

(Not) Moving Clauses

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1. Interface questions about Nominal and Clausal Arguments

A central topic for the syntax-semantics interface is how arguments combine with their argument-takers.

The picture we currently have about these relations, most thoroughly studied for nominal arguments, involves the following three ingredients.

1. The selection of nominal arguments is semantic

- the semantic combination of nominal arguments (DPs like quantified nouns, etc.) with their selecting predicates is fully determined by the meaning of DPs, the selecting predicate, and their type-driven composition.

2. Nominals arguments are subject to non-semantic constraints on their surface position

- these include licensing requirements, like case.

But the positions in which arguments can surface (according to 2) are sometimes only *indirectly* related to the positions they are interpreted in (according to 1).

- (1) a. Which of his₁ friends didn't any boy₁ talk to? a'. Some boy didn't talk to his₁ friends.
 b. *Which of his₁ friends didn't talk to any boy₁? b'. *His₁ friends didn't talk to any boy₁.

3. Movement

- movement is designed to allow sentences to satisfy the demands of 1. and 2.
 - the copy theory of movement does so by generating copies in various positions, some where they may not even be interpreted (Chomsky 1993, Fox 1999)
- (2) a. Which of his₁ friends didn't any boy₁ talk to *which of his₁ friends*?
 b. *Which of his₁ friends didn't *which of his₁ friends* talk to any boy₁?
- interpretation: copies are not truly identical – lower copy is a definite description that contains an additional variable (Sauerland 1998, Fox 2002, Johnson 2009)
 - e.g: Fox's trace conversion (THE below is manufactured from the copy of the determiner)
- (3) Which one of his₁ friends didn't any boy₁ talk to [which of his₁ friends]
Which ~~one of his₁ friends~~ λx didn't any boy₁ talk to [THE y. one of his₁ friends(y) & y = x]?
- semantically interpreted movement, then, requires lower copies to contain silent determiners

How do clauses fit this picture?

Two well-known differences between clausal (CP) and DP arguments.

1. The surface licensing condition for CPs is different than DPs

(4) *CPs don't sit comfortably in subject position*

- *To what extent is that the moon is made of cheese a theory that's worth considering?
- To what extent is the idea that the moon is made of cheese a theory worth considering?

(5) *CPs aren't subject to the kinds of case requirements DPs are*

- Marilyn is afraid (*of) that Gordon will try to repair the boat himself.
- Marilyn is afraid *(of) that.

2. What functional heads head clauses?

- it is unknown exactly whether there are meaningful grammatical ingredients that can put together predicates with their clausal arguments (complementizers? determiners?)
- and if there are, can they be put to use for the purposes of interpreting copies (i.e. trace conversion)?

Today's Plot

Part One: Clauses don't move

Evidence: the absence of certain reconstruction conflicts with fronted CPs (sentential subjects and topics)

Analysis: clauses are base generated in their surface positions; they are interpreted only where they appear

Reason: Movement requires trace conversion; trace conversion requires determiners

∴ clauses don't have determiners (cf. Takahashi 2009, et. alia.)

Part Two: Clauses do move

Evidence: Complement clauses extraposed from NPs show effects of movement (Fox and Nissenbaum 1999), as in *I heard the rumour the other day that Fred left*.

Analysis: complement clauses of nouns move.

Reason: Clausal complements of nouns *do* have a determiner that allows them to compose with their NP.

This is due to the special semantics of constructions like *the rumour/belief that Fred left* (Stowell 1981, Higgins 1973, Potts 2002, Kratzer 2006, Moulton 2009)

2. CPs don't move

'Fronted' CPs: sentential subjects and sentential topics

- (6) a. That he would be so rude seemed to Mary rather upsetting.
 b. That he would be so rude, I don't think Mary expected.
- A separate issue: some suggest that the sentential subject is really in the position that the sentential topic is (Koster 1978, but cf. Delahunty 1983, Davies and Dubinsky 2008)

Applying Reconstruction Tests to CPs

- **a caveat:** care must be taken when evaluating questions of binding in opaque contexts, which many sentential subjects and topics are
- confounds to be aware of: perspectival variation (Kuno 2004), the role of *de se* interpretations and its interaction with binding (see e.g. Grodzinsky 2007); 'distance' effects (Reinhart 1983), and information structural and prosodic factors
- the sentences below control these factors

✓Fronted CPs allow bound variable interpretation

- (7) a. That he₁'ll end up looking like his father doesn't seem to any young man₁ to be very likely.
 b. That he₁'ll end up looking like his father, (I don't think) any young₁ man expects.
- this isn't *yet* evidence that clauses participate in movement

Flexibility of copies: Anti-Reconstruction

- movement doesn't always require identity of copies
 - certain referring expressions do not always induce a disjoint reference effect – they 'bleed' Condition C
- (8) a. Which students in Ms. Brown's₁ class did she₁ like best?
 b. The undergrads in Ms. Brown's₁ class, she liked₁ more.
- (9) *She₁ liked certain students in Ms. Brown's₁'s class more.
- in cases where the semantics allows it (modifiers), copy theory lets material be present in one copy but not another (Lebeaux 1988, Chomsky 1993, Fox 1999)
- (10) [The undergrads [_{PP} in Ms. Brown's₁'s class]], she₁ liked [_{the undergrads}]

✓Fronted CPs bleed Condition C

- (11) That Texas would be a surprise was always possible, but...
 a. That Ms. Brown₁ would lose Ohio seemed to her₁ to be unlikely.
 b. That Ms. Brown₁ would lose Ohio, she₁ never expected.

The real test for syntactic reconstruction: creating a conflict (Romero 1998, Fox 1999)

- (12) *Fox's design*
 a. [_{XP} ... pronoun₁ ... r-expression₂ ...] ... pronoun₂ ... ✗ ... QP₁ ... ✗
 b. [_{XP} ... pronoun₁ ... r-expression₂ ...] ... QP₁ ... ✓ ... pronoun₂ ... ✗
- (13) a. *The papers that he₁ gave to Ms. Brown₂, she₂ hoped that every student₂ will revise.
 b. The papers that he₁ gave to Ms. Brown₂, every student₁ hoped that she₂ will read.
 (Anagnostopoulou and Fox 2007)
- (14) a. *The papers that he₁ gave to Ms. Brown₂, she₂ ✗ hoped that every student₁ will revise ✗.
 b. The papers that he₁ gave to Ms. Brown₂, every student₁ hoped ✓ that she₂ will read ✗.

*Clauses do not show this effect

- (15) *Sentential 'Topics'*
- a. ...but that he₁ might be too old for Mrs. Brown₂, I don't think she₂ would want any man₁ to believe.
 b. ...but that he₁ might be too old for Mrs. Brown₂, I don't think any man₁ would want her₂ to believe.
- (16) *Sentential subjects*
- a. ...But that he₁ might actually be too old for Mary₂ seemed to her₂ not to enter any man₁'s mind.
 b. ...But that he₁ might actually be too old for Mary₂ seemed to her₂ not to enter Bobby₁'s mind.
- CPs allow for binding *and* bleeding of Condition C
 - since movement is *designed* to **force** a conflict here, CPs must not move.
 - clauses are interpreted where they appear
 - so clauses are based generated in their surface position (the analysis of Koster 1978, Alrenga 2005)
 - we must find another way to achieve co-variation for the pronoun

2.2. Conclusion

- the signature of syntactic reconstruction is not found with fronted CPs
- CPs are interpreted in the positions in which they surface
 - using De Re attitude ascription, we can understand “apparent” binding into fronted CPs
- movement, then, is not used to let a CP be interpreted in a place it isn’t ‘licensed’; other mechanisms only imitate this effect

3. Can clauses move?

- we have seen that there must be parses for fronted CPs that base-generate them in their spoken position
- this doesn’t rule out movement of CPs; perhaps they *do* move, but certain strings (like those that cause reconstruction conflicts) are just ‘thrown out’
- No! recall the DP requirement: it must be the case that bare CPs can’t move

An alternative: Covert DP analysis

- clauses are part of a DP (Rosenbaum (1967), Davies and Dubinsky (2008), Takahashi (2009))
- only DPs undergo semantically interpreted movement (Takahashi 2009)

(27) [_{DP} Det [that John will lose]]_i seems t_i unlikely

- a covert DP analysis is not ruled out; the reconstruction data show that it is not sufficient
- But the covert DP analysis is not needed, it causes problems: why can’t non-moved CPs be embedded in a DP structure?

(28) a. *This assumption accounts for that these nouns behave differently.
 b. *The panel deliberated over that John would represent them.
 (Alrenga 2005:185)

(29) a. That these nouns behave differently is accounted for by this assumption.
 b. That John would represent them was deliberated over by the panel.
 (Alrenga 2005:185-6)

- If CPs can be headed by Determiners, what prevents a covert determiner from rescuing (28)a,b?²
- English just doesn’t allow determiners to head clauses (unlike, for instance, Greek (Roussou 1991) or Persian (Farudi 2007).

² Takahashi (2009) suggests that the covert Det in clausal arguments *must* participate in topicalization.

The proposal

CPs don’t move because CPs can’t have determiners on them.

Determiners are needed for (semantically interpreted) movement because:

- the copy theory movement requires some enrichment/modification to the way lower copies are interpreted
- e.g. quantifier raising: quantifier can’t be interpreted twice

(30) John read every book
 Every book [John read every book]³
 $\Rightarrow * [\lambda P. \forall x [\text{book}(x) \rightarrow P(x)]] (\forall y [\text{book}(y) \rightarrow \text{read}(\text{John})(y)])$

Solution: make the lower copy a type of donkey description

- the lower copy needs to contain a variable, and this is often achieved by turning the lower copy into a type of definite description whose value covaries as a function of the higher copy (e.g. Trace Conversion (Fox 2002), or similar mechanisms (see Johnson 2009))

(31) Trace Conversion: [Det (NP)]_i \Rightarrow THE [NP & $\lambda x. x = 1$]

(32) Every book_i [John read [every book]_i]
 \Rightarrow Every book λI John read THE [book & $\lambda x. x = 1$]
 $\Rightarrow \forall I [\text{book}(I) \rightarrow \text{read}(\text{John})(\iota y [\text{book}(y) \ \& \ y = 1])]$
 \approx For all books x , John read the unique thing that is a book and identical to x

Clauses

- there are no determiners heading English complement clauses
- movement, then, would create two copies but there would be no way to interpret them

(33) [that John will leave] I don’t believe [that John will leave]
 $\Rightarrow * p \lambda r [I \text{ don’t believe } p.]$

Prediction: in places where we *can* find evidence for determiners, we should find movement.

³ The problem here isn’t that generalized quantifiers can’t be interpreted in object position (they can, once we sever the external argument, Kratzer 1996). The point is that the quantifier can’t be interpreted in more than one place.

4. CPs do move

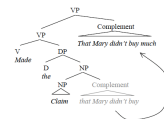
Fox and Nissenbaum (1999) provide evidence that clauses do move:

- asymmetries between complement and adjunct extraposition (from NP)
- they argue for a model whereby extraposed relatives merge counter-cyclically (“late merge”) to a noun covertly moved, whereas complement CPs move rightward.

(34) a. I made a claim yesterday that Mary didn't buy.



b. I made the claim yesterday that Mary didn't buy much.



Condition C: relatives but not complements bleed condition C

- (35) a. I gave him_i an argument yesterday that supports John's_i theory.
b. ??/*I gave him_i an argument that supports John's_i theory yesterday.
- (36) a. ??/*I gave him_i an argument yesterday that this sentence supports John's_i theory.
b. *I gave him_i an argument that this sentence supports John's_i theory the other day.
(Fox and Nissenbaum 1999:(11b),(12b))

Scope of source NP is only as low as the adjunct in the case of the extraposed relative; can be low in the complement clause case (free choice *any* needs to be in the scope of intensional *look for*)

- (37) a. * I looked for any clue very desperately that the detective might have overlooked.
b. I looked for any clue very desperately that the detective might have overlooked important evidence.
(Fox and Nissenbaum 1999(17ab))

So why can clausal complements of nouns move?

4.1. When determiners *can* head clauses

The complements of nouns (like *evidence*, *rumour*, *claim*) are not arguments but a type of restrictive appositive modifier (Stowell 1981)

Implication: making good on Stowell's conjecture requires the presence of determiners in the clausal complements to nouns

Result: because of the presence of the determiner, movement will be available to these clauses

4.2. Complements to nouns

We know the CPs aren't arguments because these nominals don't take arguments in general (Grimshaw 1990):

- (38) a. *John's story/theory/belief/claim of that.
b. John believed/claimed that.

Higgins (1973) and Stowell (1981): the CP complements describe the “content” of the theory or belief or claim, just as they do in the copula construction, which is an equative/specificational copula (Higgins 1973).

- (39) a. The theory is that pigs fly.
b. The belief/claim/observation is that pigs fly.

CP equative constructions

Potts (2002): small clauses do not allow for equative predication (Heycock and Kroch 1999):

- (40) a. Your attitude towards Jones is my attitude toward Davies.
b. *I consider your attitude toward Jones my attitude toward Davies.
c. *I consider my attitude toward Davies your attitude toward Jones.
(Heycock and Kroch 1999:(29))

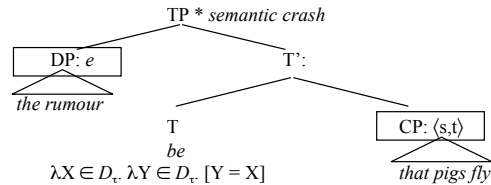
CPs can't appear as the ‘predicate’ in small clauses

- (41) a. *I consider the problem that she is bonkers.
b. *I consider that she is bonkers the problem.
c. *I consider it the problem that she is bonkers.
(Potts 2002:68(33))

There is a specificational (a.k.a. equative) relation between the NP and clause

(42) Equative copulas involve equative *be* (its two arguments are of the same type) (Partee 1987, Potts 2002)
 $\llbracket be \rrbracket = \lambda X \in D_r. \lambda Y \in D_r. [Y = X]$

(43) The CPs can't be just "propositions" (i.e. of type $\langle s,t \rangle$): types don't match (Potts 2002)



Which one do we make like the other?

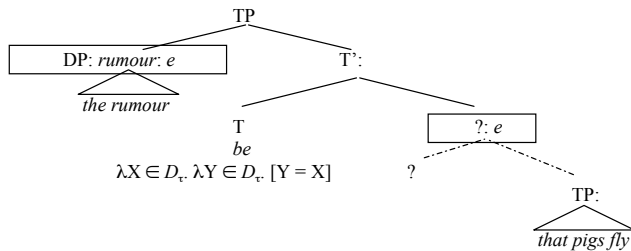
A rumour isn't a proposition:⁴

- rumours can be mean or nasty or old or dead; propositions can't
- rumours occur at a time and can cease to exist; propositions can't

(44) a. The nasty rumour that Fred left.
 b. ≠ It's nasty that Fred left (and that's a rumour).

(45) a. Yesterday's theory that pigs fly is dead.
 b. *That pigs fly is dead.

(46) ...so the clause must denote what *the rumour* does (in type *e*)



⁴ Here we diverge from Potts (2002), who contends that words like *rumour* describe (nominalized) propositions. We don't want to identify *the rumour* with the post-copular proposition, for reasons shown above.

A rumour is a thing that has propositional content – a “content” noun

(47) $\llbracket rumour \rrbracket = \lambda x. \lambda w. rumour(x)(w)$ also: *story, idea, theory, myth, etc.*

Content Recovery:

- 'things' can have propositional content
- the content of a particular rumour *x* is a set of possible worlds
- we define a function *f*CONT that returns for any thing *x* with content the set of worlds compatible with *x* in *w*.

(48) $f_{CONT}(x)(w) = \{w' : w' \text{ is compatible with } x \text{ in } w\}$

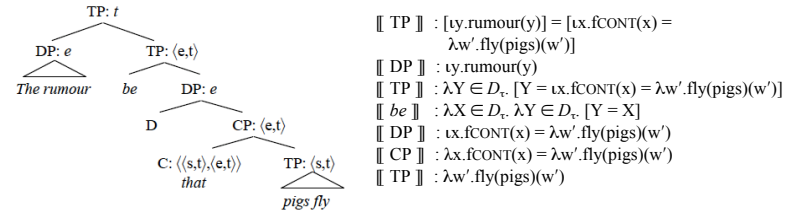
Kratzer (2006): Complementizers can introduce propositions

- turn clauses into (predicates of) 'things' with content, where that content is identified with the proposition

(49) $\llbracket COMP \rrbracket = \lambda p. \lambda x. \lambda w. f_{CONT}(x)(w) = p$ (after Kratzer 2006)

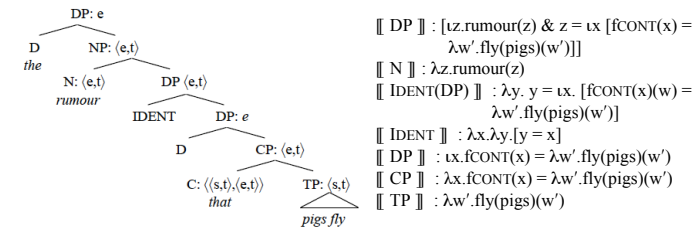
Filling in the tree: n.b. (most) world arguments suppressed here!

(50) The rumour is that pigs fly



In the nominal complement structure, the CP must restrict the nominal

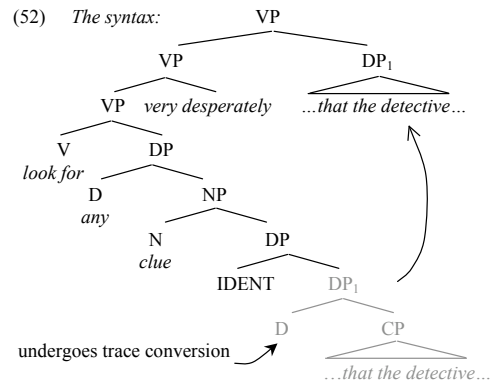
- the DP 'complement' shifts by IDENT (after Potts 2002, Partee 1987)
- the result is that the DP identifies the content of the rumour.



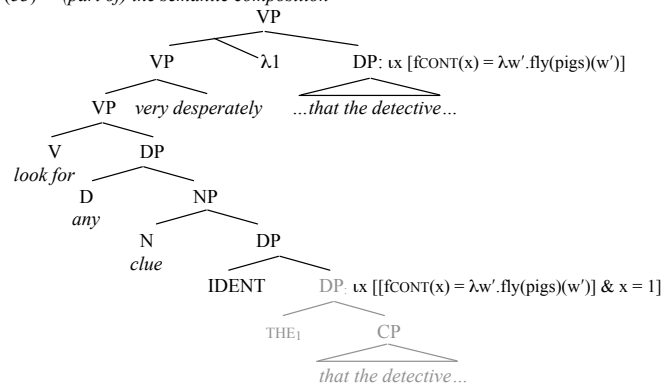
4.3. Back to movement

- recall that complements to nouns move (Fox and Nissenbaum).

- (51) a. *I looked for any clue very desperately that the detective might have overlooked.
 b. I looked for any clue very desperately that the detective might have overlooked important evidence. (Fox and Nissenbaum 1999(17ab))



(53) (part of) the semantic composition



The result is a little redundant (as a result of trace converting definite descriptions), but it keeps *any clue* low and interprets the CP low and high:

(54)

look for any [$\lambda z.clue(z) \ \& \ z = ix \ [fCONT(x) = \lambda w'.fly(pigs)(w')]$] & $x = ix \ [fCONT(x) = \lambda w'.fly(pigs)(w')]$
 = *look for any* [$\lambda z.clue(z) \ \& \ z = ix \ [fCONT(x) = \lambda w'.fly(pigs)(w')]$]

We predict relatives can late merge to the extraposed [D[CP]] (allowing low scope for *any*)

- (55) I looked for any clue during the trial that Mary was innocent that John might have overlooked.

And this should bleed condition C:

- (56) a. *?I gave him₁ evidence that John₁ submitted to the judge.
 b. I gave him₁ evidence very quickly that John₁ (then) submitted to the judge.
 c. I gave him₁ evidence very quickly that Mary was innocent that John₁ then submitted to the judge.

5. Conclusion

- clauses don't move (in a way that is semantically interpreted); only DPs do⁵
 - clauses don't have DPs on top of them unless the embedding noun requires/allows it
- Open question: can we prevent verbs from taking clauses headed by DPs?

What Moves?

- what can move (in a way that's semantically interpretable) is dependent on trace conversion
- trace Conversion can only turn determiners into definite determiners
- so the question of what can move has now been reduced to understanding this question.

⁵ Takahashi (2009) makes this claim about, but with the opposite conclusion about clauses

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