

Minimalist Accounts of T-to-C Movement

Matthew A. Tucker

Diachronic Syntax Reading Group
28 March 2007

1 Introduction

- **Goal:** Elaborate the major assumptions behind Minimalist syntax's explanations for T⁰-to-C⁰ movement.
 - Both A'-movement to [Spec, C⁰] and head movement to C⁰ itself.
- **Outline:**
 1. Head movement to C⁰
 - (a) Feature strength approaches (Adger, 2001; Radford, 2004).
 - (b) Affixal Q (Chomsky, 1995).
 - (c) Case feature-based approaches and optional movement (Pesetsky and Torrego, 2001).
 2. A'-Movement to [Spec, C⁰]
 - (a) Feature checking and [\pm wh].
 - (b) The Extended Projection Principle.
 - (c) Agreement and Rizzi (1997).
 - (d) Competition with Focal elements (Rizzi, 1997).

2 Head Movement to C⁰

- This section examines the theoretical mechanisms which can force the T(ense)/Infl(ection) head to move into the complementizer domain via head movement.¹

2.1 Feature Strength Approaches

- Two approaches: Adger (2001); Radford (2004). We will only consider the latter.
- What they have in common is the notion of *feature strength* as forcing or prohibiting the movement of an element to C⁰.

¹Already I have raised the implicit question of the nature of the complementizer domain - is it one head, a recursive C⁰ structure, or many heads as argued in Rizzi (1997)? I will stick to the assumption that it is one head, C⁰, unless otherwise noted throughout this discussion.

2.1.1 A Crash Course in Feature Strength

- Both approaches assume a theory of feature strength like that of Chomsky (1995).
- Features come in two varieties: *Strong* and *Weak*.²

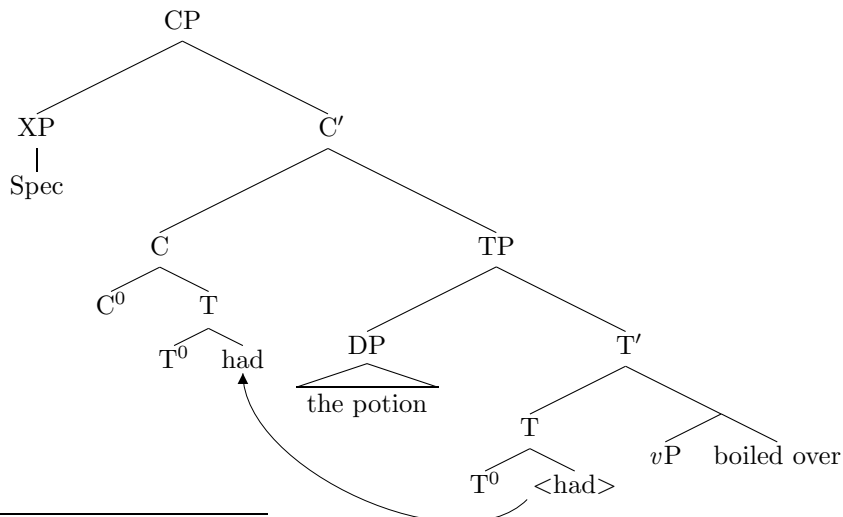
Properties of Feature Strength

1. *Strong Features*:
 - (a) Strong features trigger an overt operation (causes the derivation to crash if not checked by PF).
 - (b) Strong features cannot be “passed” by a α that would satisfy them, and later be checked by a separate β (induces cyclicity).
2. *Weak Features*:
 - (a) are bound by the principle of **Procrastinate**.

- **Procrastinate**: LF movement is *cheaper* than overt movement (Chomsky (1995):198).
- Strong features, then, force movement in the overt syntax, and weak features mean an obligatory absence of overt movement (driven by that feature).

2.1.2 Adger (2001)

- Assumes that T^0 comes valued for a feature, $u\text{Clause-Type}[\]$.³ It has two possible values associated with it:
 - Interrogative clauses: $[Q^*]$
 - Declarative clauses: $[\text{Decl}]$
- T^0 moves to see to check the strong feature in matrix interrogative sentences, as in *Had the potion boiled over?*:



²Following the convention in Adger (2001), I will denote a strong feature by postfixing an asterisk on the end of the feature, such as: $[uT^*]$. Note that this is different from the use of the asterisk in Roberts and Roussou (2003).

³I follow Chomsky (1995); Adger (2001) in showing features to be *interpretable* or *uninterpretable*, marked as i and u , respectively. Furthermore, I denote an unvalued feature with a following $[\]$. Valued features are represented as the value within the square brackets. Note that in Chomsky (1995)’s theory of feature checking, this means the feature is also checked as well.

- At the end of the derivation T^0 has a checked feature $u\text{Clause-Type}[Q^*]$.
- This analysis in assumes that C^0 has a feature that checks against the corresponding feature in T^0 - in this case, C^0 bears $i\text{Clause-Type}[Q]$.
 - **Question:** How is this any different from the approach outlined in Chomsky (1995) (see below)?
- Since the value $[\text{Decl}]$ is not strong, movement in root declarative clauses is not permitted.
 - **Question:** But what about CP-embedded subjects? Since we can have $[Q^*]^4$ in root clauses, then we would predict the grammaticality of: **That had the potion boiled over was obvious*.
 - Adger’s response: “assume that $[uC]$ on C must be incompatible with $[Q]$ ” ($[uC]$ is the selectional feature which merges the embedded CP into the specifier of the root clause).⁵ Arguably, this is more than a bit stipulative.
- Verb-second phenomena are argued to be derived by a $u\text{Clause-Type}:[]$ on T^0 and a $i\text{Clause-Type}[\text{Decl}^*]$ on C^0 .

2.2 Affixal Q

- **Idea:** C^0 in matrix clauses is, in fact, an affix.
- One major approach here: Chomsky (1995).
- Also has a theory for the phrasal movement of things to $[\text{Spec}, C^0]$.

2.2.1 Chomsky (1995)

- Following Baker (1970), Chomsky assumes that an abstract affix Q is the realization of C^0 in interrogative contexts.
- “Q is plainly Interpretable...As is well known, languages differ in strength of Q. The strong Q feature is satisfied by a feature $F(Q)$.”
- For English, Q is strong. It can therefore be checked in two different ways: **Merge** and **Move**. In each case, this operation can be accomplished by substitution of a syntactic object, or adjunction of a head.

Ways to Satisfy Q	
1. Merge	<ul style="list-style-type: none"> (a) <i>Substitution</i>: leads to a syntactic object in $[\text{Spec}, Q/C]$ from the numeration (<i>whether</i>). (b) <i>Adjunction</i>: leads to a complementizer in the C^0 position (<i>if</i>).
2. Move	<ul style="list-style-type: none"> (a) <i>Substitution</i>: Canonical <i>wh</i>-movement to $[\text{Spec}, C^0]$. (b) <i>Adjunction</i>: Subject-Auxiliary Inversion effects.

⁴I abbreviate $u\text{Clause-Type}[Q]$ as $[Q]$ and its declarative counterpart as $[\text{Decl}]$ henceforth.

⁵Adger takes this approach because he would like to preserve the idea that the EPP is, in reality, uD^* on T^0 , so he argues for merging a null pronominal subject into the $[\text{Spec}, T^0]$ position in these clauses.

- (1a): (I wonder) [$_{CP}$ whether Q [he left yet]]
- (1b): (I wonder) [$_{CP}$ [Q if Q] [he left yet]]
- (2a): Which book Q did [$_{TP}$ John give to Mary]
- (2b): Q Did [$_{TP}$ John give a book to Mary]
- The F_Q feature which checks against Q in the case (1) above “is often called the *wh*-feature, which we can take to be a variant of D.”
 - **Question:** Obviously this definition of *wh* as a variant of D is quite vague. Moreover, what is the relationship of Q to F_Q , exactly? Are they the same feature, or a special feature pair that can check against one another other despite non-identity?
- F_Q in the case of (2b) is nothing but familiar head raising, “then $F(Q)$ in this case is [V].”
 - **Question:** At this point, it’s clear Chomsky is starting to play fast and loose with feature definitions. Can we pin down more concretely how these features interact?
 - **Question:** What about languages with weak Q?
 - Chomsky’s answer: no movement (overt or otherwise) needed, so no evidence for *wh*-questions. In this case, languages satisfy the construction of questions “as something like unselective binding.”
- Q in declarative sentences is weak, so no raising occurs.
- Similarly, covert strong features are disallowed (pp. 294), so no other derivations are possible.
 - **Question:** How is the difference between embedded and root CP’s to be captured in this framework (This is not totally clear to me, at least)?

2.3 Case Approaches

- This work attempts to argue from that-trace effects to the need for linking of T^0 -to- C^0 movement with abstract Case in the syntax.

2.3.1 Pesetsky and Torrego (2001)

- I will not give an entire summary here, but refer the interested person to Pesetsky and Torrego (2001) for more information.
- **Main Idea:** T^0 -to- C^0 movement is in complementary distribution with abstract nominative Case.
- Two preliminary definitions:
 1. **Motivation for T^0 -to- C^0 movement:** C^0 bears an uninterpretable T feature with an EPP property.⁶
 2. **Nominative Case:** Nominative case is uT on D^0 .
- C^0 also bears a uWh feature.
- Consider the following structures before the movement into the CP domain:

⁶Pesetsky and Torrego (2001) work within a framework that assumes that the EPP is a property of *other* features, as opposed to a feature *sui generis*.

1. Inversion: $[C^0, uT, uWh] [_{TP} [Mary, uT] T^0 [_{VP} bought\ what]]$
 2. No Inversion: $[C^0, uT, uWh] [_{TP} [who, uT] T^0 [_{VP} bought\ the\ book]]$
- In (1) the Comp can only delete both its features in two separate operations: *wh*-movement and T^0 -to- C^0 movement.
 - In (2), on the other hand, one operation will accomplish this: movement of the subject to [Spec, C^0].⁷
 - We thus get the following contrast:
 1. What did Mary buy?
 2. *What Mary bought?
 3. *Who did buy the book?
 4. Who bought the book?
 - If we interpret the English lexeme *that* as T^0+C^0 , we can also account for the optionality of *that* in embedded clauses.
 - Consider the following derivations:
 1. Mary expects $[_{CP} [_{T} that] + [C^0, uT] [_{TP} Sue\ will\ buy\ the\ book]]$
 2. Mary expects $[_{CP} [Sue, uT] [C^0, uT] [_{TP} t_{Sue}\ will\ buy\ the\ book]]$
 - **Question:** Why are both possible?
 - “In embedded declarative clauses, C seems to be able to choose freely between TP and Spec, TP when it looks for a way to delete its uT feature. This is expected, since both TP and its specifier bear a tense feature...and both are equally close to C by [our] definition of ‘close’.”
 - See the original paper for more details (it’s a good paper).

3 Phrasal Movement to [Spec, C^0]

- This section covers theoretical approaches to phrasal movement to [Spec, CP].⁸
- Some have already been considered:
 - Affixal Q satisfied by phrasal substitution/merger to [Spec, CP] (§2.2.1).
 - Movement of a nominative DP to [Spec, CP] instead of inversion. (§2.3.1).
- Two more approaches to consider:
 1. EPP and/or uWh feature checking (Adger, 2001).
 2. Criterial approaches related to agreement (Rizzi, 1997).

⁷It would be correct to ask, here, what happens to the nominative case uT on D^0 . The answer is subtle: in all these derivations, the nominative feature has actually already been checked by movement of the subject to [Spec, T^0] - hence the idea of calling this feature nominative case. The trick here, though, is that Pesetsky and Torrego (2001) assume *phases* (Chomsky, 2001). They further claim that features which are checked can still be active in a derivation until the end of a phase cycle. This means that the uT is still available in these derivations until the end of the CP-cycle.

⁸I should mention Seth Cable’s work here, though I won’t treat it: <http://web.mit.edu/scable/www/work/papers/QP-and-WH.pdf>.

3.1 *uWh* and EPP

- This formulation is from Adger (2001).
- *wh*-elements have a feature: *iWh*.
- C^0 (more specifically, Q , as in §2.2.1) obligatorily bears a *uWh** feature which triggers overt raising of the *wh*-element to check it.
 - **Question:** What about matrix yes/no questions? There is no element to satisfy this *uWh** feature, and the derivation should crash...
 - Adger’s answer: A null operator bearing *iWh* sits in [Spec, CP] in these cases.
 - **Question:** Embedded contexts have *wh*-movement but no T^0 -to- C^0 movement. How can we account for this?
 - Adger’s answer: Q is weak in embedded contexts in English (further cross-linguistic variation is accounted for in this way).
 - **Question:** How is not more than a glorified restatement of linguistic facts? (I don’t have the answer to this one).
- Another option would be to separate the operations **Agree** and **Move** as in Chomsky (2000, 2001); Pesetsky and Torrego (2001). Then the operation which checks a *uWh* feature is separate from the operation which copies/pied-pipes a phrase to [Spec, CP].
 - It’s unclear how this approach avoids the above problem, but it certainly requires a theory of *when* the EPP is assigned to an instance of the **Agree** operation.
 - Shameless plug for an idea in my thesis: possibly the EPP is related to the checking of ϕ -features and agreement?

3.2 Criteria and Agreement

- These ideas are from Rizzi (1991, 1997). They relate ideas about focus and agreement to *wh*-movement to [Spec, CP].⁹
- Rizzi (1991) simply stipulates the movement of phrases to [Spec, CP]:

The Wh-Criterion

- | |
|---|
| <ol style="list-style-type: none">1. A <i>Wh</i>-Operator must be in a Spec-head configuration with a [+<i>wh</i>] X^0.2. A [+<i>wh</i>] X^0 must be in a Spec-head configuration with a <i>Wh</i>-operator. |
|---|

- Must be interpreted as requiring that the *chain* of the relevant X^0 position has the feature [+*wh*], not necessarily the position itself.
- Finally, *wh*-operator = a *wh*-phrase in scope position.
- These ideas are refined in Rizzi (1997).
- “syntactic movement (or, more neutrally, the formation of non-trivial chains in the syntax) is last-resort in the precise sense that it must be triggered by the satisfaction of certain quasi-morphological requirements of heads.”

⁹Strictly speaking, they relate to movement to [Spec, XP], where XP is a projection in the expanded left periphery of Rizzi (1997, 2001).

- Rizzi claims that C^0 bears tense features, as it must relate to the internal structure of the clause, but a “pared-down” version of tense (in his system, finiteness).
- Elements move to [Spec, Force⁰] to satisfy the *Force Criterion*.¹⁰
- Translation of the idea of *wh*-features to the articulated system: “The question operator ends up in the Spec of Foc[us] in main questions, where it competes with a focalized constituent...if that position is filled by a Wh element, the inflected verb, carrying the feature Wh, must move all the way up to Foc[us] to permit satisfaction of the Wh Criterion.”
- This accounts for the fact that question operators in main questions are not compatible with focalized elements in Italian:

(1) *A chi IL PREMIO NOBEL dovrebbero dare?

“To whom THE NOBEL PRIZE should they give?”

(2) *IL PREMIO NOBEL a chi dovrebbero dare?

“THE NOBEL PRIZE to whom should they give?”

- Also mentions that T^0 -to- C^0 movement should involve raising (at some point) to Fin^0 . This means “it must be the case that finiteness, the lowest C head interfacing with the IP system and structurally adjacent to the subject, can be endowed with Agr features to ensure well-formedness of the subject trace.”

4 Conclusions/Questions

- This talk has given an overview of the major approaches to T^0 -to- C^0 movement in minimalist syntactic theories.
- Some remaining questions:
 - Can we find a way to properly relate the different classes of features responsible for checking and movement to one another in a cohesive way?
 - To avoid stipulation, is it possible to derive or qualify when the EPP should apply to move segments which have entered into an **Agree** relationship?
 - How do these approaches vary diachronically?
 - How does these approaches translate into the articulated periphery structure of Roberts and Roussou (2003)?
 - Is it necessary to further expand said periphery? Articulate?

References

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¹⁰Force in Rizzi’s system is the host for matrix complementizers. I will also not comment here on the difference between criteria and features, though it is a nontrivial question.

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