

Categorial Configuration of ECM and Control Infinitives in the Minimalist Program

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This paper explores categorial properties of ECM and control infinitive complements in English. Paying special attention to the head-to-head relation between I and C in the two types of complements, it proposes that I-to-C movement is prerequisite for the selectional checking in control infinitives.

I. Introduction

There have been various intriguing approaches to categorial properties of ECM and control infinitives in the framework of Government and Binding Theory. According to Chomsky(1981), one of the most marked differences between these two types of infinitives is that control infinitives, but not ECM infinitives, license PRO.

- (1) a. John tried [_{CP} [_{IP} PRO to win]]
b. *John believed [_{CP} [_{IP} PRO to be smart]]

As is illustrated in (1a), PRO is posited as the IP-specifier of a control infinitive.

This approach is mainly based upon the so-called PRO Theorem (2) which, in turn, is heavily dependent upon the theory of government:

(2) PRO Theorem

PRO must not be governed. (Chomsky, 1981, p. 60)

Prerequisite for this “ungoverned” analysis, as has been observed in Chomsky (1981), is the assumption that the embedded clausal projection in (1a) is CP rather than IP.¹⁾

Chomsky(1993) proposes a new framework of syntactic analysis, the Minimalist Program. In this framework, the concept of government is dispensed with. Without the grammatical armor of government, the “ungoverned” approach to PRO is hard to adhere to. In this paper, we endorse the proposal in Martin(1992, 1996) that PRO is licensed by [+Tense] infinitive INFL. We observe that s-selectional as well as c-selectional distinction can be drawn between the two types of infinitive complements. The ECM-type verb s-selects [-Tense] infinitive and c-selects IP, while the control verb s-selects [+Tense] infinitive and c-selects CP. We propose that I-to-C movement is required for the selectional checking of control infinitives.

The organization of the paper is as follows. In Section II, we make a brief survey of the Null Case approach to PRO and categorial properties of infinitive complements. In Section III, we make some detailed inquires about selectional properties of ECM and control infinitives. We conclude the paper with a proposal that [+Tense] moves from I to C at LF in control infinitives.

1) This paper assumes the clausal structure of Chomsky(1995). However, we sometimes use IP and TP interchangeably.

II. Categorial Properties of Infinitive Complements

Chomsky and Lasnik(1991) present a new approach to PRO, which is known as the Null Case analysis. According to this analysis, PRO has Null Case which is licensed by nonfinite INFL via Spec-head agreement. This proposal significantly restricts the distribution of PRO, and accounts for the availability of PRO in control infinitives. The Null Case analysis, however, does not account for the full range of the distribution of PRO. We still have to answer the question why PRO is not found in certain configurations like (3b).

- (3) a. Mary believes [_{IP} John to be honest]
 b. *Mary believes [_{IP} PRO to be honest]

Martin(1992, 1996) modifies Chomsky and Lasnik's account, and proposes that [+Tense] infinitive INFL assigns Null Case. According to him, [+Tense] infinitive INFL is lexically restricted to control infinitives: PRO appears in the specifier of control infinitive projections, but not in the specifier of ECM infinitives. In the following, more details of this analysis are provided, special attention being directed to some interesting selectional properties of infinitive complements.

Pesetsky(1991) observes that an event-denoting predicate can be embedded under control predicates, but not under ECM predicates.

- (4) a. John tried to bring the beer.
 b. *John believed Peter to bring the beer.

Enç(1991), on the other hand, observes that an eventive predicate is subcategorized for a temporal argument, which needs to be bound.²⁾ Martin(1996), based upon

2) In formal semantics, tense is a sentential operator, and its scope is the clause it attaches to. Enç(1985, 1987), on the other hand, proposes that tense is a referential expression

these observations, proposes that the temporal argument of an event-denoting predicate is bound by [+Tense] in a control infinitive, but not in an ECM construction. In (4a) the temporal argument of *bring* is bound by [+Tense] of the embedded infinitive. The embedded infinitive in (4b), on the other hand, bears [-Tense], and the temporal argument of the verb *bring* cannot be bound.

Independent evidence for Martin's proposal is found in Lobeck(1991, 1993). He notes that functional heads license the ellipsis of their complements only when they undergo Spec-Head agreement. The examples (6a), (6c), and (6e) show that *tensed INFL*, *'s*, and *+wh C*, which undergo Spec-Head agreement, license ellipsis, whereas the non-agreeing functional categories *to*, *the*, and *that* do not (Fukui and Speas, 1986).

(5) Functional Categories

	Agreeing	Non-Agreeing
I(=T)	INFL [+tense]	to
D	's	a(n), the
C	[+wh] Comp	that, whether, if

- (6) a. John likes Mary and Peter [_I does *e*] too.
 b. *John believes Mary to know French but Peter believed Jane [_I to *e*].
 c. John's talk about the economy was interesting but Bill [_D 's *e*] was boring.
 d. *A single student came to the class because [_D the *e*] thought that it was important.
 e. John met someone but I don't know who [_C +wh *e*].
 f. *John thinks that Peter met someone but I don't believe [_C that *e*].

Note that VP ellipsis is available in control infinitives.

denoting interval and the interval assigned to tense is the temporal argument of a verb.

- (7) a. John was not sure he could leave, but he tried [PRO to *e*].
 b. Mary didn't ask Peter to leave but she promised Bill [to *e*].
 c. I want PRO to leave, and John wants [PRO to *e*] as well.
 d. Mary wanted Bill to join the team, so John persuaded him [PRO to *e*].

This is in sharp contrast with the ECM infinitives in (8).

- (8) a. *Mary imagined John to have won the game, but Tom imagined Jane to
 [*e*].
 b. *Mary supposed Bill to be honest, but Tom supposed Jane to [*e*].

Martin observes that this contrast between ECM and control infinitives is exactly what is predicted if tense in control infinitives checks Null Case via Spec-Head agreement with PRO: the infinitive T in (7) undergoes Spec-head agreement with PRO, and its complement can be deleted.

Thus far, we have observed that control infinitives, but not ECM infinitives, bear their own tense specification. This observation is confirmed in semantic terms. Stowell(1982) observes that the understood tense of an ECM infinitive is determined largely by the tense specification of a governing verb. For example, the tense interpretation of the infinitive complements in (9a) and (9b) is determined by the matrix tense.

- (9) a. John believes [himself to be a fool].
 b. Mary considered [Bill to be very smart].

The fact that simultaneous reading, but not shifted reading,³⁾ is available in (9) may

3) The following is from Enç(1987).

- shifted reading : the complement tense shifts the evaluation time away from the time at which the matrix sentence is evaluated.
- simultaneous reading : the complement tense is interpreted as simultaneous with the

be considered to be a piece of evidence of the absence of Tense specification in ECM infinitives.

As for control constructions, it has been observed that their embedded tense seems to denote “hypothetical” future, interpreted relative to a certain evaluation time. Martin (1996) argues that the interpretation of [+Tense] in control infinitives is similar to that of *would/should*, which denotes “hypothetical” future.⁴⁾ In other words, unlike the ECM infinitive complements in (9), the control infinitives in (10a’), (10b’) and (10c’) bear internally specified “unrealized” tense.

- (10) a. I decided that I would give the vote of thanks.
a’. I decided to give the vote of thanks.
b. I remembered that I should lock the door.
b’. I remembered to lock the door.
c. I didn’t know what I should do.
c’. I didn’t know what to do.

III. Selecting ECM and Control Infinitive Complements

Having observed some syntactico-semantic differences between ECM and control infinitives, we now move on to selectional properties of the two types of infinitive complements. The following illustrates a control infinitive:

- (11) I wonder [_{CP} what PRO to do].

matrix tense.

- 4) Martin observes that modals enjoy the following properties.
- They check “subject” Case.
 - They affect temporal interpretations.
 - They are most often future-oriented.

WH-phrases in the pre-IP position being generally assumed to be in [Spec, CP], the embedded clause of (11) is best analyzed as a projection of C: *what* is in the specifier of the embedded CP.

(12) I wonder [_{CP} what_i [_{IP} PRO to do t_i]]

The following examples illustrate the same point.

- (13) a. I asked them when to give a bribe.
 b. I asked them where to give a bribe.
 c. I asked them how to give a bribe.
 d. I asked them what to give as a bribe.

For ECM infinitives, on the other hand, no WH-clausal configurations have been documented in the literature. We suppose this difference between control and ECM infinitives is traceable back to their difference in categorial properties: a control infinitive is CP, and an ECM infinitive IP.

In this section, we have observed that an ECM infinitive is IP while a control infinitive is CP. In the preceding section, we observed that an ECM infinitive is without tense specification ([–Tense] in Martin’s term) while a control infinitive bears tense specification (i. e., [+Tense]). These observations are reminiscent of the proposal in Grimshaw(1979). She contends that the lexical entries of a predicate contain information concerning selection of syntactic categories (c-selection) and semantic types (s-selection). She argues for the autonomy of c-selection and s-selection by noting that there is no one-to-one correspondence between semantic types of complements and their syntactic categorial realization. Pesetsky(1982, 1991), on the other hand, contends that c-selection may be dispensed with. He compares the primitiveness of c-selection with those of s-selection. He argues that the latter, but not the former, meets what is called “epistemological priority.” Assuming the correctness of Pesetsky’s proposal, we may argue that selectional information

concerning the two types of infinitives is specified in terms of [\pm Tense]: an ECM-type verb s-selects [-Tense] complement, while a control verb s-selects [+Tense] complement.

An interesting question can be raised about how [+Tense] is checked in a control infinitive. One reasonable assumption about the location of tense in control infinitives is that the clausal head C of these complements bears tense specification, (embedded) tense being selected by the matrix verb in a head-to-head fashion. Tense, on the other hand, is generally assumed to be located in INFL.⁵⁾

We suppose that the so-called I-to-C movement is responsible for the double presence of tense in T and C. The following illustrates I-to-C movement in interrogative sentences.⁶⁾

- (14) a. Did Mary go there?
 b. Will you have some more?
 c. What did Mary buy?
 d. How did John repair that car?

Rizzi(1990) and Yang(1995) propose that I-to-C movement in (14) is forced by [+Q] feature: I moves to C to lexicalize the [+Q] feature. Another instance of I-to-C movement can be observed in negative adverbial inversion constructions. The following examples are from Browning(1996):

- (15) a. At no time would Leslie run for any public office.
 a'. *At no time(,) Leslie would run for any public office.
 b. Only then did Leslie see anything moving.
 b'. *Only then(,) Leslie saw anything moving.

5) See Stowell(1982), Enç(1987) and Raposo(1987) for some details of close relationship between I and C.

6) Chomsky(1995) assumes that I-to-C movement is in force, presumably at the phonological component due to the Germanic verb-second property.

c. Not even for one moment had Leslie given a damn about the budget.

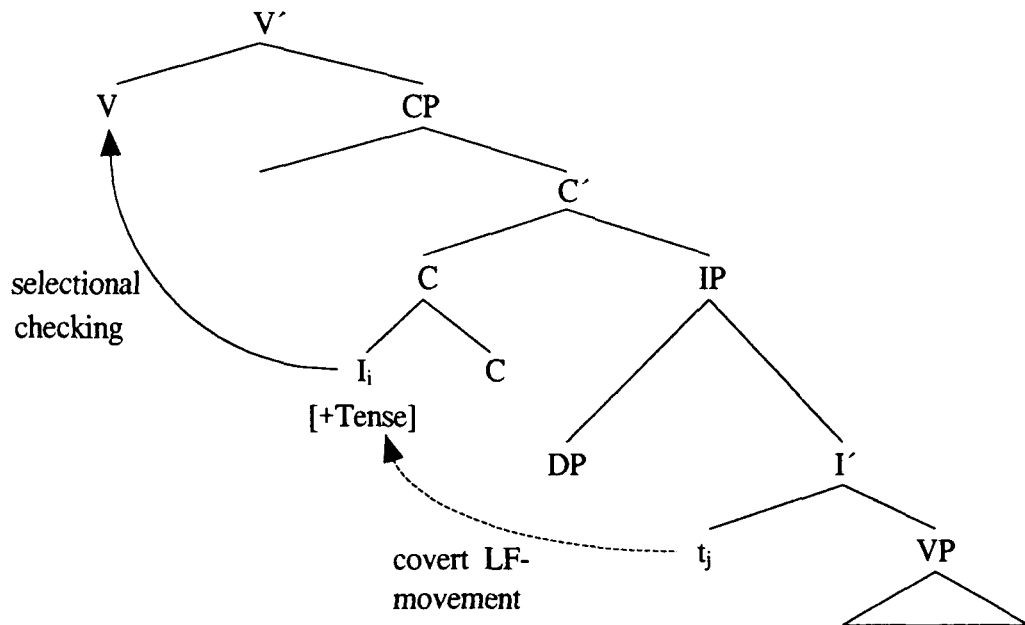
c'. *Not even for one moment(,) Leslie had given a damn about the budget.

In (15a), (15b) and (15c), the negative adverbial expressions *At no time*, *Only then* and *Not even for one moment* are in [SPEC, CP] and the head of each CP bears [+Neg] via SPEC-head agreement. Browning proposes that I moves to C in (15a), (15b) and (15c) to lexicalize the feature [+Neg]. This type of inversion, according to Browning, is forced by [+Neg], the scope-marking feature of negative (adverbial) expressions.

In (14), (15a), (15b) and (15c), we have observed that I moves to C to meet a morphological requirement on C. In the Minimalist Program, movement of an element α must be driven by the morphological properties of α itself: α cannot move to β to satisfy the morphological requirement of β . We propose, following Raposo (1987), that the I-to-C movement under consideration is driven by scope requirement of the features in I. The I of (14), (15a), (15b) and (15c) bears scope feature [+WH] and [+Neg], and I moves to C to mark the scope of [+WH] and [+Neg].

We propose that [+Tense] T moves to C in control infinitives to mark the scope of its tense specification. This proposal is in line with the suggestion in Epstein (1998). T, according to Epstein, undergoes movement to C at LF, English being a “covert verb-second” language. Under the covert I-to-C movement analysis, the selectional relation between a matrix verb and its complement is successfully checked in a head-to-head fashion in control infinitives.

(16)



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