

Clausal Complementation and the *Wager*-class

Keir Moulton

1. How do clausal complements complement?

A standard view takes clausal complements to be arguments of the predicates that embed them. So for instance, attitude verbs (like *believe* and *understand*) and modal verbs and adjectives (like *seems* and *likely*) syntactically select for clauses (tensed CPs in these cases) and semantically select for the kind of meanings usually associated with clauses, *propositions*.

- (1) a. John believed that he made the right decision.
- b. John understood that he only lives once.
- c. It is likely that kids will make fun of you.
- d. It seemed to me that adults made fun of you too.

The standard semantic treatment of attitude verbs and modals has been an analysis in which these expressions quantify over possible worlds, which are what propositions are sets of (Hintikka 1962, Kratzer 1977). So *believe* and *seems* have denotations that take propositions as the nuclear scope of a quantifier that is embedded as part of the lexical entry of these verbs, and additional lexical properties of the verbs – accessibility relations hard-wired in their meaning – restricts this quantification (to *doxastic alternatives* (the function DOX, below) in the case of *belief* or other modal bases in the case of *seems*):

- (2) a. $\llbracket \text{believe}(p)(x)(w) \rrbracket = \forall w' \in \text{Dox}(x,w): p(w')$
- b. $\llbracket \text{seem}(p)(x) \rrbracket = \forall w'. w' \text{ is compatible with the evidence available to } x: p(w')$

I will provide support for a different picture for attitude verbs, a picture in which clausal complements, or propositions, are not arguments of embedding predicates, but are rather introduced by a range of ‘mediating’ heads represented in syntax (Kratzer 2006, Portner 1992). I will use as evidence some fine-grained differences in the lexical semantics among attitude verbs.

My claim is that attitude verbs in English that describe events (like *think*, *claim*, and *say*), as opposed to attitudes that describe states (such as *believe* and *know*), must embed a clause via a particular Complementizer. This complementizer provides an

accessibility relation relative to the *event* of the embedded predicate (building on work on event-relative modality by Hacquard 2006).

The evidence for this claim comes from a curious set of facts in complementation surrounding a class of infinitival-taking verbs known as the *wager*-class, first discovered by Postal (1974).

2. Raising to Object: the *Believe*-class and the *Wager*-class

The predicates in (3), the '*B-class*', license exceptional case marking (ECM) on the subject of their infinitival complement (3)a. Anticipating the analysis below, I will take ECM as an instance of raising-to-object (Postal 1974, Johnson 1991, Runner 1995, Koizumi 1994). As expected, the derived object can participate in other operations that canonical objects participate in, such as passive raising (b), reflexivization (c) and A-bar movement (d). Predicates that participate in the paradigm include *believe*, *consider*, *hold*, *know*, *understand*.

- (3) *B-class infinitives*
- a. Melvin believed/considered/held/understood/knew **Bill to be a liar.** *R-to-O*
 - b. **Bill** was believed/considered/held/understood/known **to be a liar.** *passive*
 - c. **Bill** believed himself to be a great sleuth. *reflexive*
 - d. **Who** did Melvin believe/consider/hold/know **to be a liar.** *Operator mvmt.*

There is another set of verbs that doesn't behave quite as well. This class was identified by Postal (1974) as Derived Object Constraint verbs (DOC verbs). The reader may be more familiar with this as the *Wager*-class, following Pesetsky (1992). *Wager*-class constructions are subject to a curious constraint on the subject of their infinitival complement. These verbs do not allow raising-to-object (4) but appear to allow the subject position of the infinitival to be occupied by traces of other movements: passive raising (4b), *wh*-movement (4c), and heavy NP shift (HNPS) (4d), as well as expletives (4e)¹.

- (4) *Wager-class infinitives* (a.k.a. Postal's DOC-class))
- a.* John wagered/alleged/thought/assumed/said **Bill to be in Cairo.** * *R-to-O*
 - b. **Bill** was said/wagered/alleged/thought/assumed **to be in Cairo.** *Passive*

¹ Ura (1993) and Bošković (1997) claim that pronouns are also *wager* rescuers. If these data can be maintained, then it could be that case to pronominals (or raising to object of pronouns) is different than lexical DPs.

- c. **The person** John said/wagered/claimed/thought/assumed **to be in Cairo** was in fact in Medina. *wh/Q-operator*
- d. John said/wagered/claimed/thought/assumed **to be in Cairo** all those people whom he meet at the conference. *HNPS*
- e. John said/claimed/thought/ **there to be stolen documents in there**. *expletive*

These are indeed structures in which the moved element is the subject of the infinitive; it is just that R-to-O is not one of the movements allowed. I will call those movements/traces that *are* allowed here the '*wager-class rescuers*'.

It is important to rule out Case as the factor that prevents R-to-O for the *wager-class*. It is easy to see that the problem isn't due to the failure of these verbs to assign Case. Witness that all the *wager-class* verbs allow for DP objects, which presumably receive object case:

- (5) a. Gord claimed the parcel of land for himself.
 b. Lilah said her name yesterday.
 c. Myrtle wagered a hundred dollars on Lucky Strike.

So the *wager-class* paradigm presents a real puzzle in preventing R-to-O, but not any other movement operation.

Before moving on, it is important to mention some caveats about the nature of the *wager-class* data. There is a lot of gradience in acceptability, as with ECM in general (see Pesetsky 1992 for discussion).² While passive raising is very natural for all *wager* verbs, the other extraction rescuers are generally less acceptable, and expletives vary in their acceptability. There are also differences among the verbs as well. I will use *wager-class* verbs such as *think, claim, wager, say* (and other *verbi dicendi*) to demonstrate the class.

² Prompting Kayne (1984, p121) to comment that Postal's *DOC* facts are not "at all clear". Kayne finds ECM good with most of the cited verbs. I disagree: the core *wager* verbs, like *say, claim, allege* are all terrible in straightforward ECM/RTO constructions. ECM is improved if the complement clause has a subjective or evaluative component:

- | | | |
|-----|--|--------------------------------|
| (i) | a. She said Fred/him to be very pretty. | <i>'subjective' complement</i> |
| | b. Fred thought him to be irresponsible. | <i>'subjective' complement</i> |
| | cf. *She said him to be in the room next door. | <i>not subjective</i> |
| | cf. *Fred thought him to be in the office. | <i>not subjective</i> |

3. A near *Wager*-class Paradigm in French

The English *wager*-class paradigm is peculiar because English has R-to-O out of infinitival complements, and hence if a verb allows, say, passive raising, it should also allow raising to object for verbs that assign object case. But there are languages that do not allow R-to-O from infinitives at all, but do appear to allow some of the ‘rescuers’ that the *wager*-class verbs in English do. French (and Italian) has a pattern similar to English *wager*-class (Kayne (1984), Rizzi (1982), Bošković (1997)). In French, Raising-to-Object (or ‘ECM’) from infinitives is not acceptable (a);³ However, such constructions can be rescued by a subset of the *wager*-class rescuers, including question and relative operators (b,c) and heavy NP shift (d).

- (6) a. *Je croyais le garçon être arrivé. *ECM
 I believe the boy (to) have arrived.
 [Rochette 1988:322(5a)]
- b. Qui croyais-tu aimer Anne? *Q-operator*
 Who believe you to-love Anne.
 [Bošković 1997: 129(103a)]
- c. Le garçon que je croyais être arrivé. *Rel-operator*
 The boy that I believed (to) have arrived.
 [Rochette 1988: 332(5a)]
- d. Pierre croit être doctresses les femmes qu’il a rencontrées *HNPS*
 l’année dernière à la Nouvelle Orleans
 Pierre believes to be doctors the women he met last year in New Orleans.
 [Bošković 1997: 133(113)]

However, unlike the English *wager*-class, French infinitives under these propositional attitudes do not allow passive raising:^{4,5}

³ R-to-O/ECM is allowed in French small clause complements (i). I will leave small clauses aside for now, since I do not know how they conform to the proposal for attitude ascription adopted in this paper.

(i) Je crois Marie intelligente.

⁴ Expletives appear not to be *wager* rescuers in French. Since expletives in French have Case requirements different from English expletives, we expect different conditions on their appearance in infinitives.

⁵ There is considerable variation, it seems, in the availability of passive raising. For Italian, Rizzi (1982) reports that passive raising is possible from infinitives as long as the matrix verb is one that can also embed a small clause (and small clause subjects *do* passive raise). Rizzi suggests that such cases of passive raising out of infinitives are cases of analogy to the small clauses. Pesetsky (1992) reports similar findings from French, and argues that an analogical process cannot be the source of passive raising out of infinitives. Since, in the general case, passive raising is out for

- e. *Pierre était cru aimer Anne. *Passive Raising
 Pierre was believed to love Anne.
 [Bošković 1997: 130(105)]

Other properties also put English *wager*-class and French propositional infinitives in correspondence. Epistemic attitude verbs allow control in French (7)a unlike English B-class verbs (7)b.

- (7) a. Je crois avoir résolu le problème. [Rochette 1988:343(171a)]
 b. *I believe to have solved the problem.

English *wager*-class verbs, however, do allow control. This is particularly evident with *claim* (a fact, incidentally, that poses problems for any account that relates English control to the tense or modality of the complement infinitive (Martin 1992, Bošković 1997, see Wurmbrand 2006). The ‘flavor’ of control complement, however, varies depending on the particular *wager*-class verb: while *claim* appears to allow a control complement that roughly corresponds to an indicative finite clause complement, the control complements of verbs like *think* and *wager* are implicative (Karttunen 1971), and the control complements of verbs of speech (like *say* and manner of speech verbs like *shout*) give rise to implicit object control, with a directive modality flavor:

- (8) a. I claimed to have solved the problem. (propositional)
 b. I didn’t think to check the schedule, sorry. (implicative)
 c. I wager to say... (implicative)
 d. I said to check the schedule. (implicit object control)
 e. The guard shouted to step back. (implicit object control)

Summarized below is the three-way distinction between English *wager*-class verbs, French infinitival complements to (epistemic) attitude verbs and English B-class verbs:

verbs that embed infinitives, I will assume that English and French differ on this count. However, as we will see, I put the passive raising in a separate category from the other *wager*-class rescuers, which has the effect of making the differences between French and English, jumping ahead a bit, a question not about raising but about the availability of raising adjectives.

(9)

Summary:	English <i>wager</i>	French	English B-class
Raising-to-Object	-	-	✓
Control	✓	✓	-
Operator (<i>Q, rel</i>)	✓	✓	✓
Passive Raising	✓	-	✓

In this paper, I will concentrate on those *wager*-class rescuers that involve A and A-bar movement (passive raising and Q- and relative-operator movement). Since the status of expletives is unclear for Romance, I leave them out of this discussion (see Moulton 2007 for an account of *wager*-class constructions that incorporates English expletives and HNPS).

4. A Simple Syntactic Picture

I am going to defend a rather straight-forward, and relatively traditional, account of French infinitival complements, and then extend that picture to English *wager*-class constructions. Under this account, infinitival complements of *wager*-class verbs are CPs. My aim is to show that there is good semantic evidence for such an extension. The argument will involve identifying different kinds of complementizers for different kinds of attitude verbs. This proposal, in turn, offers support for a different view of attitude ascription, one that factors out the modal component of these predicates' meaning into complementizers (following work on complementizer meanings found in Portner 1992, and recent proposals by Kratzer 2006).

French 'propositional' infinitives, like those in (6) and (7)a, are often claimed to uniformly select for CPs (Kayne 1984, Rochette 1988, Bošković 1997). This has two effects. The first is that the presence of a CP barrier will prohibit A-movement out of the infinitive, under whatever constraint prohibits A-movement from a CP. While deriving such a syntactic constraint isn't easy in a Minimalist's world (see Bošković 1997 for one approach), we know that we need such a constraint independently. We can straightforwardly rule both raising to subject and raising to object. The second consequence of a CP analysis, following an influential proposal by Kayne (1984), is that a CP allows for the kind of *wager*-class rescuers that involve A-bar (*question* or *relative-operator*) movement from embedded subject position. Kayne (1984) proposes that Q- and relative-operators can receive Case as they pass through an intermediate specifier position of CPs. We will turn to the evidence for this laxing of case assignment

conditions. With such a mechanism, though, A-bar movement of infinitival subjects will be licensed if the complement has a Spec, CP position, correctly deriving the availability of A-bar extraction as a *wager*-class rescuer (English (4)c,d,e) and French (6)b,c,d).

This account, though, appears at first glance not to be suitable for English *wager*-class verbs. The primary reason is that English allows passive raising from *wager*-class complements, suggesting that the complement cannot be a CP. The second reason for rejecting this account is that English appears to allow other attitude verbs, those of the *B*-class, to take a non-CP complement. This is just the account many authors have given to the English *B*-class verbs: they select a constituent that is transparent to A-movement, giving rise to both raising to object and raising to subject (Bošković 1997). Moreover, as Pesetsky (1992) concludes, the complement type of *B*-class and *wager*-class verbs appears to be the same kind of semantic object. Pesetsky's evidence is that *B*-class verbs select for the kinds of clauses (*propositions* in his terminology) for which truth or falsity can be predicated (the appositive should be read as modifying the embedded clause):

- (10) a. John believed Mary to be a liar, which was true.
 b. Mary was thought to be a liar, which was true.

This is in contrast to other clause-embedding predicates, those whose complements are often described as 'irrealis' that do not allow truth or falsity to be predicated of them:

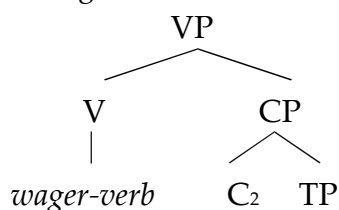
- (11) a. John wanted Mary to be his wife, #which was true.
 b. People desired for John to be Mary's wife, #which was true.

B- and *wager*-class infinitives in (10) are indicative; they are veridical in the sense of Giannakidou 2007), as opposed to those non-veridical complements in (11). This led Pesetsky (1992), and many following authors, to conclude that the complements of *wager*- and *B*-class infinitives were the same. For Pesetsky, in particular, both *wager*- and *B*-class complements select for CPs, just as in French. But English complementizers have the ability to 'incorporate' into the matrix verb. This incorporation, something independently advocated for null finite complementizers, renders the complement transparent to A-movement (under assumptions about conditions on government of the time). The unavailability of the R-to-O for the *wager*-class verbs is, under Pesetsky's account, a result of a separate condition on case-marking across sentence boundaries, subject to a particular generalization about *wager*-class verbs (which we will return to soon). The complementizer incorporation account has been subsequently rejected, under theories that do not require complement clauses to be CPs. So, for instance, Bošković (1997) argues that raising complements are TPs, in both the *B*- and *wager*-class,

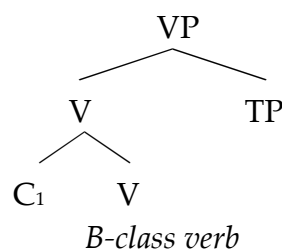
but like Pesetsky, accounts for the unavailability of R-to-O in *wager*-class verbs by separate principles.

My claim is that the English *wager*-class complements *are* like French, and my goal is to show that the obvious objections to this account, just outlined, are in fact not problems. With respect to the first obstacle, the passive praising cases, I will make the case that English passive raising in (4)b is not passivization, and should not be considered part of the *wager*-class paradigm. The second obstacle will be the nature of the complementizer in *B*- and *wager*-class infinitives. I will present evidence that *B*- and *wager*-class verbs select for different complementizers, using as motivation some novel evidence from the nature of these verb classes' non-clausal complements. That in place, I will revive Pesetsky's analysis of complementizer incorporation – recast as a theory about what kinds of complementizers can serve as affixes to verbs – and I will provide some semantic motivation for when such incorporation is possible and when it isn't. The basic picture, then, will look like the following: Two different complementizers in English: C_2 , selected by *wager*-class verbs, the other C_1 , compatible with *B*-class verbs, can be an affix.

(12) a. *wager* verbs: C_2



b. *B*-class verbs (C_1 : an affix)



The argument will proceed in several steps. First, I need to argue that there are indeed two different complementizers. And then I need to make the case for treating one of them as an affix. In the next section I turn to the evidence for postulating two different complementizers for *B*-class and *wager*-class constructions. After that, I will show that there is good evidence, following Pesetsky (1992), for treating the *B*-class complementizer as an (optional) affix. I will then add some new evidence, from nominalization, for this perspective as well.

5. Motivating the Simple Syntax: *wager*-class verbs don't select for things with propositional content

There is a striking difference between *wager*-class and *B*-class verbs when we turn to the kinds of nominal arguments these two classes of verbs take. The *B*-class verbs (those

that allow R-to-O) select for nominals that describe things carry propositional content. These are nouns like *rumour, story, idea, proposition, nonsense*:

- (13) a. Pinchwife does not **believe the rumor that** Horner is impotent because, as he well knows, rumors are unreliable.⁶
 b. To take a simple example, **consider the idea that** vitamin supplements in pregnancy lead to healthy babies.⁷
 c. David, I don't **understand your claim that** the argument has nothing to do with probability.⁸
 d. Rita held the belief that Jesus will return again.

Wager-class verbs, on the other hand, systemically resist selecting as arguments noun phrases containing descriptions of things with content (an observation observed, independently of its connection to *wager* verbs, by Moltmann 2003, Prior 1971).

- (14) a. *Fred said the rumor that Horner is impotent.
 b. *We never thought the idea that vitamin supplements in pregnancy lead to healthy babies.
 c. *I didn't wager the claim that the argument has nothing to do with probability.
 d. *He alleged the rumour that Homer was stealing.
 e. *Fred claimed the story that Steph was dating Phil.
 f. *?He yelled his belief that Jesus will return again.

I have compiled a database of roughly 30 *wager*-class verb that reliably pass the diagnostics for that class (see (4)), and none of these verbs comfortably take content nouns. (There are interesting issues involved with manner-of-speech verbs, which can take certain nouns. A database can be found at <http://people.umass.edu/keir/DOCverbs.xls>.)

The constraint is specific to DPs with just this kind of descriptive content. The *wager*-class verbs of speech, including manner-of-speech verbs, can take a certain range of nominals, those that refer to things that carry sound, audible things like *words, oaths*, and *names*:

- (15) John said some words/a foul oath/his name

⁶ "The Country Wife Q & A" <http://www.u.arizona.edu/~atinkham/TCW.html>

⁷ "Operational Meaning" <http://deming.eng.clemson.edu/pub/den/files/opermng.txt>

⁸ "Evolution Blog" <http://evolutionblog.blogspot.com/feeds/114546640836160477/comments/default>

And many *wager*-class verbs take cognate objects:

- (16) a. John thought a thought.
 b. He claimed an outrageous claim.
 c. She whispered a nasty whisper.

Moreover, *wager*-class verbs allow a range of DP arguments that appear to stand in for clauses: *determiners* like *that* and *this*; *wh*-words; and quantifiers like *something* or just *thing*.

- (17) a. John said/thought/muttered/whispered something.
 b. John said/thought/muttered/whispered that.
 c. What John said/claimed/thought/wagered was that Mary and Donna were dating .

I will assume for now that the expressions in (17) replace clauses, not content nominals (cf. Moltmann 2003). What crucially sets the two classes of verbs apart, though, is the difference in the content nominal arguments, the B-class verbs in (13) and the *wager*-class in (14). The generalization is summarized below:

- (18) **Content-Noun~Wager-class Generalization:**
Wager-class verbs do not select for content nouns
B-class verbs select for content nouns (*if they can select for DPs*)

A generalization such as this, which seems so deeply lexical, would not be so interesting if it were not for the fact that it correlates so well with the syntactic properties of these two verb classes. If the generalization in (18) is the defining difference between the two sets of verbs, the question is *why* this should give rise to the kinds of syntactic behavior the two classes exhibit. Our first task, though, is to investigate the semantics of attitude verbs that *do* take content nouns, because that will allow us to see what the *wager*-class verbs are missing.

5.1 Attitude Ascriptions

As noted in the introduction, the standard possible worlds quantification analysis (Hintikka 1962) gives to attitude verbs a lexical meaning that has a hidden quantifier over world (or situation) variables. The function, *Dox*, restricts the quantification to the set of worlds compatible with an attitude holder's beliefs (her *doxastic alternatives*).

- (19) $\llbracket \text{believe} \rrbracket = \lambda p. \lambda x. \lambda w. \text{believe}(p)(x)(w)$
 where $\llbracket \text{believe}(p)(x)(w) \rrbracket = \forall w' \in \text{Dox}(x,w): p(w') = 1$
 where $\text{Dox}(x,w) = \{ w' \mid \text{for all } x \text{ knows in } w, w' \text{ could be the actual world} \}$

But where do content nominals fit in on this picture? Content nominals are not propositions; they are descriptions of a kind of abstract individual:

- (20) a. Mary believes the rumour.
 b. Fred understands your crazy proposal.

These abstract individuals, though, can themselves have complement clauses:

- (21) a. Mary believes the rumour that Fred is dating someone from Halifax.
 b. Fred doesn't understand your proposal that quantifiers are really verbs.

Content nominals are generally thought to be descriptions of individuals related, in some way or another, to propositions. Chierchia (1984, 1985) argues, as part of a larger theory about natural language ontology, that propositions can be systematically related to entities in the domain of individuals: propositions have 'individual correlates'. Common nouns like *rumour* and *proposal* are descriptions of such correlates. Without committing myself to this particular ontology (or Chierchia's nominalizing function, which relates properties (and propositions) to their individual correlates) we can identify the individuals that content nominals describe as individuals that carry content. Following Kratzer (2006), content nominals are predicates of abstract individuals that carry content (variables of such individuals will be subscripted as x_c)

- (22) $\llbracket \text{rumour} \rrbracket = \lambda x_c. \text{rumour}(x_c)$

But, as individual correlates of propositions (Chierchia 1984), these individuals have propositional content. As such, we can recover from them content (a set of worlds). The relation **compatible**, given below, will relate a content nominal to the set of worlds that are compatible with it:

- (23) $\text{compatible}(x_c)(w') = \{ w' \mid w' \text{ is compatible with the content of } x_c \}$ ⁹

We have seen that content nominals can have clausal complements themselves, which describe their propositional content. Kratzer (2006) proposes that clauses, headed by complementizers such as *that*, relate a proposition to contents. The denotation of *that* is

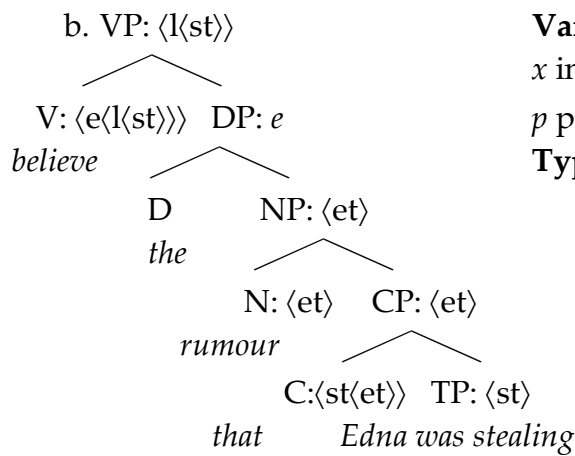
⁹ Both here and elsewhere, I am not providing (temporally) centered worlds (Lewis 1979). We are going to have to recover the attitude holders counterpart (and internal time) somehow (see Kratzer 2006 for a proposal).

given below:

$$(24) \llbracket \text{that} \rrbracket = \lambda p. \lambda x_c. [\forall w'. \text{compatible}(x_c)(w'): p(w')] \quad [\text{Kratzer 2006}]$$

The complementizer selects for a proposition (set of worlds) and returns a description of an individual that carries content, x_c . The truth of the proposition is evaluated at those worlds compatible with the content argument. The CP and the content noun NP can then be intersected, as shown below in a sentence such as (25)a:

(25) a. ...believe the rumour that Edna was stealing.



Variables:

x individuals; w worlds; e eventualities;

p propositions (type $\langle s, t \rangle$)

Types: e individuals; s worlds, l eventualities

$$\llbracket [\text{CP}] \rrbracket = \lambda x_c. \forall w'. \text{compatible}(x_c)(w'): \text{stealing}(\text{Edna})(w')$$

$$\llbracket [\text{NP}] \rrbracket = \lambda x_c. [\text{rumour}(x_c) \wedge [\forall w'. \text{compatible}(x_c)(w'): \text{stealing}(\text{Edna})(w')]]$$

$$\llbracket [\text{DP}] \rrbracket = \iota x_c. [\text{rumour}(x_c) \wedge [\forall w'. \text{compatible}(x_c)(w'): \text{stealing}(\text{Edna})(w')]]$$

$$\llbracket [\text{VP}] \rrbracket = \lambda e. \lambda w. \text{believe}(\iota x_c. [\text{rumour}(x_c) \wedge [\forall w'. \text{compatible}(x_c)(w'): \text{stealing}(\text{Edna})(w')]])(e)(w)$$

Now, we have seen that B-class verbs can take as internal arguments content nouns (or DPs whose descriptive content is a content noun):

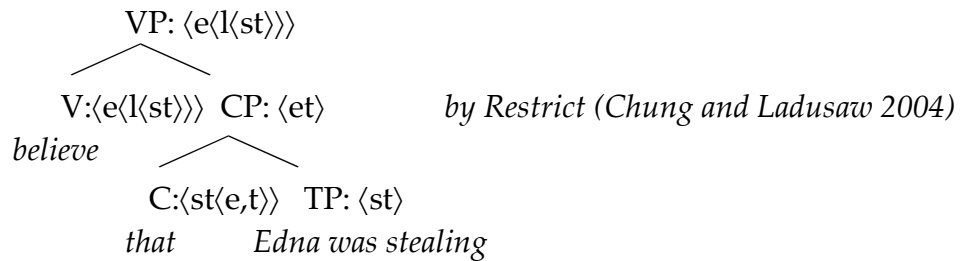
- (26) a. Edna believes the rumour.
b. Brenda understood her claim.

Kratzer (2006) argues that this shows that attitude verbs such as *believe* do not take propositions as their internal arguments, but contentful individuals. *Believe*, then, has the denotation in (27).

$$(27) \llbracket \text{believe} \rrbracket = \lambda x_c. \lambda e. \lambda w. \text{believe}(x_c)(e)(w)^{10,11}$$

When *believe* takes a clausal complement, Kratzer shows that the CP, which as we have seen above is a predicate of contentful individuals, can compose with B-class verbs via the compositional mechanism *Restrict* (Chung and Ladusaw 2004). The CP, as a predicate, restricts the internal argument of *believe*, which is then existentially bound. Kratzer's derivation for a clausal complement of *believe* is shown below:

(28) a. ...believe that Edna was stealing.



$$\llbracket [\text{CP}] \rrbracket = \lambda x_c. \forall w'. \text{compatible}(x_c)(w'): \text{stealing}(\text{Edna})(w')$$

$$\begin{aligned}
 \llbracket [\text{VP}] \rrbracket &= \lambda x_c. \lambda e. \lambda w. [\text{believe}(x_c)(e)(w) \wedge [\forall w'. \text{compatible}(x_c)(w'): \text{stealing}(\text{Edna})(w')]] \\
 &= \exists x_c. \lambda e. \lambda w. [\text{believe}(x_c)(e)(w) \wedge [\forall w'. \text{compatible}(x_c)(w'): \text{stealing}(\text{Edna})(w')]]
 \end{aligned}$$

Kratzer's strategy for combing clauses with attitude verbs has the advantage of accounting for the non-clausal arguments of *believe* and other B-class verbs. It also accounts for the fact that content nouns, like *rumor*, themselves take clausal complements. And clauses compose with these nouns and attitude verbs in the same way. The decompositional approach, with the accessibility relation, as it were, factored out to the complementizer, has a number of advantages.

However, this strategy crucially relies on the predicate to take as an internal argument an individual that carries content: the complementizer is designed to hook a

¹⁰ Here and elsewhere, I provide predicates with event and world arguments, which has the effect of complicating certain issues related to *restrict*. Strictly speaking, once the move is made to a situation semantics, predicates will have one intensional argument.

¹¹ Of course, I haven't given any meaning for *believe* now. And recovering the accessibility relation from the content argument cannot be entirely right, since we will still need to get a hold of an attitude holder's doxastic alternatives independently of the content noun. This is because in a ascription such as *John believed that rumour*, what we really need to capture is the fact that all those worlds compatible with the attitude holder's beliefs are worlds in which the content of (a particular) rumour are true. This means that the content nominal alone does not provide the modal base. I think what this shows is that B-class verbs (or any verb that takes content nominals) may have a 'built-in' accessibility relation – which is just the standard account (Hintikka 1962). I leave this to future research, noting that a more thorough understanding of how these verbs select content nouns might help understanding issue surrounding complementizer incorporation which I address in the last section of the paper.

proposition up with this argument. Given the facts about *wager*-class verbs – which do not take content nominals – we cannot employ the same strategy in these cases. So how do these verbs take clausal complements?

While *wager*-class verbs do not take content nominals, and hence are not properties of individuals with content, they are verbs that describe *events* that have content. The events of *claiming* and *thinking* and *saying* have content, as do states of *belief* and *knowing*. The mental activity of *thinking* is compatible with a set of worlds which constitutes the content of *thoughts* and *claims* (Stalnaker 1984). Not all verbs are associated with propositional content. A verb like *love*, for instance, does not describe a state that has propositional content: it is just a relation. Similarly for garden variety eventive verbs that don't describe mental or speech activities.

In recent work, Hacquard (2006) argues that modals can be made relative to an event. Typically, the modal base for a modal like *might* are sets of propositions, i.e. worlds (Kratzer 1981, 1991). Hacquard, for reasons having to do with deriving the flavors of modality from a unified entry for modals, proposes that the worlds in the modal base are those worlds compatible with an event or state. A higher attitude verb can provide such an event or state.

So while *wager*-class verbs do not have an internal argument that carries content, they themselves describe *events* that have content. We can design a complementizer, then, much like the one Kratzer proposes for *believe*, that picks out the worlds compatible with the content of an *event*. I will call this the Event-Relative Complementizer, or C_2 :¹²

$$(29) \llbracket C_2 \rrbracket = \lambda p. \lambda e. [\forall w'. \text{compatible}(e)(w'): p(w')]$$

I will then assign *wager* verbs the denotation in (30): they will be simple descriptions of events:¹³

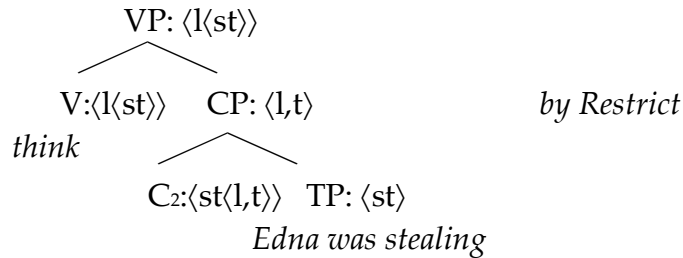
$$(30) \llbracket \text{think/claim/say} \rrbracket = \lambda e. \lambda w. \text{think}(e)(w)$$

We now have all the pieces we need to compose CPs, headed by Event-Relative Complementizers, with *wager*-class verbs. The composition of the Verb with CP proceeds by intersection of two properties of events, via *Restrict*.

¹² Since a *belief* state has content, as much as contentful events, this strategy will be available to *B-class* verbs as well. Crucially, it will be the only strategy available to *wager*-class verbs.

¹³ The DP objects that *wager* verbs *do* take will then be understood as referring to the kinds of things CPs refer to: which is properties of contentful events. (More might need to be said about the objects of *verbi dicendi*.)

(31) ...think that Edna was stealing.



$\llbracket [\text{CP}] \rrbracket = \lambda e. \forall w'. \text{compatible}(e)(w') : \text{stealing}(\text{Edna})(w')$

$\llbracket [\text{VP}] \rrbracket = \lambda e. \lambda w. [\text{think}(e)(w) \wedge [\forall w'. \text{compatible}(e)(w') : \text{stealing}(\text{Edna})(w')]]$

The top-most VP in (31) is a property of *thinking* events such that, for all worlds compatible with that event, the embedded proposition is true at those worlds.

In summary, I have adopted the following decompositional analysis of attitude verbs:

1. Attitude verbs are predicates of event/states
2. The modal component of attitude ascriptions is provided by complementizers
3. Certain attitude verbs (the *B*-class) take as internal argument content-carrying individuals, while *wager*-class attitude verbs do not
4. There are different kinds of complementizers: the Content-Noun Complementizer C_1 and the Event-Relative Complementizer C_2

For both *B*-class or a *wager*-class verbs to take a clausal (propositional) complement, a complementizer (or some functional head that has such a meaning) is needed. In this respect, the syntactic analysis that we are forced to make is going to be rather traditional indeed – and it faces the very same problems that the traditional analyses did. Even Raising-to-Object verbs, like *believe*, will require a complementizer in order to embed a clause.

Before turning to how we can make sense of the *believe*-class, let me demonstrate the effect that the proposed analysis has for *wager*-class verbs, and the solution to the paradigm outlined in (4).

6. The syntactic Consequences deliver (most of) the *Wager*-class paradigm

The CP analysis of infinitival complements in French and infinitival complements of English *wager*-class verbs has the immediate consequence that A-movement is banned.

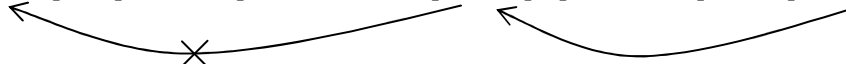
AgrO. We rule out Raising-to-Object and Passive Raising on this analysis by invoking whatever syntactic constraint rules out A-movement out of CPs:¹⁴

(34) *Raising to object:

a. *Pierre était cru aimer Anne. [Bošković 1997: 130(105)]

b. * Peter said Mary to love Anne.

c. [[DP [AgrO [vP Peter [vP said/croire [CP DP [C' [C COMP [TP DP [T'DP...]]]]]]]]



Raising-to-subject will be ruled out by the same principle, correctly for French. We now have to deal with passive raising, a possible *wager*-class rescuer in English but not French. In the next section, I will demonstrate that these constructions are not passives, and so passive raising isn't among the set of *wager*-class rescuers in the first place. I will not offer a concrete solution to what these constructions are, but it is enough for present purposes to show that they ought to receive a different analysis than *B-class* passive raising.

6.1 Passive Raising Constructions aren't Passives

On the face of it, passive raising out of *wager*-class complements appears to be a classic case of matrix passivization followed by raising of the embedded subject. So alongside *B-class* passive raising (36), we have *wager*-class passive raising (36):

(35) Caelia was believed/considered/held/understood/remembered to be there.

(36) a. Myrtle was said to be a liar.

b. Myrtle was thought to be in Paris at the time of the attack.

c. Myrtle was claimed to be an accomplice in the robbery.

d. Myrtle is alleged to be responsible for the kafuffle.

e. Myrtle is assumed to be the culprit.

¹⁴ The question then arises why raising is needed at all, if case can be licensed with the infinitival subject in the embedded clause. In a companion paper (Moulton 2007) I argue that raising infinitival complements are headed by a T node that lacks a binder-index. The role of the binder-index is to allow arguments to compose in their moved positions. If the head of a phrase to which an expression moves doesn't have a binder index, the expression will fail to compose there (or lead to a type clash). Further movement is forced from raising infinitivals. In the case of *wager-class* verbs, further A-movement, though, is blocked.

Passivizing the matrix verb should be a rather simple operation, one that leaves the external argument suppressed and promotes the highest lower argument. I am going to show that the passive raising cases in (36) are not so simple, but to do that I need to show that *wager*-class verbs are eventive. Then we will see that some curious things happen that are not expected if the *wager*-class verbs here are true verbal passives.

Pesetsky (1992) shows that there is a correlation between ECM/R-to-O and the nature of the external argument of the embedding verb. All *wager*-class verbs, claims Pesetsky, are verbs whose external arguments are (animate) agents. We can translate this correlation was one about the lexical aspect of *wager*-class verbs: they are eventive verbs.¹⁵

This is easily demonstrated, as *wager*-class verbs are all compatible in progressive aspect, something not available to stative (i.e. B-class) attitude verbs:

- (37) a. I've been saying/claiming that for years. *wager verb*
 b. He was probably thinking that the police wouldn't find him *wager verb*
 c. *He was probably believing that the police wouldn't find him *B-class verb*
 d. *He was understanding that Mary was the culprit. *B-class verb.*

More sophisticated tests for events show the same thing. With frame adverbials such as those introduced by *for*, eventive verbs such as climb ((38)a) in the simple past can receive a habitual, repeated-events interpretation, while with statives, the state holds for the entire frame (38)b.

- (38) a. I climbed Mount Monadnock for many years. *interrupted climbing events*
 b. I knew the ranger at Monadnock State Park for many years.
state holds throughout frame

(38)a can only be true if I climbed Mount Monadnock on several, perhaps many, occasions: it was a ritual of mine for many years. With stative predicates, such as *know*, the time in which the state is true holds throughout the period.

Now, just as with the progressive test, *wager*-class verbs pattern with events in this respect, while B-class verbs pattern like states:

¹⁵ Pesetsky (1992) claims that the *wager* paradigm is subject to the following correlation: (Animate) Agentive verbs cannot ECM (Pesetsky 1992:146(560)). Bošković (1997) derives the *wager*-class facts by accounting for this correlation in terms of conditions on Economy in the way accusative case is licensed in the presence of external arguments. Most of the assumptions that Bošković requires are no longer tenable, especially the assumption that Agents pass through two theta-marking positions.

(39) a. I $\left\{ \begin{array}{l} \text{said} \\ \text{claimed} \\ \text{wagered} \end{array} \right\}$ that red wine is healthy for 5 years. *repeated events*

b. I believed that red wine is healthy for 5 years. *one state*

(39)a cannot be true if there was one event of me *saying* or *claiming* that red wine is healthy, in a period of five years. Rather, the sentence can only be true if I repeated my claim or statement over a period of five years.¹⁶ This contrasts with *B-class* attitude ascriptions, as in (39)b, which simply require that I hold a particular belief for the specified period.¹⁷

Wager-class verbs, then, are descriptions of events. When passivized, we do not expect anything special to happen to their lexical aspect. But this is not what we find. In the passive raising construction, *wager-class* verbs behave like statives: they cannot appear in the progressive.

**Progressive on Passive Raising wager verbs*

(40) a. *The suspect was being thought to be on the run.

b. The suspect was thought to be on the run.

(41) a. *The suspect was being said/claimed/wagered/whispered to be in cahoots with the local police.

b. The suspect was said/claimed/wagered/whispered to be in cahoots with the local police.

(42) a. *The suspect was being alleged to have run off with the farmer's milking implements.

b. The suspect was alleged to have run off with the farmer's milking implements.

¹⁶ Of course, with perfective aspect things change, giving rise to a derived stative that will allow for an "uninterrupted" reading of the predicate.

¹⁷ In this respect, *think* behaves a little differently from other *wager* verbs. It seems that in the *for-frame* it cannot pick out repeated events (perhaps due to more difficult individuation conditions on *thinking-events*)

(i) For years, I thought that the Leafs would make it to the cup.

I take *think's* ability to appear in the progressive as evidence that it can describe an event.

Crucially, there is no general prohibition against progressives in (eventive) verbal passives, even of those verbs that take clausal complements:¹⁸

- (43) a. Fred was being accused of being in cahoots with the local police.
 b. It is just now being discovered that red wine isn't that much of a benefit.

What seals the deal, though, is the fact that *Q-* and *rel-movement* (those *wager*-class rescuers accounted for by the CP hypothesis) are fine with the progressive, showing that the *wager*-class paradigm does not as a whole require a derived stative:¹⁹

- (44) The woman we have been claiming/thinking/saying to be responsible is in fact innocent.

If the passive raising cases are not true passives, then what are they? One possibility is that they are stative (or adjectival) passives. This would put the passive raising cases in the same class as raising adjectives like *likely* and *probable*. But raising *wager*-class verbs allow *by-phrases*. Postal (1974) notes, however, that passivized *wager*-class verbs allow *by-phrases* of a limited sort: general 'agents' are possible, but not Agents that would pick out individuated events.

- (45) a. The suspect was thought $\left. \begin{array}{l} *?by\ the\ Officer \\ by\ many \end{array} \right\}$ to be in Kansas.
 b. The suspect was said $\left. \begin{array}{l} *?by\ the\ police \\ by\ many \end{array} \right\}$ to be in Kansas.

¹⁸ It is unclear to me whether *wager*-class verbs can be event passives at all, independently of passive raising:

- (i) ?It is being said that Mary was the criminal.
 (ii) ?*It is being thought that Mary was in danger.
 (iii) ??It is being claimed that Mary was responsible.

This does not affect the point I am making. Either the passive of these verbs is not a verbal passive in general, or it is not a verbal passive when raising occurs. I leave this to future research.

¹⁹ These test now give us a sense of whether we are dealing with the CP-analysis. The fact that expletives are *wager*-class rescuers in English (and probably not French) allows us to test the division of labor. Expletives pattern with passive raising and are not compatible with the progressive:

- a. He was probably thinking that there were no police around.
 b. *He was probably thinking there to be no police around.
 cf. *He thought there to be no police around.*

I refer the reader to Moulton (2007) for an account of expletives as *wager*-class rescuers. That account, based on the lack of a binder index in raising infinitives, allows expletives to surface as the subject of infinitivals since expletives do not need to compose as other referential arguments do.

Again, this restriction is not a normal consequence of passivizing an eventive verb, as witnessed in (46), where a particular event of *discovering* is described:

- (46) Throughout this period, however, it was being discovered that law after law in the observational sciences did not hold.

(W. Sinclair, *Conditions of Knowing: An Essay Towards a Theory of Knowledge*)

Moreover, the presence of *by*-phrases does not rule out an adjectival-analysis of the raising cases. Many adjectival passives allow *by*-phrases, and they exhibit the same gradience in acceptable *by*-phrases as the passivized *wager*-class verbs in (45). Grimshaw (1990), citing Zubizarreta (1987), discusses how *by*-phrases for adjectival passives tend to be more ‘generic’:

- (47) a. The island was uninhabited by humans/*by the woman.
 b. The jacket was untouched by human hands/*by Bill.
 c. These facts remain unexplained by current theories/*by your theory.

Lastly, the adjectival analysis is not impossible given the fact that many of the *wager*-class verbs can be bona fide adjectives:

- (48) a. It was a widely-claimed idea.
 b. John was an alleged murderer.

Of course, many other *wager*-class verbs do not behave as adjectives, like *thought* and *said*.

I will not provide an analysis of the passive raising cases in this study. What suffices for now is the clear fact that these verbs are not passives in any straightforward syntactic sense. One hypothesis is that they are adjectival passives, or at least derived statives of some sort. Whatever the analysis of passive raising is, it should be kept apart from the other *wager*-class rescuers, which do not require such alterations to the aspectual interpretation of these verbs. Incidentally, this opens up new options for investigating passive raising in French. As I briefly mentioned, both French and Italian do allow passive raising out of infinitives for a small set of verbs, and with certain restrictions (Rizzi 1982, Pesetsky 1992). It remains to be seen whether this has to do with whether French, for instance, allows raising adjectives or not. There is some suggestive evidence that French does not generally allow raising from the infinitival complements of adjectives. Léger (2006) points out that adjectives that are raising predicates in English are not raising predicates in French. We can test this prediction with reconstruction. English *sure* can be interpreted as a raising predicate because the subject

can reconstruct. So (49) can report a situation in which there is a very high likelihood that a New Yorker will win the lottery.

- (49) Someone from New York is sure to win the lottery.
sure > someone (= It is a sure thing that a New Yorker will win the lottery)

The French version can only express an attitude of certainty held by a particular individual from New York, namely that she is convinced that she will win the lottery.

- (50) Quelqu'un est sûr/certain de gagner à la loterie.

These are in fact control constructions (the presence of *de* identifies this for certain French control constructions (Rochette 1988)). I leave the differences between raising adjectives in French and English to another occasion, noting here that the lack of passive raising as a *wager*-class rescuer in French may be connected with a general lack of raising adjectives.

6.2 B-class/Raising-to-Object Verbs

We have accounted for the lack of A-movement (R-to-O) from these complements on the CP analysis, and we have accounted for the fact that traces of A-bar movement are possible as subjects of these infinitives, under Kayne's proposal. Now we need to deal with the B-class constructions. Recall that these predicates embedded clauses from which R-to-O was possible. On the story we are telling, this means these verbs embed TPs, which are transparent to A-movement. The verbs also had the ability to select for nominals that carry propositional content. As such, the Content-noun complementizer was used (see (24)) following Kratzer (2006). But if all attitude verbs require complementizers to embed a proposition (a TP), then we will block raising to object for B-class verbs just as with *wager* and French propositional infinitives (via a syntactic condition banning A-movement from CPs). As I said, this traditional account puts us in the very same position that earlier researchers were: a position which lead to the postulation of Comp-deletion (or S' deletion) (see Chomsky 1981).

One account of "S' deletion", proposed by Pesetsky (1992), is that complementizers in English can undergo incorporation into the embedding verb. At the time, incorporating a complementizer created, with the help of conditions on government, a transparent complement clause from which A-movement and/or case-assignment could proceed. While complementizer incorporation has its defects, I want

to defend a version of it, at least for R-to-O constructions. This version postulates that certain complementizers can be verbal affixes. This will have the same result as Pesetsky's incorporation, without the need for a mechanism that moves complementizers or relies on government transparency to license traces of A-movement. What's crucial, though, is that only the Content-Noun Complementizer can be a verbal affix, while the Event-Relative Complementizer is not.

In fact, the literature on complementizer incorporation already provides evidence for this. Pesetsky's approach tells that anytime a complementizer goes silent, including the null finite complementizer *that*, it is an affixal (or incorporated) complementizer. And complementizers can only be silent if locality conditions are satisfied. Extraposed CPs, for instance, are famous for requiring the pronounced complementizer:

- (51) a. Fred didn't believe Mary was a great person.
 b. *Fred didn't believe at any point Mary was a great person. **extraposed null C*

On the complementizer incorporation account, extraposed clauses headed by null complementizers are out because the incorporated complementizer will fail to properly bind its trace after the CP undergoes extraposition.²⁰ Only non-incorporating complementizers, then, will be allowed to head extraposed clauses: they do not involve movement and hence will leave traces that would fall under the proper binding conditions. A similar pattern holds for R-to-O complements: extraposed R-to-O is not possible (52)b, suggesting that the complementizers that make R-to-O possible are complementizers that must incorporate (or be verbal affixes).

- (52) a. Fred didn't believed Mary to be a great person.
 b. *Fred didn't believed at any point Mary to be a great person. **extraposed*

This is because R-to-O will in general require an incorporated complementizer so that the complement clause is transparent for movement²¹. But constructions with incorporated complementizers do not allow for extraposition of the clausal (TP) complement. (I will not provide an explanation of why this should be so. That is, on my

²⁰ Bošković and Lasnik (2003) argue that the complementizer incorporation story (along with the PBC) does not adequately account for null finite complementizers. I will leave these considerations for future study, noting that the complementizer available to B-class verbs, that allows for R-to-O, is an affixal complementizer.

²¹ Pesetsky's (1992) account is a little more nuanced than I have made it appear.

affixation account, the proper binding condition won't rule out extraposition of the TP. The central puzzle, now, is then why TPs cannot extrapose.²²)

Interestingly, the infinitival complements of *wager*-class verbs are not subject to the same requirements: these infinitives, like control infinitives, can extrapose:

(53) Which boy did you claim at one time to be the best right-winger.

But (53)b is not a control construction. It is a *wager*-class construction with A-bar movement. The complement is, by hypothesis, a CP. The difference between *wager*-class and R-to-O infinitives is that the complementizer responsible for embedding clauses under *wager*-class verbs is not a complementizer that has to incorporate. The complementizer that allows for R-to-O, on the other hand, must be affixal. It couldn't be any other way: to allow for A-movement, the complement clause must be transparent, a property we have identified with TPs, not CPs.

If the complementizer affixes to V, which gives a [C+V] complex, then the clausal complement can be a TP complement (of type ⟨st⟩), and as such renders the clause transparent to A-movement.

²² There are, though, some interesting prospects now for accounting for a number of complementizer deletion facts. Take the obligatoriness of the overt complementizer *that* for subject sentences. I follow Alrenga (2004) who quite conclusively shows that sentential subjects are (base-generated) topics, and a DP element has A-bar extracted over the internal argument position of a verb, like *believe*. Complementizer incorporation, seen here as affixal C, will not work for subject sentences. Here's how the composition of (ia) works under the proposed system, where the content argument is abstracted over at TP, and the topicalized CP will then intersect (not shown below) as in the cases where it appears in object position (sentence-level \exists -closure will bind the content argument x_c):

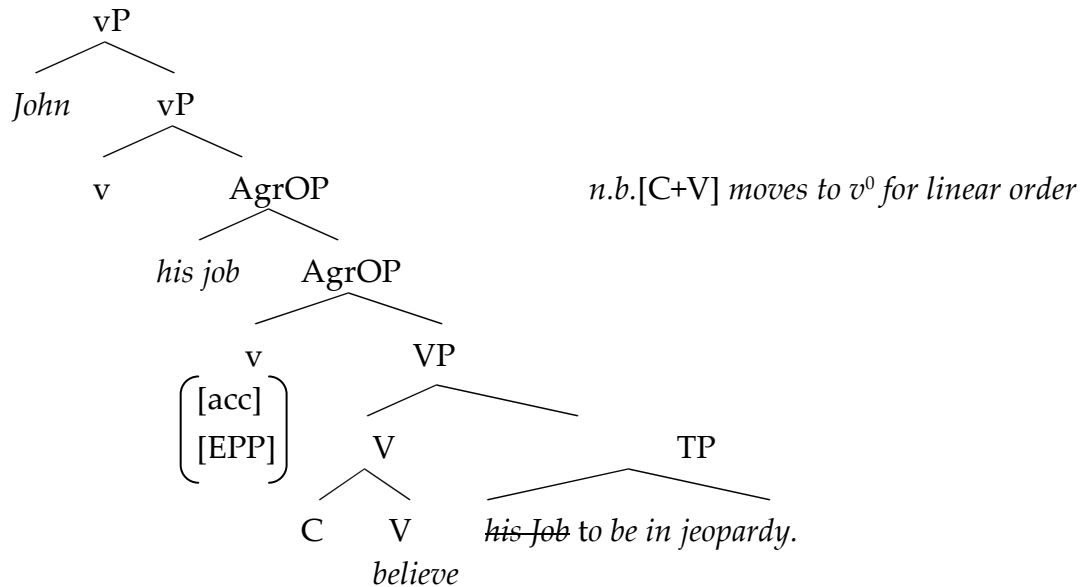
(ia) That [[John was happy]= p] was widely believed.

(ib) [[_{CP} $\lambda x_c. \lambda p. \forall w'. \text{compatible}(x_c)(w'): p(w')$] [_{TP} $\lambda x_c. \text{believed}'(x_c)(w)$]]

Without a complementizer, this composition will fail, since TPs are standard propositions (sets of worlds) and will not compose with a predicate of contents. Nor will complementizer incorporation work either, on the assumption that affixal complementizers do not themselves undergo A-bar movement.

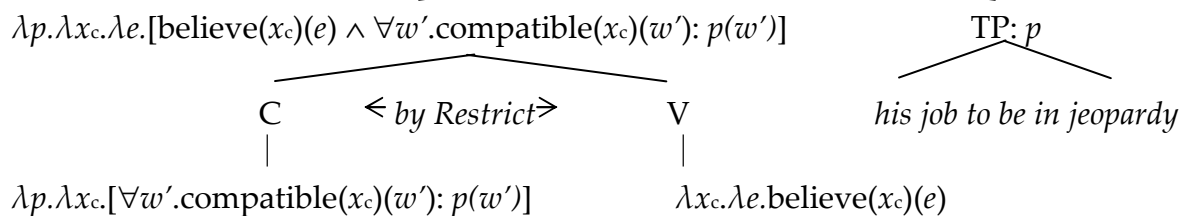
a. John believed his job to be in jeopardy.

b. a partial tree...



There is a perfectly respectable semantics that builds this structure compositionally. If the Content Noun Complementizer affixes (i.e. composes with) the verb, the operation *Restrict* can apply to the individual argument ($\lambda x_c \dots$) shared by *believe* and C:

(54) $VP : \exists \langle e, x_c \rangle . [\text{believe}(x_c)(e) \wedge \forall w' . \text{compatible}(x_c)(w') : [\text{his-job-in-jeopardy}](w')]$



The result is a C+V complex that selects for TPs, a category we have assumed to be transparent to A-movement.

Taking stock, we have seen that the Content-Noun complementizer was available only to B-class verbs. Moreover, we saw that this complementizer could be affixal, and in fact had to be in order to allow for R-to-O. And, the corroborating evidence for this was the usual set of facts about the inability for R-to-O complements to extrapose, a fact that put the complementizer for R-to-O constructions in league with null finite complementizers. Here is a summary of complementizers and their morpho-syntactic properties:

Complementizer Meanings and their Morpho-Syntactic properties²³

- (55) a. Event-Relative Complementizer [C₂] *infinitive selecting* [-Affix]
 = $\lambda p.\lambda e [\forall w'. \text{compatible}(e)(w'): p(w')]$
- b. Content-noun complementizer [C₁] *selects verb root* [+Affix]
 = $\lambda p.\lambda x_c [\forall w'. \text{compatible}(x_c)(w'): p(w')]$

Now, we had evidence that the Event-Relative Complementizer, C₂, while null, did not have to be an affix: this is what allows for extraposition of non-control infinitives of *wager*-class verbs (53) (an interesting fact in its own right given the typically non-extraposition behavior of raising infinitives). This does not tell us that the Event Relative Complementizer *can't* be an affix, though. But this is crucially what is needed if we are to block R-to-O for *wager*-class verbs.²⁴

What kind of evidence would be needed to show that a complementizer *cannot* be an affix? The first kind is the theory-internal one, which tells us that non-affixal complementizers do not allow for transparent complements. This, though, was the fact about *wager*-class constructions that we are explaining, and so it doesn't count as independent evidence. Another piece of evidence would be the phonologically null nature of complementizers. Pesetsky's (1992) claim is in part a project about null heads in syntax being licensed only by incorporating to overt heads. But on this score, we either have no evidence or contravening evidence: the Event-relative complementizer that selects for non-finite clauses (C₂) is null. So being null, if our story is right, is not a property that forces complementizers to incorporate.

The evidence I can offer at this point is theory-internally motivated. If French has complementizers that are null, and that cannot incorporate (cf. Pesetsky 1992, for proposals about LF incorporation), then why should English not have a such a null complementizer? Furthermore, the kinds of evidence for complementizer affixation that shows that the *B*-class complementizer *must* incorporate are absent for *wager*-class complements. In the next section I will demonstrate this evidence, and then show how

²³ Of course, the finite-clause selecting C (*that*) can also be null. Conditions on this null-C are different than those conditions that involve affixal C, since *wager* verbs show that the ability to select a null *that* (*John said he was happy*) does not travel with the ability to be selected by the incorporated complementizer (e.g. ECM).

²⁴ Here I refer to reader back to footnote 11. There I revealed that the meaning I gave for *believe* and other content-noun taking verbs won't get their meaning quite right. It may be that, like the classical analysis, *B*-class verbs have their accessibility relation hard-wired in. That would mean that they don't *incorporate* anything like a complementizer meaning I have given. Then the analysis would be simpler: *wager*-class verbs would take complementizers, and we wouldn't need to require any (non-finite selecting) complementizers to incorporate.

- (60) a. *John's belief of that story.²⁶ *cf. John believed the story.*
 b. The Roman's destruction of the city. *cf. The Romans destroyed the city.*

Moreover, the nominal itself refers to the things believed:

- (61) John's belief was crazy (= *the content of what he believed was crazy*)

This suggests that nominalization, in these cases, is root nominalization, and that the internal argument is closed off for any further composition after nominalization.²⁷

If that is true, then what rules out the order [\emptyset_{comp} [*nom* [V]]]? As we saw, nominalization of *believe* renders the internal argument closed for further composition (as in (60)a). I take the nominalizer to be an existential quantifier over the *content* argument of *believe*:

- (62)
- $$\begin{array}{c}
 n: \lambda e. \exists x. \text{believe}(x)(e) \\
 \swarrow \quad \searrow \\
 n \qquad \qquad V \\
 | \qquad \qquad | \\
 \exists x \qquad \lambda x. \lambda e. [\text{believe}(x)(e)] \quad \rightarrow \text{spell-out [belief]}
 \end{array}$$

Since the individual/content argument of the predicate *believe* is inaccessible for further composition, the Affixal Complementizer cannot affix afterward. But this is crucially what the Content-Noun Complementizer Required (it *restricted* this argument (see (54))). This means that nominals can never just take a TP (a proposition) since they will never allow the Affixal Complementizer.

But, the Event-Relative Complementizer (which doesn't allow R-to-O due to syntactic locality²⁸) is fine, since it is not dependent on an internal argument:

- (63) a. John's claim to be a doctor.
 b. John's presumption to be the first in line.

This means that availability of control but not raising/R-to-O constructions doesn't have to do with raising or control *per se* but with the nature of the complementizers. A

²⁶ I owe this observation to a discussion with Kyle Johnson.

²⁷ Further evidence may come from the fact that the nominalization of B-class verbs such as *believe* and *prove* undergo phonological change: the nominalizer devoices the final consonant *belief*, *proof*. This may suggest it is a root nominalizer, although certain morphological theories may not require such a close relationship to the root to account for phonological change.

²⁸ And I presume the assignment of *of-Case* to DPs within the CP complement of the nominal is ruled out too.

Content-Noun relative complementizer *must* be able to compose with a predicate of contents. Nominalization renders predicates like *believe* a property of states, not contents, and the complementizer used must be the Event-Relative Complementizer.

Of course, this approach leaves many questions unanswered. Why are Event-Relative complementizers, when they select infinitives, never affixes? Why does the content-noun complementizer not allow control? These questions will have to await further research.

7. Conclusion

I have claimed that attitude verbs do not take *propositions* directly, but only via meaningful heads, which I have identified as Complementizers. Below is a summary of the complementizers identified in this paper:

Verb class	Complementizer	Embedded clause	A-movement?
<i>wager</i>	Event-Rel. C ₂ [-Affix]	CP	✗
<i>B-class</i>	Content-N C ₁ [+Affix]	TP	✓
	Event-Rel C ₂ [-Affix]	CP	✗
French attitudes	<i>both types of C</i> [-Affix]	CP	✗

By decomposing attitude verbs, and factoring out their ‘accessibility relations’ to complementizers, we were able to derive differences among attitude verbs depending on the nature of their (non-clausal) arguments.

This led to the hypothesis that there are different types of complementizers for the B-class and *wager*-class verbs. This allowed us to state (with some evidence from nominalization) that the Content-Noun complementizer was affixal (thus allowing the embedded clause to be a TP, transparent to A-movement), while the Event-Relative Complementizer, which embedded *wager*’s clausal complements, was not.

The approach to complementation I have taken has consequences for a more general understanding of the kinds of constraints on predicate meanings and embedding in general. As argued here, attitude verbs do not select for higher types (i.e. propositions). Instead, propositions were factored into the composition indirectly, via

complementizers. Is the job of embedding propositions done solely by functional heads (like complementizers, and modals)? Is there a general constraint that predicates only select for low types (Chierchia (1984, 1985))?

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