can say,

(52) This bread should cut, I thawed it yesterday,

meaning something like *It should be the case that you will be able to cut this bread because it is no longer frozen*. Similarly, we can create a context for epistemic *must* as well. Imagine that you have never seen a pineapple in your life, but you have heard glowing reports about its taste. Many of your friends love to eat pineapple on a daily basis and make it sound very enjoyable and easy to do so. One day you see a pineapple for the first time and think to yourself,

(53) Huh, pineapples must peel I guess.

The paraphrase is something like, *it must be the case that one peels/can peel pineapples because I can't imagine anyone enjoying eating that spiny exterior*¹⁵. We see for both epistemic *should* and *must* that the readings include an ability interpretation. By contrast if we change the context to avoid an ability reading, the sentences become much stranger.

New context: You see freshly peeled pineapples every Wednesday morning at the grocery store, but you never see them fresh on any other day. You also know that nobody works before opening time on Wednesdays so the only time the pineapples could have been peeled is Tuesday evening. You conclude,

(54) #Pineapples must peel on Tuesday evenings.

To me, if this sentence is to mean anything, it can only have an unaccusative-like reading in which pineapples are self-peeling, unlike the standard middle interpretations that contain an implied external argument. The infelicity of this sentence in a context that avoids an ability reading shows that the ability reading is a necessary component of middle facilitation by epistemic modals. However if we insert a standard low facilitator, this sentence can be rescued.

(55) Pineapples must peel most easily on Tuesday evenings, otherwise we might expect to see freshly peeled pineapples on other days.

In this sense, the ability reading is acting like a facilitator rather than an intrinsic component of the meaning. If there are other facilitators present (e.g. low adverbs), it is no longer necessary. But when the only facilitator present is a modal that moves to T, the ability reading is necessary to facilitate the middle.

¹⁵Thanks to Neil Banerjee for help with these contexts and discussion.

Looking at teleological *should* and *must* shows a contrast on the basis of available ability readings as well¹⁶. Imagine that we are producers of a TV show discussing props, and product placement is essential to get sponsorship from advertisers. In particular we have a sponsor that makes fine bread knives so it is essential that we have cuttable bread in the show so the bread knife can be featured (as opposed to plastic bread loaf props). We might say,

- (56) In this show, bread should/must cut because we need the protagonist to feature our sponsors' bread knife.

By contrast in a context that emphasizes a non-ability reading, we get infelicity. Imagine now that we are bakery owners trying to reduce the amount of time we spend cleaning up bread crumbs. We therefore relegate all bread-cutting to one corner of a room to minimize the spread of crumbs. We then declare,

- (57) #Bread should/must cut in this corner so crumbs don't get everywhere.

However if we add other facilitators (with the appropriate context), the middle becomes felicitous.

- (58) The bread should cut quickly in this restaurant so customers don't get impatient.

In summary the teleological modals show the same pattern as the epistemic modals, namely that they are only felicitous in a context with an ability reading in the absence of other facilitators¹⁷.

This preliminary investigation of modals suggests that ability readings in middles are represented as projections that count for Anti-locality. A remaining puzzle is that the ability reading cannot rescue any middle¹⁸. Perhaps this can inform our particular representation of these readings as a component of a modal. For example, the ability reading could be a specifier of a modal that controls that modal's base. In the absence of a modal, it cannot exist.

3.4 Transitive subjects

We now return to the fact that transitive subjects appear not to be sensitive to Anti-locality in the way that raised objects are. On the assumption that transitive subjects move from the edge of the verbal domain to Spec TP, as objects do in middle formation, why do regular transitive sentences not require a high facilitator? In other words, why

¹⁶Deontic contexts, or contexts in which there is obligation placed on an agent, are ungrammatical in middle formation because there are no agents. For example, if I want my brother to peel the pineapple before I get home from work, I couldn't say **That pineapple must peel by the time I get home* to mean that he must peel it.

¹⁷The future modal *will* seems to pattern like *should/must* in these respects, and the straight ability modal *can* also appears to be acceptable, though the contexts need to be richer. In this section I focus on the easier contexts with the intention of giving readers an idea of possible future lines of inquiry.

¹⁸Though my personal judgment fatigue is starting to allow sentences like *This bread cuts* with an ability interpretation.

are we able to utter *Gromit flew/has flown to the moon* if movement of the subject should require a high facilitator to avoid an Anti-locality violation?

One possible answer is that subjects don't actually move string vacuously to Spec TP, but rather only move in the presence of a facilitator. However, a problem for this idea is the fact that subjects move across auxiliaries that don't license middles (e.g. *Gromit has gone to the park*). This movement is non-string vacuous, but should still violate Anti-locality since *have* moves to T.

We might alternatively postulate that subjects are further embedded in some way (2 possibilities illustrated in 17). Thus subject movement to Spec TP would always be licensed. The literature provides some evidence in favor of these configurations with further embedded subjects, which we will now evaluate.

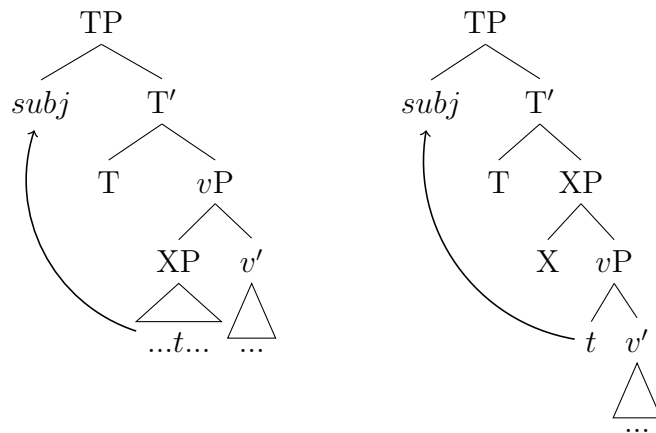


Figure 17: Two possibilities for embedding the subject such that Anti-locality is satisfied when it raises to Spec TP.

Richards (2016) observes that ergative languages tend to be verb-peripheral languages, i.e. they typically have word orders that are either verb-initial (VSO) or verb-final (SOV) (with some exceptions in V2 languages that he discusses). His theory of selectional contiguity accounts for this pattern on the assumption that ergative subjects always stay low, and do not move to Spec TP. (cite other people)

This generalization is compatible with both of these trees. If we adopt a structural case account of ergativity, this pattern can be explained by the configuration in the left-most tree; subjects are always further embedded in a case shell, which they may strand when they move to Spec TP (the case morpheme becomes null when its host moves out of its domain).

This generalization is also compatible with the configuration on the right, where there is a maximal projection along the clausal spine between T and transitive subjects that demarcates a case domain. Subjects within the case domain receive ergative case, while subjects that have moved higher do not. I will argue for this configuration with additional support from Collins (2005) and Merchant (2007), who argue that there is such an XP on the clausal spine (namely VoiceP) that is the locus of active/passive voice.

Collins' account of the passive includes a VoiceP that is headed by *by*, which selects for *v*. On his account, *v* introduces the external argument. He proposes that the verb phrase *smuggles* the internal argument past the external argument to Spec VoiceP, where the internal argument strands the VP on its way to Spec TP. His proposal explains how the object can violate relativized minimality, and also how the *by*-phrase surfaces post-verbally.

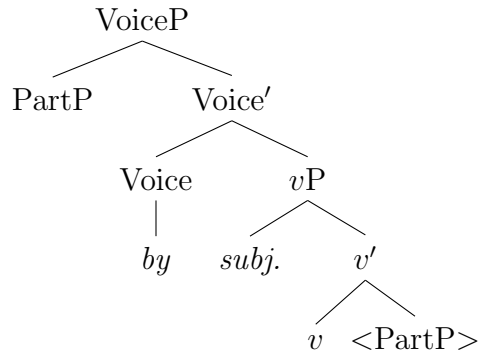


Figure 18: Collins' proposed structure for passives.

Merchant (2007) similarly argues for this structure due to evidence from active/passive mismatches across ellipsis sites.

- (59) Active antecedent, passive VP ellipsis
 - a. Actually, I have implemented it (=a computer system) with a manager, but it doesn't have to be <implemented with a manager>. (Kehler 2002:53)
 - b. The janitor must remove the trash whenever it is apparent that it should be <removed>. (p.c. David Pesetsky)
- (60) Passive antecedent, active VP ellipsis
 - a. This problem was to have been looked into, but obviously nobody did <look into this problem>. (Kehler 2002:53)
 - b. The system can be used by anyone who wants to <use it>. (p.c. David Pesetsky)

If identity between elided constituent and antecedent is to hold, the head that controls active/passive voice should be higher than the VP. He shows that this head must also be lower than T because no such mismatches are allowed in sluicing.

- (61) No mismatches in sluicing
 - a. *The cheese was eaten, but we don't know who.
 - b. *Someone ate the cheese, but we don't know who by.

Merchant proposes that "VP ellipsis" is actually *vP* ellipsis, which is licensed by a higher Voice head. TP ellipsis, or sluicing, elides this Voice head as well, resulting in the unavailability of active/passive mismatches in sluicing.

On this view, the subjects of active and passive sentences need to cross this VoiceP on their way to Spec TP, which satisfies Anti-locality. Since middles are neither active nor passive, I propose that they do not have such a head in their clause, thus restricting movement of the object from *v*P to Spec TP.

Ellipsis tests with mismatches in middle/passive/active voice provide further evidence that subjects are introduced in Spec *v*P. If subjects were merged higher than *v*P, we might expect mismatches between middle antecedents and passive/active ellipsis sites (and vice versa) to be allowed due to identity within the *v*P. This is not the case.

- (62) a. The baker might cut the bread if he finds out that it usually cuts. (it=bread)
- b. #The baker might cut the bread if he finds out that it usually does <cut>. (it=baker)
- c. This bread usually cuts, but apparently nobody has cut it today.
- d. ??This bread usually cuts, but apparently nobody has <cut it> today.
- (63) a. Gromit thinks the bread was cut, but it didn't cut!
- b. *Gromit thinks the bread was cut, but it didn't <cut>!
- c. The bread usually cuts, but for some reason it wasn't cut today.
- d. ??/*The bread usually cuts, but for some reason it wasn't <cut> today.

I propose that the reason these mismatches are disallowed is because the passive and active *v*P's contain 2 arguments while the middle *v*P's only contain one (the internal argument). Therefore identity between elided portion and antecedent is not satisfied¹⁹.

¹⁹When the elided portion is reduced (potentially to VP-size), these examples seem to improve: *?The bread cuts easily, but it won't be <cut>.*

4 Previous Work

This analysis is a departure from previous literature about the middle construction. Firstly, I have been regarding a much wider set of sentences as belonging to the middle construction than previous analyses. Previous analyses that claim the middle construction to be an exclusively generic construction with modality consider the following episodic and non-modal examples in this paper not to be related to middles.

- (64) a. The knife was so sharp that the bread cut in a single stroke.
b. Sheet 1 washed better than sheet 2.

These analyses attempt to trace the restrictions on middles to semantic requirements of the generic operator and its interaction with different aspectual classes. Condoravdi (1989) argues that the middle involves quantification over events by a generic operator, which requires an adverb, modal, or negation in the nuclear scope to provide a predicate for the event variable in the restrictor. Only verbs with the right kind of eventive structure can combine with a generic operator that quantifies over events.

Fagan (1988) by contrast suggests that there is generic quantification over implicit agents, and that the facilitators are required for language-specific subcategorization rules. Both of these analyses take as a premise the idea that middle formation is dependent on a generic operator, whose requirements explain the properties of middles we observe.

On previous assumptions that middles in English and French are inherently generic, these analyses are attractive because they can explain the modification requirement in light of the specific semantics of these language's middles. However in addition to my arguments that English middles are not inherently generic, neither of these analyses is equipped to handle the positional requirements of these facilitators.

The fact that the facilitation requirement is 3-fold, (some verbs require strictly low facilitators, some accept both high/low, and some require both), is completely inexplicable under an analysis that just depends on the existence of *a* facilitator for the semantics.

Additionally, the claim that facilitation requirements are not general to middles, but are language specific, is troubling given the other common features that middles share cross-linguistically. In particular, French and Icelandic are claimed not to have facilitation requirements. We have seen how Icelandic can be viewed as having quirky case facilitators in addition to its morphological facilitator. Now we will see that French also has a multifaceted facilitation requirement, masked in part by the fact that the reflexive is an ever-present facilitator.

4.1 The French facilitation requirement

French middles appear to also have a facilitation requirement, though they tend to require overt facilitation less frequently than English middles. One example of a French middle requiring an overt facilitator is shown in (65b).

- (65) a. Le papier se lève
the paper REFL wash

- “This paper is (generally) washed/paper can be washed.” (ambiguous)
- b. La Tour Eiffel se voit ??(de ma fenetre)
 the tower Eiffel REFL see from my window
 “The Eiffel Tower is visible from my window.” (one sees the Eiffel Tower from my window)

I have proposed that the reflexive clitic is responsible for the infrequency with which we see obligatory overt facilitators. Since French has this extra projection built into the construction, Anti-locality is ameliorated in one of the movement steps by default. However the other movement step still needs to be licensed. If a verb doesn’t further embed its object, we saw in (65) that an adjunct phrase can license the middle, and we will now see that genericity can as well.

In addition to overt facilitators, French appears to use genericity as a covert facilitator as well. For French middles I will describe two types of available readings, which I will call the *ability* and *generic* readings respectively. By *ability* reading, I mean that the middle expresses the capability of the derived subject to be *verb-ed*. This yields a paraphrase like *X is verb-able*. *Generic* readings by contrast make reference to an impersonal subject, like *One typically verb-s X*.

The ability reading is entailed by the generic reading but not vice versa. We might therefore regard the ability reading as being contained in the generic reading, which yields a description of the ability reading as the ‘bare’ interpretation, while the generic reading is richer. In the following examples, I show that while the generic reading is always available, only some verbs can yield a bare ability reading (without extra facilitation).

Context: You come to my bakery in search of bread. One of the breads you are considering is frozen so you will not be able to cut it right away. I helpfully say,

- (66) Ce pain se coupe mais celui-là ne se coupe pas
 this bread REFL cut but this-one NEG REFL cut not
 “This bread can be cut but this one can’t.”

Example (66) could in principle mean something like *one typically cuts this bread but not this other bread*, but the context makes such a generic reading infelicitous. Instead we get an ability reading, which is illustrated in the translation *this bread can be cut but this one can’t*. Furthermore this reading is acceptable with token readings of *bread* as well as type readings, in contrast with the generic interpretation which requires type readings. By contrast verbs like *banish* can only have a generic reading. If uttered in a context which forces an ability reading, example (67) is infelicitous.

Context: In France’, one typically banishes criminals. The monarch is brought the day’s batch of criminals to banish, but her advisor informs her that one of them is a renowned public figure. There will therefore be a lot of resistance to said person’s banishment. The advisor says,

- (67) # Ce criminel se bannit mais celui-là ne se bannit pas
 this criminal REFL banish but this-one NEG REFL banish not
 “This criminal can be banished but this one can’t.”

The facilitation requirement in French appears to be divided, with the most restricted verbs requiring overt low facilitators or a generic reading, and the less restricted verbs not requiring any overt facilitators and allowing both generic and ability readings. The more restricted French verbs in this sense pattern with the English verbs that have the strong restriction, while the other verbs seem to have no restriction at all.

I attribute this difference between English and French to the presence of the reflexive clitic, which I consider to be an ever-present facilitator. On this view French has the same weak/strong distinction as English, with all weak restriction middles being licensed vacuously by the reflexive clitic. In this way the presence of the reflexive clitic gives the effect that French middles are “less restricted” than English with respect to the facilitation requirement, when in fact they have the same requirements²⁰.

4.2 Verb classes

In this paper we have shown that middle formation is more easily available for structurally rich verbs, which follows from the Anti-locality analysis presented. Furthermore the inability of stative verbs to form middles was attributed to the fact that they cannot host the relevant facilitators. However many others have characterized these verbs by other means, which we will now discuss.

Levin’s (1993) description of the middle claims that middle verbs take affected objects, which seems to capture verbs like *cut*, but is harder to extend to verbs like *read*, *play*, *etc.*. Fagan (1992) takes a different approach by referencing the aspectual classes of these verbs. Of the four categories: statives, achievements, activities, and accomplishments, she observes that only activities and accomplishments can undergo middle formation. One of Fagan’s tests for statives/achievements vs. activities/accomplishments involves whether a verb can be put into the progressive. She shows that only transitive verbs that can form a progressive can form a middle (in English).

- (68) a. I’m reading a book. (accomplishment)
- b. I’m drawing some trees. (activity)
- c. # I’m recognizing John. (achievement)
- d. # I’m owning a house. (stative)
- (69) a. This book reads easily.
- b. ?Trees draw easily.
- c. *My cousin recognizes easily.
- d. *Houses own easily.

Looking only at English for the moment, it appears that the availability of the progressive is indeed a necessary condition for middle formation. However it is clearly not sufficient as evidenced by (70).

²⁰There is an apparent aspectual requirement in French as well (perfective middles are not allowed). This is not universal in Romance; Spanish for example has no such requirement. This aspectual requirement potentially plays a role in this facilitation paradigm, or could be the result of independent factors. To be investigated in future work.

- (70)
- a. I'm buying some food.
 - b. *This food buys easily.
 - c. I'm practicing the flute.
 - d. *The flute practices easily.
 - e. I'm dousing the cat (with water).
 - f. *The cat douses easily (with water).

To further constrain the predictions of Fagan's proposal, Van Oosten (1977,1986) argues that we can add a "Responsibility" condition on the object, which requires the object to be somehow pragmatically "responsible" for the action, i.e. for the object to have some quality that affects the action. For example, diamonds have no intrinsic properties that directly bear on how easy they are to steal, so the predicate *steal the diamonds* should not form a middle. But a particularly good book is more likely to sell so one could say *This book sells by the dozens*²¹. Van Oosten shows this condition at work with examples like (71), in which changing the object changes the grammaticality judgment for the same verb.

- (71) (Van Oosten 1986:98)
- a. *This applesauce will eat rapidly.
 - b. Keep these pills away from the baby. They're powerful, but they eat like they were candy.

Van Oosten motivates the Responsibility condition by proposing that subject positions are inherently focused, so an object in subject position should take on "subject-like" characteristics. However this proposal is somewhat unsatisfying for two reasons: 1) because we would expect the same sorts of restrictions to apply to passives and unaccusatives, since those objects also appear in subject position (this is obviously not the case), and 2) we have seen that some of these predicates can be made better with additional facilitators (e.g. *?those diamonds don't steal easily*).

Putting aside the Responsibility condition, if activity/accomplishment-hood is indeed a robust precondition for middle formation, my analysis suggests a relationship between the aspectual class of a verb and the amount of structure it can host. While statives and achievements should take bare DP complements and have limited options for modification, activities and accomplishments should have more options for embedding their objects and an expanded range of available modification. My analysis allows for different verbs within the same class to have different results for middle formation on the basis of what structure they are lexically specified for.

A more detailed investigation of verbs in each class and their respective facilitation requirements could bear on this idea. In particular I would want to test the robustness of the ban on stative verbs in middle formation cross-linguistically²². If morphology and

²¹Though *sell* could arguably be unaccusative. *The books sold all by themselves* sounds grammatical to me.

²²The ban on achievements seems less robust. Some preliminary investigation into Buli and French middles shows that achievements are sometimes available with extra facilitation.

reflexives were to act as low facilitators in a language, we might expect such a language to allow stative middles. Indeed Spanish and French seems to allow some stative verbs to participate in middle formation such as *understand*, *own*, *know*. However it is unclear if middles with stative verbs involve coercion into another aspectual class.

5 Other agent-less clauses

5.1 Unaccusatives

The analysis put forth in this paper makes general predictions about object extraction out of agent-less clauses beyond middles as well. In particular, I make the prediction that unaccusatives should be as restricted as middles, if not more so, because they too lack agentive structure. This is clearly not the case; unaccusatives do not require facilitators.

- (72) a. Gromit arrived.
 b. The ship sank.
 c. The flower grew.

I argue that the difference between middles and unaccusatives is that unaccusatives lack a *v* layer altogether (contra Legate (2003)). The reason that middles are so restricted is that the objects of middles must move intermediately to satisfy some property of *v*/move to the phase edge. If there were no *v* with such a property, we might imagine that the internal argument could move to Spec TP in one fell swoop²³. This is the derivation I propose for unaccusatives. Since there is no V to T movement in English, this movement step should be allowed.

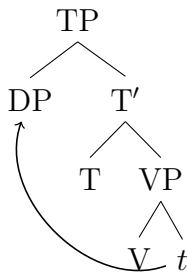


Figure 19: A proposed derivation for unaccusatives.

Given that French has V to T movement, I predict that French unaccusatives should require some kind of facilitation. Famously, French does indeed have a class of inchoative unaccusatives that require a reflexive clitic.

²³The alternative proposal, if we wanted to posit intermediate movement in unaccusatives, would be to say that objects of unaccusative verbs are further embedded in two shells that they can strand. This is less desirable as it relies on two null maximal projections.

- (73) a. Marie s'est évanouie
 Marie REFL.be fainted
 "Mary fainted."
 b. La branche s'est cassée
 the branch REFL.be broken
 "The branch broke." (Dobrovie-Sorin 2005)

What is puzzling under my analysis is that French unaccusatives don't *all* require SE. The French unaccusative paradigm can be divided into 4 classes: inchoatives with SE, inchoatives that optionally take SE, inchoatives without SE, and non-inchoative unaccusatives without SE. The inchoative paradigm differs from the other unaccusatives in that inchoatives have a transitivity alternation while other unaccusatives do not. Focusing first on the inchoative paradigm shows that the presence of the reflexive clitic correlates with a host of other syntactic and semantic differences between inchoatives of different classes. Dobrovie-Sorin (2005) (following Zribi-Hertz 1987 and others) analyzes the SE-less inchoatives as unergatives. On this view, SE-less inchoatives are not predicted to be restricted, because the 'object' is in fact an underlying subject.

Legendre and Smolensky (2009) summarize some of the arguments for the unergativity analysis of these inchoative unaccusatives. These three classes of inchoatives are 1) those that require SE, 2) those that have both se and SE-less forms, and 3) those that never take SE. They note that the presence of SE has the same effect across all of these classes. Two features that we will focus on here are that the SE inchoatives can have resultative phrases and expletive insertion, while the SE-less inchoatives can't.

- (74) Resultative phrases
 a. *La branche a cassé en trois morceaux.
 b. La branche s'est cassée en trois morceaux.
 "The branch broke into three pieces."
 c. *L'oiseau a mué en un monstre à cinq têtes.
 d. L'oiseau s'est mué en un monstre à cinq têtes.
 "The bird turned into a five-headed monster."
 (75) Expletive insertion
 a. Il s'est cassé plusieurs branches.
 "There broke several branches."
 b. Il a cassé plusieurs branches.
 "He broke several branches/*There broke several branches."

On the unergativity analysis, these facts are expected. Resultative phrases are only available if the object originates low. If the nominal is merged as a subject of an unergative verb instead, resultative phrases and expletives should be blocked. However this analysis fall short in a few ways. First, it doesn't account for non-inchoative unaccusatives in French, which do not take SE, but allow expletive insertion.

- (76) Il est arrivé trois hommes
 “There arrived 3 men.”

In fact the expletive insertion test has been argued not to demonstrate object origin effectively given that almost all intransitive verbs in French have an impersonal construction with an expletive. A second problem is that the unergativity analysis violates UTAH. If all inchoatives have a transitive counterpart in which the subject of the inchoative appears as an internal argument, their intransitive counterpart should not take that argument as an external argument.

I argue that we can alternatively understand the lack of SE in part of the inchoative paradigm through Deal (2009). Deal argues that inchoatives in English do not allow expletive insertion due to the presence of a causing event in Spec *v*P, where the expletive should be merged. This causing event, being a structural projection, can ameliorate Anti-locality as the reflexive does.

The divide between inchoatives with SE and inchoatives without SE could then be understood in the following way; the causing event is always present to license movement, and the addition of the reflexive yields the differences in expletive insertion and availability of resultatives. On this view, all inchoatives allow their objects to raise because they have at least a causing event to move across. The distribution of the reflexive is unpredictable, but its presence allows expletive insertion for independent reasons (i.e. perhaps auxiliary selection for reflexive constructions is teaching us that these clauses look intransitive in the relevant sense for expletive insertion).

We therefore expect all inchoatives, whether they take SE or not, to not require facilitation because the causing event will license movement of the internal argument²⁴. This leaves only the non-inchoative unaccusatives to explain.

An additional unaccusativity test in French is the availability of participial constructions. While unergatives cannot form adjectival passives, unaccusatives can. This highlights a difference between French non-inchoative unaccusatives and English non-inchoative unaccusatives. In English, unaccusative verbs like *arrive* cannot form an adjectival passive, while in French they can.

- (77) a. *L’enfant couru dans le parc, ...
 “The child run in the park...”
 b. La personne arrivée ce matin, ...
 “The person arrived this morning, ...”

This fact suggests that there is a structural difference between English and French unaccusatives. On a view that adjectival passives are derived similarly to passives, these French verbs should host at least some of the structure that allows passivization. In this sense, the relative richness of these verbs could explain their apparent insensitivity to Anti-locality.

²⁴It is currently unclear how the reflexive interacts with the availability of resultative phrases in these clauses. I leave this to future investigation.

5.2 Tough predicates, gerund nominalizations

In section 2, middles were likened to tough predicates and gerund nominalized predicates, citing their common lack of *by*-phrases and allowance of experiencer subjects. An additional common factor is the type of modifiers that they allow. Tough predicates and gerund nominalized predicates are restricted in what sorts of adjectives they can host, which patterns with the types of adverbs that middles can host. This pattern can be explained by their common lack of an agent. Adverbs/adjectives that attribute an attitude to an agent are disallowed.

- (78) a. *This bread cuts proudly. (cf. I cut the bread proudly)
b. *This piano plays angrily. (cf. I played the piano angrily)
- (79) a. It is easy/quick/etc. to cut this bread.
b. This bread is easy/quick/etc. to cut.
c. *It is proud/angry/etc. to cut this bread.
d. *This bread is proud/angry/etc. to cut.
e. Cutting this bread is easy/quick/like <insert activity>/etc.
f. *Cutting this bread is proud/angry/etc.

What is interesting about this is that while none of these adjuncts can reference an agent, they all reference an implicit (or overt) experiencer. There is debate in the literature about the status of experiencers in tough predicates, which should in principle bear on the role of experiencers in these other clause types as well. Given that experiencers are claimed in this paper not to facilitate middle formation, this paper likely makes predictions for where they can be hosted in tough predicates as well. This is a possible future line of inquiry.

6 Conclusion

In this paper I have outlined an analysis of middles that is founded on principles of movement. The core feature of the analysis is that middles require the internal argument to undergo two steps of movement on their way to subject position, both of which are too local to satisfy Anti-locality. Any extra projections in these two domains can facilitate middle formation by making these movement steps larger. On this view, verbs are not ‘middle-able’ because of their semantic class, but rather because of the richness of their structure combined with the availability of adjuncts in their domain.

This analysis captures the positional requirements of facilitators in English and the apparent lack of a facilitation requirement in languages with richer morphology in their middles. In other languages, reflexive morphology either preverbally as a clitic or postverbally as a suffix provides the extra structure necessary to facilitate one of these movement steps. If such a language is additionally either pro-drop or V2 (in CP), we might expect there to be no facilitation requirement at all because the derivation is reduced to one anti-local movement step, which is ameliorated by the morphology (on the assumption that the subject stays low in pro-drop languages, and moves from *v*P straight to CP in V2 languages rather than through TP).

Topics for future work include 1) how the external argument is logically represented in these constructions, and 2) where and how the middle morphology is represented in various languages, and the resulting facilitation requirements in these languages.

This work raises additional questions about the typology of passives and middles cross-linguistically. I have presented middles as an impoverished form of the passive. In this sense we might predict directionality in whether a language has a middle. If a language has a passive²⁵, it should have the capacity to form a middle by reducing that clause. Languages with middles, on the other hand, might not necessarily be expected to also have a passive.

Buli might be such a language with a middle but no passive. Buli is claimed not to have a passive, preferring to insert an impersonal subject when an English speaker might use the passive. However, there appear to be transitivity alternations with a restricted set of verbs²⁶.

- (80) a. John dīgì lāmmú
 John cook the.meat
 “John cooked the meat.”
 b. lāmmú dīgì (*John)
 the.meat cook (*John)
 “The meat cooked (*by John).”

²⁵It might be important that in all of the languages with middles and passives that I have looked at, they have all had periphrastic passives, rather than morphological passives. Greek is a language purported to have a morphological passive but no middle. Upon closer inspection it appears that Greek’s passive is more restricted than most periphrastic passives and may have more middle-like tendencies. Whether this is true of all languages with morphological passives is something to investigate further.

²⁶Many thanks to Abdul-Razak Sulemana for sharing his judgments with me.

- c. John tè bísáǵá lāmmú
John give children the.meat
“John gave children the meat.”
- d. ?bísáǵá tè lāmmú
children give the.meat
“Children got the meat.” (need context to avoid garden path)
- e. lāmmú tè bísáǵá
the.meat give children
“The meat was given to children.”

Adding facilitators expands the range of verbs that can participate in this alternation, much like in English.

- (81) a. bísáǵá miŋ(i) AJohn
children recognize.(impf) John
“The children recognize John.”
- b. AJohn *(an bag a) miŋ(i)
John *(NEG can IMPF) recognize
“John can’t be recognized.” (need negation/modal/aspect)

Given the apparent *by*-phrase constraint and sensitivity to facilitators that these Buli transitivity alternations show, we might conclude that Buli has a productive middle construction, despite its lack of a passive. Future work on Buli and other languages without passives may refine these typological predictions further.

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A Additional Investigation of Facilitators

In this section we look at many different types of adjuncts and the domains in which they adjoin. This paper’s proposal predicts that adjuncts in the VP and TP domains should be able to license middles, while higher adjuncts cannot. Here we show that these predictions are born out, though we see some unexpected sensitivity to linear order in addition to structural placement of these adjuncts.

As noted previously, manner adverbs are the most common type of facilitator. Taking for granted that these are VP level adverbs, they are correctly predicted by the analysis to license middles. However not all manner adverbs can license middles. Those that are “agent-oriented” such as *proudly* cannot participate, due to the lack of an agent in these clauses. By contrast, adverbs that refer to an experiencer subject are allowed.

- (82) a. This landscape photographs easily.
 b. * This landscape photographs angrily. (cf. Wallace angrily photographs this landscape)
 c. This shirt irons quickly.
 d. * This shirt irons proudly. (cf. Gromit proudly irons this shirt)

It is unclear from the literature how to test for a distinction between vP level adverbs and VP level adverbs. In principle vP level adverbs should count for Anti-locality, but they would disrupt the verb-object adjacency requirement that motivates head movement of the verb to v. If we were able to successfully diagnose adverb placement as this level, we could test to see whether this adjacency requirement is indeed responsible for this head movement on the basis of whether these adverbs license middles.

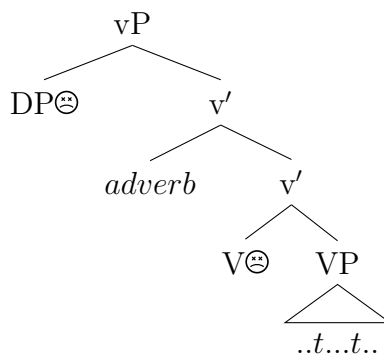


Figure 20: The DP should in principle be able to move over a vP level adverb to Spec vP. However if such an adverb is projected there, the DP and the V will never be able to achieve adjacency.

For weak facilitation verbs and double facilitations verbs, TP level adverbs should count as high facilitators. This appears to be true, though some adjuncts additionally show sensitivity to whether they linearly intervene between the subject and verb. Rightward projection of these particular adjuncts appear unable to license the middles.

- (83) a. That bread probably cuts/??that bread cuts probably
 b. The bread usually cuts/??that bread cuts usually
 c. This bread once cut/that bread cut once (but now it is frozen).
 d. This bread now cuts/this bread cuts now (because it thawed).
 e. */?? The bread cut yesterday.
 f. */?? The bread cuts every day.

Whether a TP level adverb appears next to the subject or far to the right appears to have consequences for scope. In the following examples, a rightward projected adverb has two scope possibilities, while and phrase medial adverb can only take low scope.

- (84) a. 2 Argentinians usually win the marathon. (2>usually, ??usually>2)
 b. 2 Argentinians win the marathon usually. (2>usually, usually>2)

Adjuncts with this sensitivity to linear order in middles might therefore be projected higher than TP when they show up on the right, which would explain why they do not count as a high facilitator in that position.

CP level adverbs are predicted to be too high to license middles, and indeed they do not license middles.

- (85) a. */?? (Unfortunately) these peanuts (unfortunately) shell.
 b. */?? (Maybe) these peanuts (maybe) shell.
 c. */?? The peanuts shelled because they were ripe.
 d. */?? Those peanuts shell for all intents and purposes.

B Modality

In section 3.3.1, middles with modals were shown to be dependent on an ability reading, but I claimed that this modality is not a necessary component of middles more generally (contra Fagan). This claim was motivated by the fact that we could construct a middle with no detectable ability reading (or other modality). Additionally we can see that modality is not inherent to middles by comparing middles to their passive counterparts. If middles had inherent modality, we would expect to see meaning differences between them and passives in every case. We take a closer look now at the example presented in 3.3.1.

Context: Two sheets were washed together. One became wrapped up inside the other so it came out less clean.

(86) Middle

- a. Sheet #1 washed better than sheet #2.
1 sheet became cleaner than the other.

(87) Passives

- a. Sheet #1 was washed better than sheet #2.
1 sheet became cleaner than the other.

The sheet-washing middle has no detectable modality, and it shares the same meaning as the modality-less passive. These examples express nothing about the inherent properties of the sheets involved, but rather assert a sheet-washing event in which one sheet became cleaner for random reasons.

Nonetheless, many middles (not just those with modals) seem to have modality inherent to their meanings and we might wonder where this modality comes from in these other cases. I argue that we can source most of the various types of modality to the types of facilitators that license these middles. In particular, middles with the canonical manner adverbs seem to carry their modality through the adverbs themselves. Their passive counterparts appear to share these modal readings due to the presence of the adverb.

(88) Middles

- a. This bread cuts easily.
This bread has properties that make it easy to cut.
- b. This piano plays like a harpsichord.
This piano has properties that make playing it akin to playing a harpsichord.

(89) Passives

- a. This bread is easily cut.
This bread has properties that make it easy to cut.
- b. This piano is played like a harpsichord.
This piano has properties that make playing it akin to playing a harpsichord.

These adverbs trigger ability interpretations in both the passive and middle examples, showing that they have this modality independent of construction. This supports a view of middles as not having inherent modality.

An interesting puzzle is negation. Negation triggers modality in middles but not passives.

(90) Middles

- a. This bread doesn't cut.
All attempts to cut this bread fail.
- b. The bread didn't cut.
An attempt was made to cut the bread and it failed.

(91) Passives

- a. This bread isn't cut.
Cutting events of this bread do not occur.
- b. The bread wasn't cut.
There was no bread cutting event.

The fact that negation carries modality in middles but not in passives is puzzling if middles lack inherent modality. What is interesting about middles with negation is that the modality here isn't an ability reading of the type seen thus far. Negation here actually causes us to infer an implicit subject's attempt to cause the relevant event. In the bread-cutting examples, the negation causes us to understand that a bread-cutting attempt either failed or would fail. The passive examples do not have this reading.

This implicit attempt present in negative middles can lead us to infer properties of the object, thus appearing to be an ability reading. For example, *this bread doesn't cut* might lead us to expect that the bread has certain properties which make it uncuttable. However, the ability reading is not a necessary component of these middles as we can source the failure to other external factors in these middles as well.

(92) Wallace is such a nincompoop with that knife that the bread didn't even cut.

In this example we are led to believe that a subject with regular knife-wielding capabilities would have been able to cut the bread, but Wallace's ineptitude caused the bread cutting attempt to fail in this case. The ability inference about properties of the bread is entirely absent from this example, suggesting that the implicit attempt reading is distinct from the ability reading.

If we accept that the inference about implicit attempts under negation is distinct from the ability readings commonly attributed to middles, we might posit that the implicit attempt component of the meaning is an inherent component of middles, but the ability reading is not. In positive clauses, the attempt is asserted, thus rendering it obsolete as an extra inference.

This approach could provide some insight into how the external argument is logically represented in middles. The semantics of external arguments in middles might be different from passives in a way that only comes apart under negation, i.e. in middles the semantics of the agent provides an attempt at the event, but not in passives. One hypothesis is that middles are a kind of impersonal construction.

To test this hypothesis, we might look carefully at languages that have both passives and impersonal constructions, and see 1) whether these constructions have the same semantics, and 2) whether they behave differently under negation.