

# Selection: Factivity and Interpretation\*

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Draft, May 2013 (Comments welcome)

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## Abstract

Work on the syntax-semantics interface has been at odds to explain two seemingly unrelated issues: factivity effects and the nature of clausal complementation. I show that we need look no further than basic selectional requirements: new data and generalizations from English, Hebrew, Greek, Persian and American Sign Language reveal a systematic difference between verbs of different kinds which reduces to whether they select for an entity (a DP) or a proposition (a CP).

I argue that some verbs select for a definite entity, translating into a CP embedded in a covert DP layer; and some select for a proposition, being simply a CP. The former are factive, the latter nonfactive. In addition, all verbs that select for a DP can embed a factive complement. A definite complement triggers not only factivity but also leads to differences in interpretation in a predictable manner, thus uniting the two issues of interest.

The resulting syntactic analysis of matrix predicates and embedded clauses feeds semantic and discursive effects, bridging assertions, presuppositions and referential propositions. It also allows us to account for additional, as-yet-unexplained generalizations such as the factivity and nominalhood of sentential subjects, correctly predicting when they would be nonfactive.

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## 1 Introduction

Linguists have often found it beneficial to divide verbs into two broad classes, **factive** and **nonfactive**. The former presuppose the existence of their complements and include English verbs such as *know*, *regret* and *remember*. The latter include other verbs expressing thoughts and attitudes, and do not presuppose their complements. Such verbs are *think*, *say* and *claim*. There is good reason to be interested in this factivity and in the mechanisms that bring it about, which I argue are tied to selection.

Here is a taste of things to come. For a number of decades now it has been observed that clauses introduced by factive verbs pattern differently than patterns introduced by nonfactive verbs. First, **extraction** of complements is allowed from both (a) while extraction of subjects and adjuncts is allowed from nonfactives only (b-c).

(1) Nonfactives:

- a. *What do you think that John stole \_\_\_?*
- b. *Who do you think \_\_\_ stole the cookies?*
- c. *Why do you think John stole the cookies \_\_\_?*

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\*Thanks to Stephanie Harves, Alec Marantz and Anna Szabolcsi for much discussion, and to Vera Zu for comments on previous drafts. I have benefited from discussions with Dylan Bumford, Kate Davidson, Kyle Johnson, Manfred Krifka, Tal Linzen, Terje Lohndal, Keir Moulton and Lisa Pearl on various points related to this paper, though they are not responsible for the end result.

## (2) Factives:

- a. *What do you remember that John stole \_\_\_?*
- b. \* *Who do you remember \_\_\_ stole the cookies?*
- c. # *Why do you remember that John stole the cookies \_\_\_?*

We will call the former Selected Embedded Nonfactives and the latter Selected Embedded Factives, since I argue that they are selected by the matrix verb.

To these examples we add novel data from Hebrew and other languages, showing that factive clauses can be introduced by a D<sup>0</sup>. In this case no element can be extracted. This is similar to the case of clauses in English prefaced by *the fact that*, in which no extraction is possible either.

## (3) ENGLISH

- a. \* *What do you remember **the fact** that John stole \_\_\_?*
- b. \* *Who do you remember **the fact** that \_\_\_ stole the cookies?*
- c. # *Why do you remember **the fact** that John stole the cookies \_\_\_?*

## (4) HEBREW

- a. \* *(et) ma ata zozer et ze še-dani ganav \_\_\_?*  
ACC what you remember ACC **this** COMP-Danny stole  
(int. 'What do you remember the fact that Danny stole?')
- b. \* *mi ata zozer et ze še-\_\_\_ ganav et ha-ugiot ?*  
who you remember ACC **this** COMP stole ACC the-cookies  
(int. 'Who do you remember the fact that stole the cookies?')
- c. # *lama ata zozer et ze še-dani ganav et ha-ugiot \_\_\_?*  
who you remember ACC **this** COMP-Danny stole ACC the-cookies  
(int. 'Why do you remember the fact that Danny stole the cookies?')

I call these Overt Definite Factives since they include an overt definite element.

Second, **fronting** is allowed in nonfactive clauses but not in factive clauses:

## (5) Nonfactives:

- a. John **thinks** that [this book, Mary read].
- b. I can **assure** you that [that film, I don't want to ever see again].

## (6) Factives:

- a. \* John **regrets** that [this book, Mary read].
- b. \* John **remembers** that [this book, Mary read].

I explain these patterns by proposing that factive verbs C-Select for a DP and S-Select for a presupposed individual. A CP is embedded in this DP, except that its left periphery lacks Topic and Focus projections. The extraction facts are then reducible to islandhood, while the fronting ban arises since the fronted elements have no clause-initial landing site.

The functional structure within the embedded clause is different for the three types of clauses discussed here:

- Selected Embedded Nonfactives (*think that ...*) are CP complements to the verb: [<sub>VP</sub> V CP].
- Selected Embedded Factives (*regret that ...*) are DP complements to the verb, with a semantically-sensitive determiner  $\Delta$  and no NP layer [<sub>VP</sub> V [<sub>DP</sub>  $\Delta$  CP]].

- Overt Definite Factives (*the fact that ...* in English, or *ze še...* ‘this that ...’ in Hebrew and other languages) are full DP complements to the verb, in which an adjunct CP modifies the noun:  $[VP\ V\ [_{DP}\ D\ [_{NP}\ [_{NP}\ N]\ CP]]]$ .

This analysis is extended to **sentential subjects**, which have been argued to be nominal since at least Ross (1967). Classifying sentential subjects as Overt Definite Factives predicts their extraction effects (the Sentential Subject Constraint) as well as their factivity, a proposal that is corroborated by a new crosslinguistic generalization: the same  $D^0$  that introduces an Overt Definite Factive in languages such as Greek and Hebrew is required in order to introduce a sentential subject.

Our discussion of complementation is relevant not only for factivity effects; we will also see that **differences in interpretation** arise depending on the kind of complement selected for, DP or CP. Take the verb *explain*: depending on whether its complement is a DP (7) or a CP (8), its interpretation is one of “explaining why” or of “saying something by way of explanation”. These observations are also shown to hold crosslinguistically.

- (7) DP, explaining why the building collapsed:
- He **explained**  $[_{DP}\ \text{the building's collapse}]$ .
  - He **explained**  $[_{DP}\ \text{the fact that the building collapsed}]$ .
- (8) CP, saying that the building collapsed:
- He **explained**  $[_{CP}\ \text{that the building collapsed}]$ .

Among the DPs in (7), (a) is a “simple” nominalization whereas (b) is an Overt Definite Factive. Example (8) is a simple Selected Embedded Nonfactive. We are able to generalize from these data if we think of factives as DPs: the relationship between V and its complements may lead to special meaning (Marantz 1984; Kratzer 1996), but we can show that the meaning of a CP complement will be predictable while the meaning of a DP complement may be idiosyncratic. The interpretation of *explain* and its complement, for example, changes depending on whether the complement is a CP (Selected Embedded Nonfactive; C-Selection for a CP and S-Selection for a proposition) or a DP (Overt Definite Factive; C-Selection for a DP and S-Selection for a factive).

The claims made about each construction are summarized in Table 1.

Name	Structure	CP complement	Factive	Special meaning
Selected Embedded Nonfactive	$[V\ CP]$	yes	no	no
Selected Embedded Factive	$[V\ [_{DP}\ \Delta\ CP]]$	yes	yes	no
Overt Definite Factive	$[V\ [_{DP}\ D\ [_{NP}\ [_{NP}\ N]\ CP]]]$	no	yes	yes
Sentential Subject	$[DP\ VP]$	no	yes	yes

Table 1: Combinations of V, DP and CP examined in this paper.

We begin in section 2 by laying out the empirical background for factives as it is discussed in the literature. Section 3 then goes into detail about our proposal, providing an analysis of the factivity data based on the approach summarized in Table 1. With this machinery in place we turn to section 4, extending the analysis to cover selection and interpretation. Section 5 then shows how sentential subjects fit into the picture. Penultimate section 6 reviews some prominent existing analyses, arguing against their problematic aspects, and section 7 concludes with take-home messages on factivity, embedding and selection, as well as avenues for future work. Throughout, the paper uses the term *factive* interchangeably to refer to factive predicates (*regretted*) or to their clausal complements (*that he was late*).

## 2 Factivity

Broadly speaking, there are various ways to divide verbs into different classes (Vendler 1957; Cattell 1978; Levin 1993; Anand and Hacquard 2013; Hooper and Thompson 1973). The theoretical issue is whether these classes correspond to anything in the grammar, and conversely, whether the lexical semantics of a predicate has a predictable influence on the way it is treated by the grammar. A considerable literature points to certain syntactic affects that are limited to either factive or nonfactive environments, to be reviewed below. A recent surge in work on these domains has resulted in a number of theoretical proposals, which this paper aims to improve on. One such domain is extraction from embedded clauses. Another domain is a collection of phenomena dubbed **Main Clause Phenomena**—e.g. argument fronting—which are banned in embedded clauses introduced by a factive but allowed in clauses introduced by a nonfactive. We will focus on argument fronting in this paper as representative of MCP at large.

### 2.1 Factive Verbs

In essence, factive predicates are adjectives or verbs which presuppose the existence of their argument: *is significant*, *makes sense*, *bothers*, *regret* and so on, contrasted with predicates such as *likely*, *possible*, *appears*, *say* and *think* (Kiparsky and Kiparsky 1970; Cattell 1978). We will limit our discussion to clausal complements of verbs (as opposed to adjectives, the selectional properties of which are a different matter. See Hartman 2012:36). Strictly speaking, factive verbs are not the only verbs we will be concerned with (although the literature has mostly centered on them, e.g. Zubizarreta 1982; Adams 1985; Rooryck 1992; Abrusán 2011). Notably, Cattell (1978) divided verbs into three types:

- (9) Cattell’s verb classes:
  - a. NON-STANCE (factive): *regret*, *know*, *remember*, *realize*, *notice*, etc.
  - b. RESPONSE STANCE: *deny*, *reiterate*, *accept*, *agree*, *confirm*, *verify*, *admit*, etc.
  - c. VOLUNTEERED STANCE: *think*, *believe*, *suppose*, *assume*, *claim*, *suspect*, etc.

Factive verbs (or NON-STANCE VERBS in Cattell’s terminology) pattern together with RESPONSE STANCE VERBS in the phenomena examined here—extraction (Szabolcsi and Zwarts 1997) and fronting (Heycock 2006; Hooper and Thompson 1973)—to the exclusion of the VOLUNTEERED STANCE VERBS, which are nonfactive (Hegarty 1990). I will mostly call them by the umbrella term “factives,” even though strictly speaking they refer to a given topic or Question Under Discussion, for two reasons: One, the literature has by and large treated this as an issue of factivity and the notion of a “factive island,” for example, has become well-known. Two, the most appropriate term might be “referential,” but this is a technical term in the semantics of DPs and is also the term used in a different way by Haegeman and Ürögdi (2010a), which we will review later. Cattell’s more accurate taxonomy will be considered again in section 3.2.

### 2.2 Factive Clauses

Some verbs are inherently factive, meaning that their complements cannot be negated:

- (10) a. I **thought/claimed/suggested** that the building collapsed, but it didn’t.
- b. # I **regretted/remembered/knew** that the building collapsed, but it didn’t.

In English, nonfactive clauses can be made factive by prefacing them with *the fact*. In example (11), utterances (a)-(b) are nonfactive and can be denied, but (c)-(d) cannot:

- (11) a. I **explained** [that the building collapsed], but it didn't really.  
 b. I **explained** [that the building collapsed], but I was just making an excuse for being late.  
 c. # I **explained** the fact that the building collapsed], but it didn't really.  
 d. # I **explained** the fact that the building collapsed], but I was just making up an excuse for being late.

The same can be said for predicates like *predict* or *anticipate*, as their presuppositions covary with the form of their complements: [<sub>CP</sub> *that* ...] or [<sub>DP</sub> *the fact* [<sub>CP</sub> *that* ...]].

- (12) a. I **predicted** that the building would collapse, but it didn't.  
 b. # I **predicted** the fact that the building would collapse, but it didn't.  
 (13) a. I **anticipated** that the enemy would destroy the city, but he didn't.  
 b. # I **anticipated** the fact that the enemy would destroy the city, but he didn't.

It should not come as a surprise that the lexical item *fact* triggers factivity. Earlier analyses have even suggested that factive clauses are headed by a silent FACT element (Kiparsky and Kiparsky 1970; Kayne 2008, 2009), an idea we will later reject as it cannot account for the extraction or interpretation facts.

But let us now introduce data from Hebrew where factivity is licensed by a the proximal demonstrative *ze*, a functional element rather than a lexical item like *fact*.

- (14) a. *hu hisbir* [*še-ha-binyan karas*] (*aval hu lo be'emet karas*)  
 he **explained** COMP-the-building collapsed but he NEG really collapsed  
 'He explained that the building collapsed (but it didn't)'  
 b. *hu hisbir et [ze še-ha-binyan karas]* (# *aval hu lo be'emet karas*)  
 he **explained** ACC this COMP-the-building collapsed but he NEG really collapsed  
 'He explained the fact that the building collapsed (# but it didn't)'

This behavior is not unique to Hebrew: Persian uses the proximal demonstrative *in* similarly, as does Greek with the definite article *to* (cf. Roussou 1992). In American Sign Language, this factivity is signaled by signing the relevant propositions or individuals in different spatial locations, the ASL equivalent of a determiner (Kastner and Davidson 2013).<sup>1</sup>

These are the factive clauses considered in this paper. First off, we will examine their extraction facts.

## 2.3 Extraction

Extraction from nonfactive predicates like *think* is possible in ways that extraction from factive predicates like *remember* is not, as can be seen in (15)-(16), adapted from Basse (2008); Haegeman and Ürögdi (2010a). The question is what makes factives behave like islands for movement.

<sup>1</sup>Judgments are due to Fryni Panayidou (Greek), Tamar Gindin (Persian) and the UConn Sign Lab (ASL).

- (15) Extraction from nonfactives is generally allowed:
- a. What do you **think** (that) John stole \_\_\_? COMPLEMENT
  - b. Where do you **think** John came from \_\_\_? COMPLEMENT
  - c. Who do you **think** \_\_\_ stole the cookies? SUBJECT
  - d. Why do you **think** that John stole the cookies \_\_\_? ADJUNCT
- (16) Only complements can be extracted from factives:
- a. What do you **remember/deny** that John stole \_\_\_? COMPLEMENT
  - b. Where do you **remember/deny** that John came from \_\_\_? COMPLEMENT
  - c. \* Who do you **remember/deny** \_\_\_ stole the cookies? SUBJECT
  - d. # Why do you **remember/deny** that John stole the cookies \_\_\_?<sup>2</sup> ADJUNCT

In fact, even extraction of complements from factives is degraded (examples adapted from Kluender and Kutas 1993:628):

- (17) a. ? What did you figure out you will say \_\_\_ to your boss in the meeting?
- b. ? Who did the senator figure out that they discovered \_\_\_?
- (18) a. ? What did you figure out that you should tell your boss about \_\_\_ before the meeting?
- b. ? Who did the senator figure out that they had discovered something about \_\_\_ in the press room?

This pattern obtains in other languages as well. Extraction from nonfactives is allowed in Hebrew and Greek (recall that we dub these **Selected Embedded Nonfactives**):

- (19) HEBREW
- a. *ma ata xosev še-dani ganav \_\_\_?*  
what you **think** COMP-Danny stole  
'What do you think that Danny stole?' COMPLEMENT
  - b. *mi ata xosev (še-) \_\_\_ ganav et ha-'ugiot?*  
who you **think** COMP- stole ACC the-cookies  
'Who do you think stole the cookies?' SUBJECT
  - c. *lama ata xosev še-dani ganav et ha-'ugiot \_\_\_?*  
why you **think** COMP-Danny stole ACC the-cookies  
'Why do you think Danny stole the cookies?' ADJUNCT
- (20) GREEK
- a. *ti nomizis oti eklepse \_\_\_ o Janis?*  
what **think.2SG** COMP stole.3SG the John  
'What do you think that John stole?' COMPLEMENT
  - b. *pjos nomizis oti \_\_\_ eklepse ta biskota ?*  
who **think.2SG** COMP stole.3SG the biscuits  
'Who do you think stole the biscuits?' SUBJECT
  - c. *jati nomizis oti o Janis eklepse ta biskota \_\_\_?*  
why **think.2SG** COMP the John stole.3SG the biscuits  
'Why do you think that John stole the cookies?' ADJUNCT

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<sup>2</sup>Ungrammatical on the intended reading.

Extraction from factives is only allowed for complements in Hebrew, and is banned even for them in Greek (we call these **Selected Embedded Factives**):

## (21) HEBREW

- a. *ma ata zoʔer še-dani ganav \_\_\_?*  
 what you **remember** COMP-Danny stole  
 ‘What do you remember that Danny stole?’ COMPLEMENT
- b. \*? *mi ata zoʔer (še-) \_\_\_ ganav et ha-’ugiot?*  
 who you **remember** COMP- stole ACC the-cookies  
 (int. ‘Who do you remember stole the cookies?’) SUBJECT
- c. \* *lama ata zoʔer še-dani ganav et ha-’ugiot \_\_\_?*  
 why you **remember** COMP-Danny stole ACC the-cookies  
 ‘Why do you remember Danny the cookies?’ ADJUNCT

## (22) GREEK

- a. \* *ti thimase oti eklepse \_\_\_ o Janis?*  
 what **remember.2SG** COMP stole.3SG the John  
 (int. ‘What do you remember that John stole?’) COMPLEMENT
- b. \* *pjos thimase oti \_\_\_ eklepse ta biskota ?*  
 who **remember.2SG** COMP stole.3SG the biscuits  
 (int. ‘Who do you remember stole the biscuits?’) SUBJECT
- c. \* *jati thimase oti o Janis eklepse ta biskota \_\_\_?*  
 why **remember.2SG** COMP the John stole.3SG the biscuits  
 (int. ‘Why do you remember that John stole the biscuits?’) ADJUNCT

Factives pattern with islands, then, and not with nonfactives. The only way to extract out of a Greek factive is by introducing it not with the declarative complementizer *oti* but with the subjunctive complementizer *na*.

Let us add another class of factive clauses, those that are prefaced by an overt DP. We called these **Overt Definite Factives**, and they are prefaced by the string *the fact that* in English but by a determiner in various other languages (as discussed above in section 2.2):

## (23) ENGLISH

- a. \* *What do you remember **the fact that** John stole \_\_\_?*
- b. \* *Who do you remember **the fact that** \_\_\_ stole the cookies?*
- c. # *Why do you remember **the fact that** John stole the cookies \_\_\_?*

## (24) HEBREW

- a. \* *(et) ma ata zoʔer et ze še-dani ganav \_\_\_?*  
 ACC what you remember ACC **this** COMP-Danny stole  
 (int. ‘What do you remember the fact that Danny stole?’)
- b. \* *mi ata zoʔer et ze še-\_\_\_ ganav et ha-ugiot?*  
 who you remember ACC **this** COMP stole ACC the-cookies  
 (int. ‘Who do you remember the fact that stole the cookies?’)
- c. # *lama ata zoʔer et ze še-dani ganav et ha-ugiot \_\_\_?*  
 who you remember ACC **this** COMP-Danny stole ACC the-cookies  
 (int. ‘Why do you remember the fact that Danny stole the cookies?’)



## (25) GREEK

- a. \* *ti thimase to eklepse \_\_\_ o Janis?*  
 what **remember**.2SG COMP stole.3SG the John  
 (int. ‘What do you remember that John stole?’) COMPLEMENT
- b. \* *pjos thimase oti \_\_\_ eklepse ta biskota ?*  
 who **remember**.2SG COMP stole.3SG the biscuits  
 (int. ‘Who do you remember stole the biscuits?’) SUBJECT
- c. \* *jati thimase oti o Janis eklepse ta biskota \_\_\_?*  
 why **remember**.2SG COMP the John stole.3SG the biscuits  
 (int. ‘Why do you remember that John stole the biscuits?’) ADJUNCT

## Overview of Analyses

Our account of these facts will treat the Selected Embedded Factives and the Overt Definite Factives as DP constructions embedding a CP and rendering them islands for movement. Previous analyses have taken other tacks, however.

Basse (2008) follows de Cuba (2007) in treating factive clauses as defective phases: the embedded CP lacks an Edge Feature and so no element can move out of it. To allow for extraction of objects, Basse suggests that they are probed by the matrix V: its [ACC] feature probes into the embedded clause, finding the object within it. The degradedness (in some languages) or ungrammaticality (in others) of long-distance extraction from factive clauses is then said to be a result of multiple agreement: first the lower V checks [ACC] on the object and then the matrix V does the same. It is unclear, though, why the higher V must trigger movement of the embedded object rather than checking its feature *in situ*. Furthermore, this idea cannot explain why it is **complements** rather than objects that can be extracted from Selected Embedded Factives, including complements of prepositions as in (16b) above, repeated here:

- (26) Where do you **remember** that John came from \_\_\_? COMPLEMENT

Haegeman and Ürögdi (2010a) propose that a **referential** operator intervenes between the left periphery and any material in the embedded clause, ruling out extraction. However, this operator is a stipulated theoretical device which does not seem to be overt in any language. Its characterization as a referential operator is also somewhat vague (Bhatt 2010; Kallulli 2010). We will return to these proposals in detail after presenting our own alternative in the next section. First, though, there is another generalization to be mentioned.

## 2.4 Fronting

Fronting is generally allowed in nonfactives but disallowed in factives (Maki et al. 1999; Basse 2008; Bentzen 2010; Haegeman and Ürögdi 2010a:112).

- (27) Argument fronting in nonfactives, grammatical:

- a. John **thinks** that [this book, Mary read].
- b. I can **assure** you that [that film, I don’t want to ever see again].
- c. That film, I don’t ever want to see again.



- (28) Argument fronting in factives, ungrammatical:
- a. \* John **regrets/denies** that [this book, Mary read].
  - b. \* John **regretted/denied** that [Gone with the wind he never went to see].

Argument fronting is taken here as representative of **Main Clause Phenomena**, a topic of much work in the early days of transformational grammar (Emonds 1970; Hooper and Thompson 1973; Green 1976); see Heycock (2006) for a recent review. These constructions are only possible in “main” or “root” clauses such as matrix clauses and non-restrictive relative clauses.

- (29) **VP-preposing**  
*Mary plans for John to marry her*, and marry her he will.
- (30) **Negative constituent preposing**  
*Never in my life* have I seen such a crowd.
- (31) **Topicalization**  
*This book* you should read.
- (32) **Locative inversion**  
*Up the street* walked a dog.

The question is why nonfactives allow some of these operations while factives do not. Specifically, we will address the issue of fronting arguments, though the generalizations and the analysis extend to the other kinds of fronting described as MCP.

## Overview of Analyses

In an important early study of MCP, Hooper and Thompson (1973) suggested that MCP effects arise in clauses that do not make an **assertion** (cf. the volunteered/non-volunteered stance in Cattell 1978): “*emphasis would be unacceptable in clauses that are not asserted, e.g. embedded clauses which are pre-supposed*” (Hooper and Thompson 1973:472).

The strong form of this semantic-pragmatic hypothesis has since been challenged on empirical grounds (Green 1976; Heycock 2006): example (33) shows a non-asserted embedded clause with a fronted element, while example (34) shows the factive verb *regret*, a non-assertive verb, embedding a cleft (another form of emphasis).

- (33) I get very upset if I go into my sewing room, and out of the closet pops  
 your boyfriend. (Green 1976:390)
- (34) We **regretted** that [it was precisely this book that had been  
 destroyed]. Heycock (2006)

A strong semantic hypothesis can be ruled out, but the idea is not without merit. Pointing out something that already exists is arguably a limited kind of conversational move. Unlike this earlier work, we need not say that factive utterances are not conversational moves at all. However, it is true that they do not change the common ground, for their content is already assumed by both interlocutors.

Turning to the implementation, what does a conversational move with limited illocutionary force look like technically? Previous authors have tried to tie this to an [ASSERTION] feature (Basse 2008, following de Cuba 2007) or [FACTIVE] feature (Haegeman and Ürögdi 2010a) active in the left periphery. Leftward movement inside the clause is

blocked either by constraining the left periphery itself (Basse) or by severing the connection between the left periphery and the fronted element (Haegeman and Ürögdi).

Haegeman and Ürögdi (2010a) have developed an analysis in which a factive operator intervenes between the left periphery and TP, ruling out movement of the fronted argument to a Topic position. The idea is that leftward movement of a factive element is blocked in a Relativized Minimality way by an operator that has the same factive feature (Rizzi 1990, 2004): the factive element cannot be probed by an element in the left periphery since the operator is found instead. Their full analysis will await dedicated treatment until section 6, but we will adopt their intuition. They actually speak of **referentiality** rather than factivity, making a distinction between referential clauses and non-referential clauses.

(35) The basics of the referentiality account (Haegeman and Ürögdi 2010a:137):

- a. Non-factive predicates take either a referential or a non-referential clause, while factive predicates can take only referential clauses.
- b. **Referential clauses** denote a proposition with no illocutionary force. A referential clause cannot be an utterance unto itself.
- c. **Non-referential clauses** involve a conversational move, i.e. an assertion or speech act. Factive verbs cannot embed speech acts because speech acts must contain novel information (de Cuba and Ürögdi 2009).

While the specifics of this proposal await scrutiny later on, the basic premise is again that there is something different about the left periphery of factive clauses. We can add one further tweak based on Rizzi's original formulation of the expanded left periphery: *"It is reasonable to assume that the topic-focus system is present in a structure only if "needed", i.e. when a constituent bears topic or focus features to be sanctioned by a Spec-head criterion."* (Rizzi 1997:288)

If TopP and FocP are not required projections, it stands to reason that they will be constrained by some feature on Force<sup>0</sup>. Anticipating discussion of our proposal later on, we will claim that Selected Embedded Factives are headed by a determiner  $\Delta$  which selects for a C<sup>0</sup> complement. The factive determiner selects for a C<sup>0</sup> (or Force<sup>0</sup>) that does not license Top<sup>0</sup> and Foc<sup>0</sup>, making it impossible to front arguments. This analysis has the added benefit that it does not postulate an extra element, insofar as the determiner is syntactically and semantically motivated crosslinguistically in a way that the referential operator is not.

## 2.5 Interim Summary

Section 2.3 presented the extraction puzzle, which we will go on to analyze as extraction from an island: Selected Embedded Factives do not allow extraction of subjects and adjuncts and even extraction of complements can be degraded, unlike the situation in Selected Embedded Nonfactives which allow all types of extraction. Overt Definite Factives do not allow any extraction.

Section 2.4 introduced MCP effects and summarized the debate on banned fronting in factive clauses. While previous work has shown that the solution cannot be entirely semantic, no one explanation has been agreed upon yet. Our proposal will be similar to a number of existing proposals, though it uses the basic philosophy behind the left periphery as articulated by Rizzi in conjunction with the view of selection in Selected Embedded Factives to achieve what others have done with additional theoretical machinery.

In section 5 we will fit another piece in the factivity puzzle, that of factivity in subject position. To better appreciate the relevant points in sentential subjects, however, we should first go into detail with our analysis.

### 3 The Proposal

We aim to account for the behavior of three separate constructions: Selected Embedded Nonfactives, Selected Embedded Factives and Overt Definite Factives. Their proposed structures will match the extraction and fronting facts, reducing notions such as “factive island” to the Complex NP Constraint (in the case of Selected Embedded Factives) or Adjunct Islands (in the case of Overt Definite Factives), and accounting for “MCP effects in factive clauses” with a selectional constraint in Selected Embedded Factives. With this machinery in place, there will be two follow-up questions:

1. What is the difference in interpretation for the different kinds of elements selected by the matrix verb:  $\Delta$ ,  $D^0$ , CP?
2. How do sentential subjects fit into the picture?

These questions will be addressed in sections 4 and 5, respectively. Table 1 is reproduced here to anticipate the discussion.

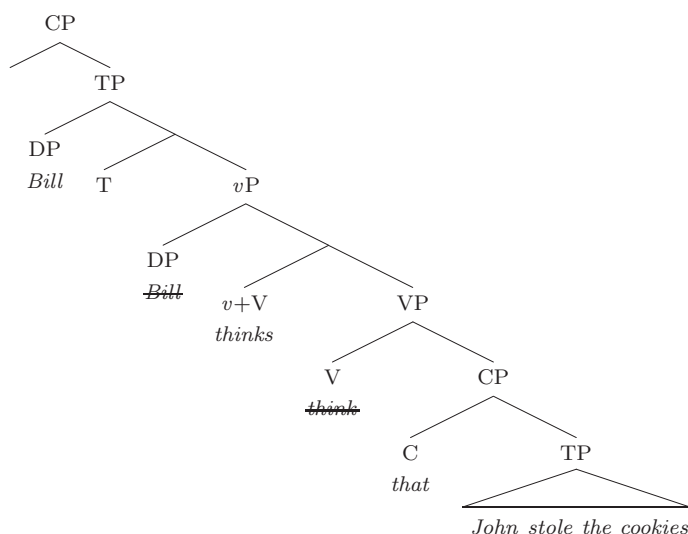
Name	Structure	CP complement	Factive	Special meaning
Selected Embedded Nonfactive	[V CP]	yes	no	no
Selected Embedded Factive	[V [ $DP$ $\Delta$ CP]]	yes	yes	no
Overt Definite Factive	[V [ $DP$ D [ $NP$ [ $NP$ N] CP]]]	no	yes	yes
Sentential Subject	[ $DP$ VP]	no	yes	yes

Table 2: Combinations of V, DP and CP examined in this paper.

#### 3.1 Selected Embedded Nonfactives

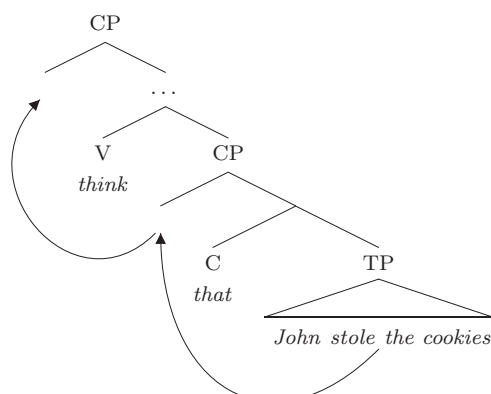
This group contains verbs that are not inherently factive, such as *think* and *claim*, which take a clausal complement. Under our analysis, the matrix verb C-Selects for a CP and S-Selects for a proposition:

- (36) *Bill thinks that John stole the cookies.*



Extraction proceeds straightforwardly for any element in the CP:

(37) Extraction of subject, object or adjunct:



There are no specific predictions made regarding fronting/MCP effects; any good analysis of these effects should be easily incorporated into this account.

#### Selected Embedded Nonfactives:

- V C-Selects for a CP and S-Selects for a proposition.
- They are not factive.
- No particular claims regarding fronting beyond what might already be proposed in the literature.

This is not to preclude nonfactive verbs from taking DP complements: *answer* can take a DP (a) or a CP (b), but the structure for (b) will be as in (36) above.

- (38) a. The President answered [<sub>DP</sub> the question].  
 b. The President answered [<sub>CP</sub> that construction will go ahead as planned].

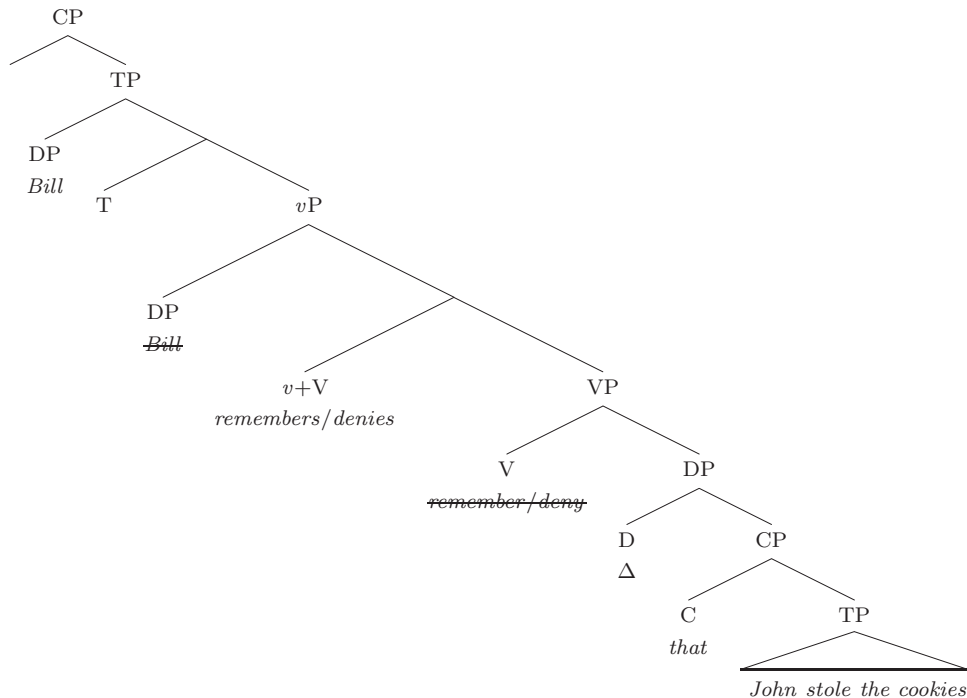
The next construction is the factive counterpart of these verbs.

## 3.2 Selected Embedded Factives

This group contains predicates that are inherently factive, such as *remember*, *know* and *regret*. These too take a clausal complement, at least as it seems on the surface. Yet in our analysis they differ from their nonfactive counterparts by taking a DP. The matrix verb C-Selects for a DP and S-Selects for a factive individual. We use a special symbol for the determiner, following Adger and Quer (2001):  $\Delta$ . Motivation for this relationship between a special determiner and the CP follows below.

The resulting structure recalls Mixed Categories in the sense of Lefebvre and Muysken (1988), in that a CP “becomes” a DP along the derivation.

- (39) *Bill remembers/denies that John stole the cookies.*



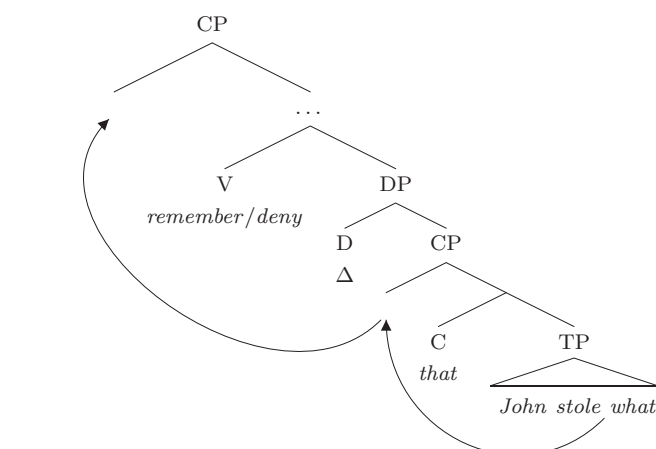
### 3.2.1 Extraction from Selected Embedded Factives

Extraction from within a DP is not easily allowed: a Complex NP Island is a strong island (Ross 1967). However, it has been shown that complements extract more easily than specifiers, for a variety of constructions and even in strong islands (Hofmeister and Sag 2010:370):<sup>3</sup>

- (40) a. What did you [go to the store] and [buy \_\_\_]? (COORDINATE STRUCTURE)  
 b. What did [the attempt to find \_\_\_] end in failure? (COMPLEX NP, SUBJECT)

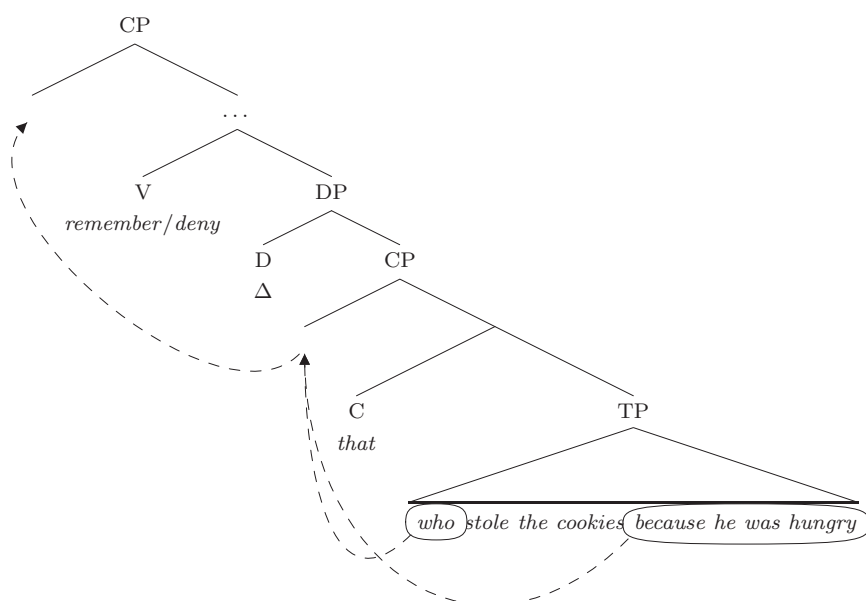
Our structure captures this island-like pattern, creating a complex DP out of which only complements may be extracted, in accordance with the ECP (dashed lines depict the banned derivation):

- (41) *What do you remember/deny that John stole \_\_\_?*



<sup>3</sup>The traditional analyses rely on the complement being properly governed, reducing their behavior as described by the Condition on Extraction Domains (Huang 1982) to the Empty Category Principle. We will not attempt a Minimalist rethinking of Subacency here, though see Müller (2010) and references therein for a few approaches.

- (42) a. \* *Who do you remember/deny (that) \_\_\_ stole the cookies?*  
 b. \* *Why do you remember/deny (that) John stole the cookies \_\_\_?*



This is not to say that any complement can be extracted from a “factive island.” Rather, Selected Embedded Factives pattern like other weak islands with regards to the kind of element that can be extracted:

- (43) a. \* How much milk did you drink \_\_\_? (Szabolcsi and Zwarts 1997:224)  
 b. \*? How much milk do you regret/deny that John drank \_\_\_?  
 (44) a. Which man did you see \_\_\_?  
 b. Which man do you regret/deny that I saw \_\_\_? (Szabolcsi and Zwarts 1997:223)

See Szabolcsi and Zwarts (1997) or Szabolcsi and den Dikken (1999) for the full details. For our purposes, it suffices that some complements can be extracted from a DP structure.

### 3.2.2 Selection in Selected Embedded Factives

What is the nature of the relationship between the verb,  $\Delta$  and C? We say that  $\Delta$  requires a CP complement, but what does such a relationship between a determiner and a complementizer entail? We will adopt an answer from the work of Adger and Quer (2001) and see that implementing it in our theory gives us exactly the right kind of control over the left periphery of the embedded clause: the factive verb selects a factive determiner, which in turn selects a  $C^0$  (or  $\text{Force}^0$ ) that constrains the availability of  $\text{Topic}^0$  and  $\text{Focus}^0$  in its clause.

Returning to a more accurate subdivision of predicates, we have noted above that NON-STANCE VERBS (factives) such as *remember* pattern together with RESPONSE STANCE VERBS such as *deny*. In both cases the predicate addresses some topic which is given in the discourse, a claim that has been made or some Question Under Discussion. This claim is factive in the sense that its existence is presupposed: it is in the common ground. A definite determiner can refer to it, and it is this determiner that we label  $\Delta$ . In other words,  $\Delta$  is a definite D head that picks out a unique utterance which the speaker can take a RESPONSE STANCE on or refer to with NO STANCE.

Adger and Quer (2001) investigated what they termed **unselected embedded questions**, roughly meaning *if*-clauses embedded under proposition-selecting predicates like *tell* (**selected** embedded questions, in contrast, are selected by predicates such as *ask*). While *whether*-clauses are fine with such predicates (45a), UEQs sound odd to some speakers and ungrammatical to others (45b):

- (45) a. The bartender told me whether I was drunk.  
 b. % The bartender told me if I was drunk.

What Adger and Quer noticed is that in some cases these UEQs are clearly fine, for instance in downward-entailing environments (46), but that certain predicates cannot embed UEQs (47). These examples are adapted from Adger and Quer (2001:110):

- (46) a. **Did** Julie admit/hear/say if/that the bartender was happy?  
 b. Julie **didn't** admit/hear/say if/that the bartender was happy.  
 (47) a. Julie claimed/assumed/maintained that/\*if the bartender was happy.  
 b. Did Julie claim/assume/maintain that/\*if the bartender was happy?  
 c. Julie didn't claim/assume/maintain that/\*if the bartender was happy.

Relying on the notion of true-false predicates from Ginzburg (1995), the authors attribute the contrast to what these predicates license. The verbs in (47) “signal the subject’s epistemic commitment to the truth or falsity of the embedded proposition” (Adger and Quer 2001:110)—i.e. a *STANCE*—but there is no epistemic commitment in a question. This is why these true-false predicates cannot embed a question. On the other hand, the proposition-embedding predicates in (46) can embed a question and may therefore license UEQs.

The next part of the argument has to do with the environments UEQs are possible in. The authors show that UEQs pattern, perhaps surprisingly, with NPIs (48)–(49) as well as with free choice items under imperatives (50) or generics (51), to quote just a few of their examples. Together these are referred to as Polarity Sensitive Items (PSIs).

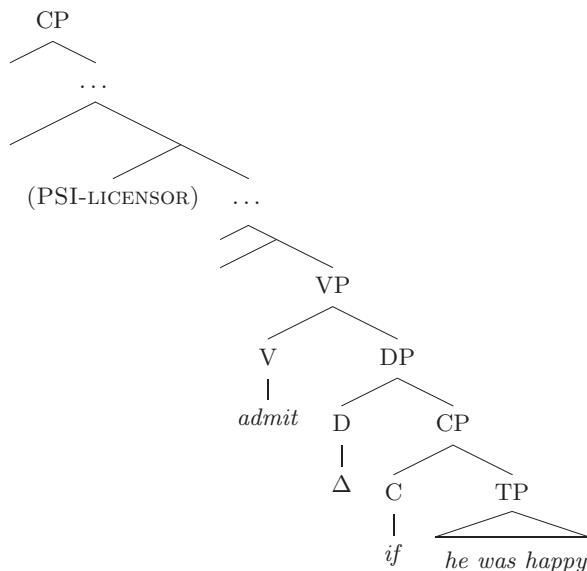
- (48) a. % John admitted if the bartender was happy.  
 b. **No one** admitted/heard/said if the bartender was happy.  
 c. **Only** Julie admitted/heard/said if the bartender was happy.  
 (49) a. % They admitted if they had the keys.  
 b. **If** they admitted [if they had the keys], **then** things would be much easier.  
 (50) a. % John admitted if he was guilty.  
 b. **Admit** if you're guilty!  
 (51) a. % John heard if someone has sinned.  
 b. **Priests** get to hear if someone has sinned.

The suggested analysis of these patterns consists of a **semantically sensitive functional head** above the CP, namely the determiner  $\Delta$ . Data from Basque shows that this language has a complementizer-like element sensitive to the type of clause; this element can be decomposed into a  $D^0 + C^0$  complex, meaning that a polar determiner and a CP result in a UEQ in Basque. The authors then extend this to English, proposing that the  $D^0$  is covert but interacts with the matrix predicate above it and with the  $C^0$  (*if/whether/that*) below it, bridging the two.



This proposal accounts for the way that the meaning of an embedded question interacts with the matrix predicate; in other words, the [V-D-C] spine. V imposes a selectional restriction, selecting the polarity-sensitive determiner  $\Delta$ . This determiner then selects for the appropriate  $C^0$  (*if*, *that* or *whether* in English).

(52) Adger and Quer (2001:118), adapted:



What if the matrix context is not downward-entailing or polarity-sensitive, though, but factive? That is, the higher licensing material might originate in the left periphery of the matrix clause. In this case a different determiner will be licensed, one sensitive not to polarity but to factivity. In other words: a definite determiner. This is the account given in our paper. Some higher functional element in the matrix clause—or the verb itself—licenses the semantically-sensitive  $\Delta$ . The exponent of its complement,  $C^0$ , is restricted by the semantics of a licenser higher up in the clause (Adger and Quer 2001:118).

Combining the analysis in this paper with that of Adger and Quer (2001) accounts for a large amount of data crosslinguistically. Their paper makes no claims with regards to declarative embedded clauses, which is where our analysis steps in: when the context is factive, our theory handles those clausal complements that are in complementary distribution with Unselected Embedded Questions, namely Selected Embedded Factives. The consequences of  $C^0$  being constrained by factivity explain the fronting facts.

### 3.2.3 Fronting in Selected Embedded Factives

Let us revisit the premise that there is something different about the left periphery of factive clauses (Basse 2008; Haegeman and Ürögdi 2010a). In his original description of the expanded left periphery, Rizzi suggested that “*It is reasonable to assume that the topic-focus system is present in a structure only if “needed”, i.e. when a constituent bears topic or focus features to be sanctioned by a Spec-head criterion.*” (Rizzi 1997:288)

The technical details of TopP and FocP being non-obligatory need to be spelled out. Here is one attempt:  $\text{Force}^0$  is supposed to be sensitive to the discourse environment of both the matrix predicate and the embedded predicate – that is the original idea standing behind the left periphery as a mediator between “high” structure and “low” structure.  $\text{Force}^0$  licenses TopP and FocP, so it stands to reason that they are sensitive to certain features on it. Now, the factive embedding verb would carry a feature

[F] relevant to factivity; it is not crucial at this point whether the feature is [-ASSERT] (Basse 2008), [+FACTIVE] or [+REFERENTIAL] (Haegeman and Ürögdi 2010a), since the end result is the same: V checks this feature on  $\Delta$ , which checks it on  $\text{Force}^0$ . The factive complementizer does not select for  $\text{Top}^0$  and  $\text{Foc}^0$  but for  $\text{Fin}^0$  directly, eliminating the landing sites for fronted elements. When compared to analyses such as the referential operator account of Haegeman and Ürögdi (2010a), this analysis has the advantage that it does not postulate an extra element.

There are two motivations for  $\Delta$  to be part of the grammar, one syntactic and one semantic. Syntactically, a determiner would render the factive clause a Complex NP, leading to the extraction facts discussed above (or a Complex DP in this case). In addition, many languages can head their factive clauses with a definite  $\text{D}^0$  as seen in section 2. Of course, this way of thinking about extraction runs the risk of being circular, so it is good that there is semantic motivation for a definite determiner composing with the proposition.

Intuitively speaking, a demonstrative picks out a unique referent in the actual world. This unique referent must exist, so if the referent is a proposition then that proposition must hold in the actual world. Let us attempt an informal compositional analysis of  $\text{D}^0$  and CP and see why this is so, considering the referentiality of the complements involved: a proposition  $P$  is a set of possible worlds  $P = \{w_1, w_2 \dots w_i\}$ . For a proposition to be true in the actual world  $w_0$ , the actual world must be in its set,  $P = \{w_1, w_2, \dots w_0 \dots\}$ . A definite determiner identifies a unique element in the actual world, so it must pick out the actual world from any set of possible worlds when it is used. Since the world was in the set defined by the proposition, it is necessarily a true world, meaning that the proposition holds in it,  $\llbracket \text{D}^0 \text{ CP} \rrbracket^{w_0} = 1$ . Whichever mechanism composes the determiner with the proposition must intersect the worlds they are true in, resulting in  $w_0$ .

There is a prediction here, which is that definite determiners will never compose directly with counterfactuals or conditionals, as there is no way to guarantee that the actual world will be in their denotation. This can only be done with some explicit mediating material such as a noun. As far as I know this is correct.

- (53) a.  $*[_{DP} \text{D}^0 [_{CP} \text{if/whether} \dots]]$   
 b.  $[_{DP} \text{D}^0 \text{question} [_{CP} \text{if/whether} \dots]]$

This completes our account of fronting in Selected Embedded Factives, which uses the same building blocks as our account of extraction.

### 3.2.4 Summary

Selected Embedded Factives are definite elements:

- V C-Selects for a DP and S-Selects for a semantically-sensitive, factive  $\text{D}^0$ , namely  $\Delta$ . This determiner, in turn, selects for a CP headed by a factive  $\text{C}^0$  (or  $\text{Force}^0$ ).
- They are factive.
- Fronting is not allowed since the factive  $\text{Force}^0$  does not allow for Topic and Focus projections, eliminating these as potential landing sites.

This is not to preclude factive verbs from taking DP complements: *know* can take a DP (a) or a clausal complement (b), but the structure for (b) will be as in (39) above.

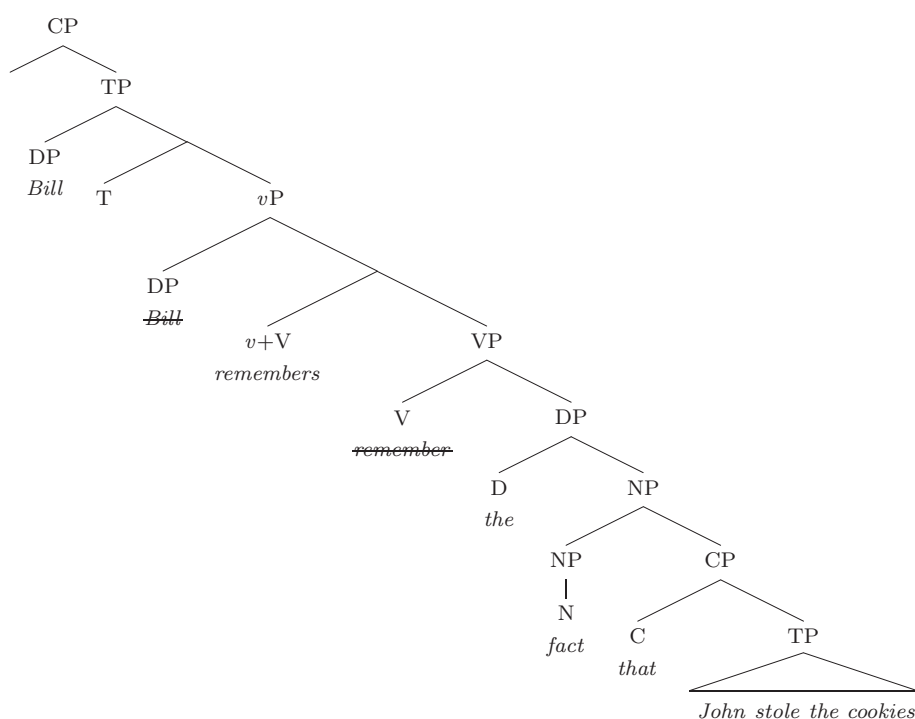
- (54) a. The President knew [<sub>DP</sub> the answer].  
 b. The President knew [<sub>DP</sub> Δ [<sub>CP</sub> that construction will go ahead as planned]].

There is one more structure to consider, one in which a full DP is instantiated. We discuss it next.

### 3.3 Overt Definite Factives

This group contains verbs that are followed by a clause headed by an overt determiner. Overt Definite Factives differ from Selected Embedded Factives in that the DP selected by the matrix predicate is a full DP, including an NP layer in which the noun is silent or semantically bleached (*the **fact** that*). The embedded clause is an adjunct modifying the noun phrase. Here, too, the matrix verb C-Selects for a DP and S-Selects for a factive individual.

- (55) *Bill remembers the fact that John stole the cookies.*



Extraction of any element is impossible from Overt Definite Factives, as mentioned in section 2.3 for English, Hebrew and Greek. Examples (23)-(24) are repeated here.

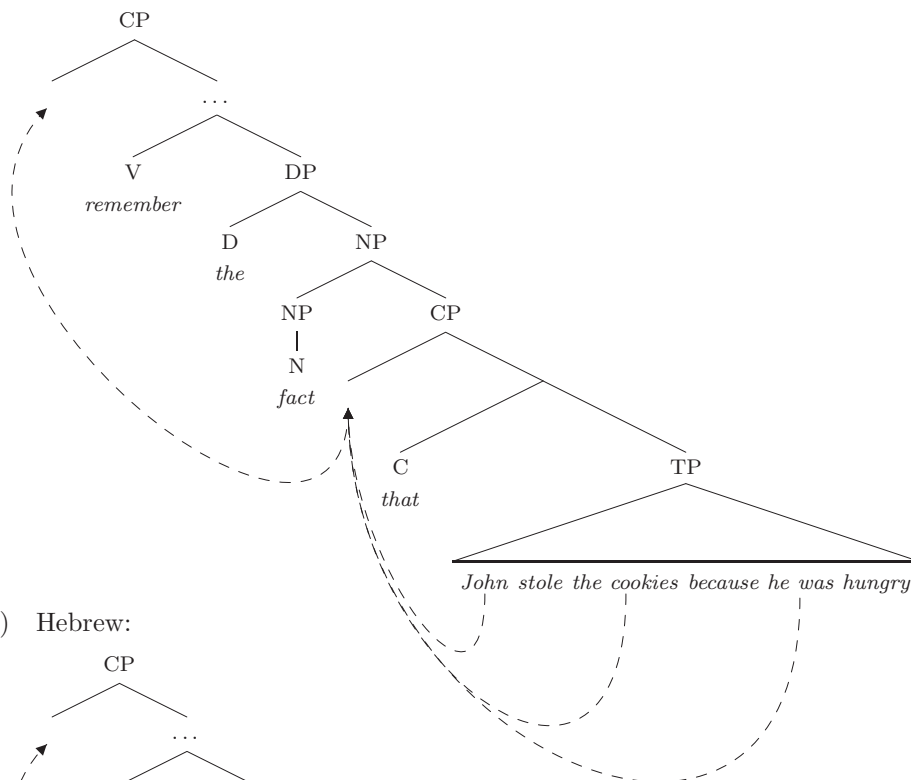
- (56) ENGLISH
- \* *What do you remember **the fact** that John stole \_\_\_?*
  - \* *Who do you remember **the fact** that \_\_\_ stole the cookies?*
  - # *Why do you remember **the fact** that John stole the cookies \_\_\_?*

## (57) HEBREW

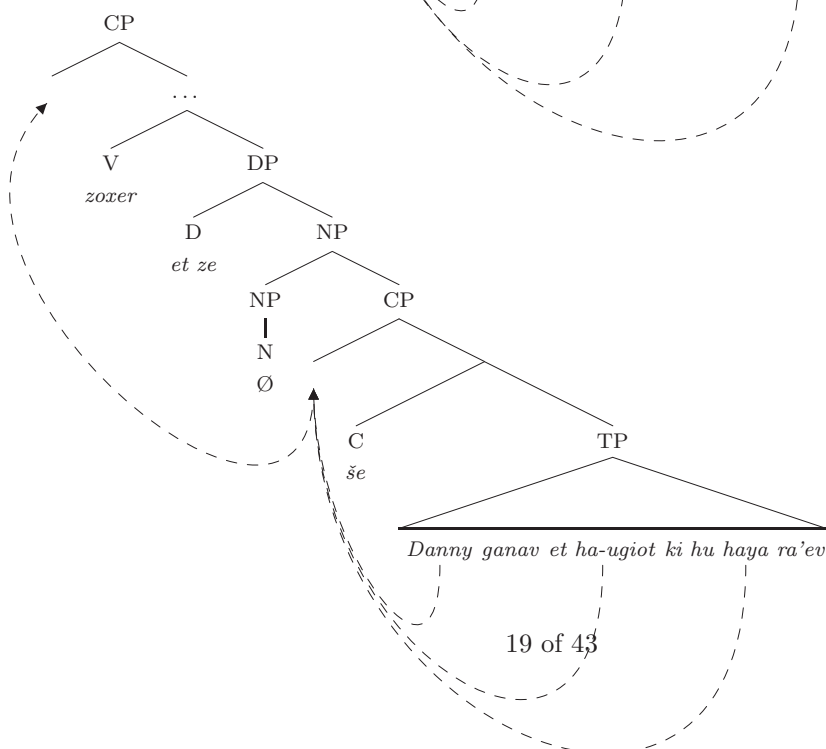
- a. \**(et) ma ata zoxer et ze še-dani ganav \_\_\_?*  
 ACC what you remember ACC **this** COMP-Danny stole \_\_\_?  
 (int. 'What do you remember the fact that Danny stole?')
- b. \**mi ata zoxer et ze še-\_\_\_ ganav et ha-ugiot ?*  
 who you remember ACC **this** COMP stole ACC the-cookies  
 (int. 'Who do you remember the fact that stole the cookies?')
- c. #*lama ata zoxer et ze še-dani ganav et ha-ugiot \_\_\_?*  
 who you remember ACC **this** COMP-Danny stole ACC the-cookies \_\_\_?  
 (int. 'Why do you remember the fact that Danny stole the cookies?')

Any kind of extraction from an adjunct clause is blocked:

## (58) English:



## (59) Hebrew:



## The Overt Determiner

This construction, which at least for languages like Hebrew and Greek has not been discussed (though see Roussou 1992 and Kastner and Davidson 2013), raises a few questions for further inquiry. We mention them here but will not address them head-on.

Hebrew *ze* is not the same kind of demonstrative as an English demonstrative, in that its distribution within the DP is more restricted. With the exception of one mention in Shlonsky (2004:1497), existing treatments of constructions with *ze* focused on its copular use (Greenberg 2008; Danon 2012) or its usage with clefts (Spector 2012). Figuring out its exact role in the DP should add insight into the Overt Definite Factive construction.

The status of the silent Hebrew (and Greek) noun is also unclear: what kind of covert  $N^0$  is it? Hebrew and Greek do not allow the lexical item *fact* in its place.<sup>4</sup>

These questions, which to varying degrees are specific to certain languages, do not bear on the empirical coverage of our proposal. With our new typology of embedded clauses in place, we can go one step further and ask what influence the selection of a DP or a CP has on the interpretation of the sentence.

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## 4 Interpretation and Selection

Now that we have a clearer view of factives, we may take a step back and consider the broader picture of embedded clause selection and interpretation. What happens when other verbs take DPs – do they become factive? Is there a difference between selecting for a DP and selecting for a CP? If so, what is the division of labor between the syntax and the lexical semantics? This section will argue that DP complements can be interpreted differently from CP complements.

It has been noted that clausal complements have different interpretations from DP complements, serving more as appositions than actual arguments (Higgins 1972; Stowell 1981):

- (60) a. I **explained** [<sub>DP</sub> the problem]  $\approx$  I EXPLAINED WHY X  
 b. I **explained** [<sub>CP</sub> that there was a problem]  $\approx$  I SAID X AS EXPLANATION

Our claim here is that the meaning of complements varies in a semi-predictable way, depending on the predicate. It **varies**, because the DP-object and the CP-object mean different things. It is **predictable**, because the CP version will always be this kind of apposition to a general case of the verb. It is **semi-predictable**, because the exact interpretation will depend on the lexical semantics of the verb.

Take *explain* as a case in point. The meaning of [*explain* Obj] covaries with the form of Obj, with a DP object meaning 'explain why' and a CP object meaning 'say as explanation' (60). The same holds for other verbs: the meaning of [*observe* CP] is predictable in a way that [*observe* DP] isn't. The lexical semantics of *observe* are such that when selecting a proposition (CP), the meaning is always one of seeing

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<sup>4</sup>Unlike English, in Hebrew and Greek it is possible to elide a noun:

- (i) *Pass me the yellow* \*(one/book).  
 (ii) *ta'avir li et (ha-sefer /ha-ze) ha-cahov*  
 pass me ACC the-book the-this the-yellow  
 'Pass me the yellow one.' (HEBREW)

something, but when selecting an individual (DP) the meaning is more free to vary. One can *observe the ritual* or *observe the patients*, with different denotations:

- (61) a. I observed the ritual  $\approx$  CARRY OUT X  
 b. I observed the patients  $\approx$  WATCH X

Seeing both DPs and CPs as possible complements of a predicate will stand in contrast to work which aims to reduce all clausal complements to either CPs or DPs (Takahashi 2010; Moulton 2013). Takahashi's work aims to account for reconstruction facts, while Moulton's is based on a reluctance to allow CPs as arguments. The facts they present do not constitute a counterexample to the analysis here, and their own systems do not account for the differences in interpretation between DP and CP complements; if anything, they predict that the interpretation would be identical. But first we must fill in the details.

#### 4.1 Selecting Individuals and Selecting Propositions

Our working hypothesis is that a verb can select for a DP or a CP (among other categories), following intensive work on S-selection and C-selection (Grimshaw 1979, 1981; Pesetsky 1982, 1992; Rothstein 1992; Pesetsky 1993; Odijk 1997).

Some predicates can take an individual (DP) or a proposition (CP) with no substantial difference in meaning. That is, both sentences in (62) assert that the speaker said something to a third person. In this regard they are truth-conditionally equivalent:

- (62) a. I told him the time.  
       'I SAID X'  
 b.  $\approx$  I told him that he was late.  
       'I SAID X'

However, the predicate *explain* has different meanings for its two different syntactic complements. The CP complement serves more as an apposition than an actual argument (Stowell 1981; Moulton 2013):

- (63) a. I **explained** [<sub>DP</sub> the problem].  
       'I said what was the reason for the problem.'  
        $\approx \llbracket \text{I EXPLAINED X} \rrbracket = \lambda x. \text{explain}(x)(\text{problem})$   
 b. I **explained** [<sub>CP</sub> that there was a problem].  
       'I said that there was a problem by way of explanation for something else.'  
        $\approx \llbracket \text{I SAID X AS EXPLANATION} \rrbracket = \lambda x. \text{say} [\exists \text{ explanation } (\text{explanation} = x)] (\text{problem})$

The different meanings of *explain* can be brought out by adding different continuations:

- (64) a. He **explained** [<sub>DP</sub> the building's collapse].  
       ... The contractor was a crook, the building supplies were bought cheap and safety regulations were flaunted. (=65)  
 b. He **explained** [<sub>CP</sub> that the building collapsed].  
       ... and that's why the police closed off the street.

The DP in (64a) can be substituted by a factive [DP CP] with *the fact*:

- (65) He **explained** [<sub>DP</sub> the fact that the building collapsed].  
 ... The contractor was a crook, the building supplies were bought cheap and safety regulations were flaunted. (=64a)

**Crosslinguistic evidence** shows that just as in the factive case, this behavior is not due to the lexical item *fact*; Overt Definite Factives in Hebrew, Greek and Persian have “DP shells” headed by a proximal demonstrative or the definite article.<sup>5</sup>

- (66) a. *hu hisbir [še-ha-binyan hitmotet]*  
 he explained COMP-the-building collapsed  
 ‘He explained that the building collapsed.’  
 b. *hu hisbir et [ze še-ha-binyan hitmotet]*  
 he explained ACC this COMP-the-building collapsed  
 ‘He explained the fact that the building collapsed.’ HEBREW

- (67) a. *dustam tozih dād [ke cāy-e man rā xorde ast]*  
 my-friend explained COMP tea-EZ me ACC drank  
 ‘My friend explained that she drank my tea,’ ‘My friend told me that she drank my tea.’  
 b. *dustam tozih dād [in ke cāy-e man rā xorde ast]*  
 my-friend explained this COMP tea-EZ me ACC drank  
 ‘My friend explained the fact that she drank my tea,’ ‘My friend explained why she drank my tea.’ PERSIAN

- (68) a. *i fili mu eksijise [oti ipce to tsai mu]*  
 the.F friend.F my explained COMP drank the tea my  
 ‘My friend explained that she drank my tea,’ ‘My friend said that she drank my tea.’  
 b. *i fili mu eksijise [to oti ipce to tsai mu]*  
 the.F friend.F my explained the COMP drank the tea my  
 ‘My friend explained the fact that she drank my tea,’ ‘My friend explained why she drank my tea.’ GREEK

The case of *observe* is similar, in that the DP and CP complements trigger different interpretations (and see also Stowell 1981 on [*see* DP] ‘see’ vs [*see* CP] ‘realize’):

- (69) a. The doctor observed [<sub>DP</sub> the patient].  
 ≈ HE LOOKED AT X  
 b. The doctor observed [<sub>CP</sub> that the patients were unhappy].  
 ≈ HE THOUGHT X

In order to understand these contrasts it is necessary to consider the interaction of verb and complement. In the [V DP] case, when a verb combines with its direct object DP a specific meaning emerges, depending on the lexical semantics of the root (just as with every other [V DP] combination). This is how *He explained the fact that the building collapsed* roughly means ‘He said why the building collapsed’.

To give another example, [*explain* DP] varies depending on the direct object, as is usually the case with direct objects (following much work on argument structure, e.g. Marantz 2009).

<sup>5</sup>I am grateful to Tal Linzen for bringing the Hebrew facts to my attention.



- (70) a. The mayor explained the collapse of the building.  
           ‘The mayor said why x’  
       b. Explain yourself!  
           ‘Say why you behaved x’

On the one hand, utterances (70a)-(70b) differ in interpretation through some mechanism which is not yet understood (though see Potts 2002). On the other hand, [*explain* CP] will always mean ‘say x by way of explanation.’

The same holds for *observe*, such that *observe the patients* and *observe the Sabbath* mean different things, although they are both [*observe* DP]. But [*observe* CP] always means the same thing, roughly ‘notice x’.

Let us conclude that the meaning of [V CP] is **predictable** in a way that the meaning of [V DP] is not. What’s more, the meaning **covaries** with the syntactic category of the complement. This covariation is only **semi-predictable**, however, since the actual semantics of [V DP] are dependent on the idiosyncrasies of the root. The semantics of [V CP] are some kind of apposition to one reading of the verb, varying from verb to verb.

When a verb combines with a CP the resulting reading is an existential one, asserting the existence of a “result” nominal (Grimshaw 1990) which is restricted by the CP. For *He explained that the building collapsed*, this would mean that there exists an explanation *p*. The content of *p* is filled in by the embedded clause, *the building collapsed*, so the reason ends up being [[the building collapsed]] (Higgins 1972; Stowell 1981; Moulton 2013).

A number of researchers have capitalized on this [V CP] relation to argue for an apposition-like or a relative-clause-like analysis of clausal complements, positing that they are all DPs with appositive CPs. However, these proposals cannot account for the differences in interpretation and factivity between a CP complement and a DP complement (Kayne 2008; Arsenijević 2009; Takahashi 2010; Moulton 2013). In addition, any special meaning resulting from the interaction of verb and complement would have to be attributed by these theories to the [NP CP] relation, which seems unlikely; the [V DP] relation has been more strongly implicated as a locus of special, unpredictable meaning (Marantz 1984, Kratzer 1996 and recently Marantz 2013, among others).

**Clause-level operations** do not change the interpretation. SAY here is shorthand for the CP reading, ‘say X as explanation’, and WHY is shorthand for the DP reading, ‘explain why X’.

- (71) Simple active sentences:
- |    |   |     |
|----|---|-----|
| a. | The Mayor explained that the building collapsed.          | SAY |
| b. | The Mayor explained the fact that the building collapsed. | WHY |
- (72) Nominalizations with an internal argument pattern like verb phrases (Grimshaw 1990):
- |    |   |     |
|----|---|-----|
| a. | The mayor explained [the collapse of the building].             | WHY |
| b. | The Byzantine Emperor predicted [the fall of the Roman Empire]. | WHY |
- (73) Impersonal passive:
- |  |   |     |
|--|---|-----|
|  | <b>It was explained</b> by the Mayor that the building collapsed. | SAY |
|--|---|-----|

Passivization does interact with the main predicate. Let us take the following verbs:

- **Explain:** When selecting for a DP individual, gives the reading “explain why” (factive). When selecting for a CP proposition, gives the reading “say as explanation.”

- **Say:** Means the same thing whether it selects for a DP or a CP.
- **Reiterate:** Means the same thing whether it selects for a DP or a CP (“say again”).
- **Support:** Can only take a DP individual.

What predictions does our theory make? The first verb, *explain*, covaries in factivity and interpretation with its complements. Passivized elements are DPs, and so the DP-like reading should emerge. The other three verbs would pattern together, but since they are not sensitive to different possible forms of their complement they will only have one possible reading. This prediction is borne out:

(74) Passivization:

- |     |   |         |
|-----|---|---------|
| a.  | That the building collapsed was explained by the mayor.                       | DP-LIKE |
|     | Compare:  |         |
| i.  | The building’s collapse was explained by me.                                  | DP      |
| ii. | The fact that the building collapsed was explained by me.                     | DP      |
| b.  | That the building collapsed was said/reiterated/supported by the authorities. |         |

The point is this: a predicate such as *explain*, whose interpretation depends on whether its complement is a DP or a CP, will exhibit the DP reading if its complement is promoted to subject. But before assessing subjects more thoroughly, we need to compare the factivity data with the interpretation data.

## 4.2 Factivity and Interpretation

What happens to factivity when we introduce the  $D^0$  to the CP? We have already seen the answer early on, in (11), expanded on here. The two effects hold at the same time, interpretation and factivity:

(75) Simple DP:

- |    |   |
|----|---|
| a. | I explained [ <sub>DP</sub> the collapse of the building].<br>‘I explained why the building collapsed.’ |
| b. | # I explained [ <sub>DP</sub> the collapse of the building], but it didn’t really.                      |

(76) Overt Definite Factive, [DP CP]:

- |    |  |
|----|--|
| a. | I explained [ <sub>DP</sub> <u>the fact</u> that the building collapsed].<br>‘I explained why the building collapsed.’ |
| b. | # I explained [ <sub>DP</sub> <u>the fact</u> that the building collapsed], but it didn’t really.                      |

(77) Selected Embedded Nonfactive, CP:

- |    |  |
|----|--|
| a. | I explained [ <sub>CP</sub> that the building collapsed].<br>‘I said that the building collapsed.’ |
| b. | I explained [ <sub>CP</sub> that the building collapsed], but it didn’t really.                    |

It is time to take stock. Allowing predicates to take a DP or a CP complement is a good idea: some predicates relate to an individual (*hit*), some relate to a proposition (*seem*) and some can relate to either one (*explain*, *see*, *observe*). This frees us from the need to postulate that clauses cannot be direct objects and gives us a consistent view of the semantics: any special meaning will only arise from the interaction of the verbal root and the DP. The resulting prediction is twofold: that the meaning of all CP complements is generated in a predictable way and is “appositive” in some intuitive sense (Higgins 1972;

Stowell 1981), but that not all DP complements must be interpreted in the same way. This prediction is borne out. And nominalizing clauses using a definite determiner has predictable consequences: the proposition becomes part of an Overt Definite Factive.

One other domain remains to be examined, namely, what happens to factivity (and interpretation) in subject position.

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## 5 Sentential Subjects

Sentential subjects have been at the center of a debate as to whether they are generated as topics (Koster 1978; Alrenga 2005; Takahashi 2010) or as subjects (Delahunty 1983; Davies and Dubinsky 2009; Hartman 2012; Moulton To appear). Lohndal (2013), for instance, notes that phrases cannot be topicalized in an infinitival sentence (b) whereas sentential subjects can (c, Delahunty 1983:389 and Lohndal (2013)):

- (78) a. Bill wants [to give a raise to Fred].  
 b. \* Bill wants [to Fred to give a raise].  
 c. Bill wants [[that Fred lied] to be obvious to everyone].

It is not crucial for our purposes whether sentential subjects are topics or “true” subjects, but we will adopt the latter view.<sup>6</sup> An implementation of these constructions as subjects generates a null DP in Spec,*v*P and a coreferential sentential subject in Spec,TP, leaving open the question of how the sentential subject is “made” into a DP (Lohndal 2013:4). That sentential subjects show nominal characteristics is not a new observation by any means, documented by Lees (1960); Rosenbaum (1967); Ross (1967) and treated more recently by Alrenga (2005); Takahashi (2010); Hartman (2012:ch. 3). The latter documents a number of empirical and theoretical reasons for sentential subjects being nominal, including agreement, licensing of *pro*, and Case assignment (Hartman 2012:55). In this section we will see that sentential subjects are usually factive—not a new observation, but one that has not yet been made explicit—with the result that active-voice sentential subjects are simply another kind of Overt Definite Factive. Turning to passive clauses and unaccusative clauses, we will see that their factivity is predictable from the main verb. Once again the connection between C-Selection, S-Selection, factivity and interpretation will arise: verbs like *explain*, whose interpretation covaries with the form of their complement, give factive readings even when passivized. Verbs like *support* and raising verbs like *seem*, which have one C-Selectional possibility, or verbs like *say* whose DP and CP meanings are the same, give nonfactive readings when passivized.

A word on the discursive status of subjects is in order first. New discourse referents are usually introduced as objects rather than subjects (Irwin 2012). A Gricean speaker will refer to a topic already existing in the common ground, obeying the maxim of relevance. If an utterance does not explicitly mark a topic, the subject serves as one and so it seems safe to say that subjects are at the very least **given**. Whether a subject is presupposed is a different matter: presupposition is often discussed in terms of truth of a proposition, not the existence of a proposition. Individuals can have their existence presupposed, as with definite DPs:

---

<sup>6</sup>See Hartman (2012:§3.7.2) for a summary. Lohndal (2013) argues for a topic analysis based on Norwegian data, though the pattern he rules out is available in Hebrew. However, we will not go into this issue here.

- (79) a. Q: Did you ride a horse?  
       b. A: No, there was no horse.
- (80) a. Q: Did you ride the horse?  
       b. # A: No, the horse doesn't exist / there was no horse.

Since subjects are given in the discourse, I assume that they are factive. As we have already seen in this paper, one way to presuppose something is to make it definite. This assumption is useful if we wish to explain **why** sentential subjects are factive and why they are definite, but the generalizations detailed below do not hinge on it. For more on new and old information see Clark and Haviland (1977) or, for a different take, Irwin (2012). On presupposed subjects see Guéron (1980); on their topic-hood and givenness, Lohndal (2013:7).

## 5.1 Sentential Subjects are Factive

In a recent commentary, Bhatt (2010:176) noted that “certain sentential subjects (but not all) are interpreted factively”. His examples are given here:

- (81) a. That John is so tall is amazing.  
       b. # That John is so tall is false.  
       c. That John is rich is widely believed by his classmates. (He's managed to fool them all!)

Which sentential subjects are interpreted factively and which are not? For example, if we deny (78c) the result is a presupposition failure.

- (82) a. Bill wants [that Fred lied] to be obvious to everyone.  
       b. # Bill wants [that Fred lied] to be known to everyone, even though it isn't true.

Once we look at other languages, an interesting pattern emerges. The same D<sup>0</sup> from the Overt Definite Factives heads the sentential subject. For example, the Hebrew determiner is always *ze*, as in the Hebrew Overt Definite Factives. This is not a matter of factivity but of grammaticality:

- (83) [*\*(ze)* *še-ha-binyan karas*] *hifia oti*  
       this COMP-the-building collapsed surprise me  
       ‘(The fact) That the building collapsed surprised me.’ HEBREW
- (84) [*\*(in)* *ke to u-ra da'vat na-kard-i*] *madar-at-ro narahat kard*  
       this that you he-OBJ invitation you-didn't mother-2SG-OBJ upset did  
       ‘That you did not invite him made your mother upset.’ PERSIAN
- (85) [*\*(to)* *oti ehis filus*] *simeni pola*  
       the-NOM that you.have friends-ACC means much  
       ‘That you have friends means a lot.’ GREEK

Recall our assumption regarding the factivity of subjects, stemming from their topic-like status. If subjects are factive, then so are sentential subjects. Presupposing a clause can be done by making it definite, as we saw earlier. The question of why sentential subjects are nominal, posed by various authors, is now closer to finding an answer: it is by nominalizing the proposition and most importantly by making it **definite** that it can be made factive and worthy of its topic-hood. By treating the sentential subject as an Overt Definite Factive, we claim that the CP in a sentential subject is an adjunct. Extraction is not allowed from adjuncts, and hence not allowed from sentential subjects. The Sentential Subject

Constraint can now be reduced to the ban on extraction from adjuncts, just like with other Overt Definite Factives.

If the sentential subject CP is an adjunct, we might ask why it cannot be dropped. The answer would involve the EPP requiring an overt element in Spec,TP:

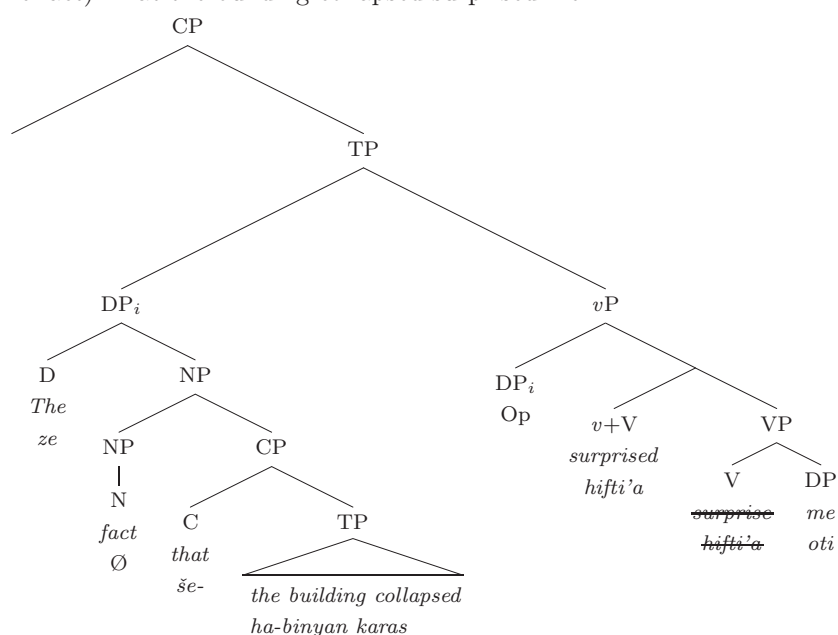
- (86) \* (~~DP<sup>0</sup> [That the building collapsed]~~) Surprised me.

The structure of a sentential subjects construction is as follows, with the operator in Spec,vP and the full DP in Spec,TP as in Lohndal (2013).

- (87) a. [(*The fact*) *that the building collapsed*] *surprised me*.

- b. [(*ze*) *še-ha-binyan karas*] *hifiti oti*  
 this COMP-the-building collapsed surprise me  
 ‘(The fact) That the building collapsed surprised me.’

HEBREW



Interestingly, English shows variation on this point, allowing sentential factives which look like Selected Embedded Factives (i.e. headed by *that*), unlike Hebrew and Greek. The DP is still a DP, though, which does not pose problems for this analysis.

## 5.2 Nonfactivity in Sentential Subjects

This leaves us with the counterexample in (81c) above, repeated here:

- (88) That John is rich is widely **believed** by his classmates. (He's managed to fool them all!)

There are two new factors at play now. One is the passive construction, which we will address presently. The other is the verb *believe*, which is incompatible with factives across the board:

- (89) ?? Bill believed the fact that John was rich.

- (90) # Bill believed the rumors.

NONFACTIVE

Without entering into metaphysics, it seems that *believing* is not compatible with factivity: if what one believes is a fact, then believing should become *knowing*.<sup>7</sup> This is one difference that sets (88) apart.

<sup>7</sup>On a possibly related note, see Moltmann (2013) on *the case that* ...

An informal Google search did not turn up any appropriate examples for the string  $\{\textit{believed the fact that}\}$  within the first 50 results. Intriguingly, the minimally distinct string  $\{\textit{believe the fact that}\}$  was relatively common in downward-entailing environments:

- (91)  $\gamma$  Why cant right handed people believe the fact that left handed people are smarter?<sup>8</sup>
- (92)  $\gamma$  GOP Lawmaker Refuses To Believe The Fact That Rep. Eric Cantor Is Shorting U.S. Treasury Bonds<sup>9</sup>
- (93)  $\gamma$  I Don't Believe The Fact That Teachers Have Extra Eyes Behind Their Heads<sup>10</sup>

Regarding the downward-entailment, Adger and Quer (2001) have already shown that unselected embedded questions are compatible with polarity-sensitive items. As discussed above, the matrix predicate in their system imposes a semantic restriction on its complement determiner  $\Delta$ , which selects for an appropriate  $C^0$ . The case of *believe* seems like the inverse, where an NPI appears above the matrix predicate. We will not cash this out in terms of an explicit analysis of what *believe* can or cannot combine with in the dialects of different speakers.

Most clause-level operations do not affect the factivity of the clause, which matches up with the interpretation data on page 23.

- (94) Simple active sentences:
  - a. The Mayor explained that the building collapsed. NON/SAY
  - b. The Mayor explained the fact that the building collapsed. FACT/WHY
- (95) Modals operate straightforwardly, in that the entire sentential subject is presupposed including the modal.<sup>11</sup>
  - a. I predicted that the building would collapse (but it didn't).
  - b. [That the building would collapse] was predicted by me (but I was wrong).
  - c. # [That the building would collapse] was predicted by me, but I had no opinion on the matter.
- (96) Nominalizations with an internal argument:
  - a. The mayor explained [the collapse of the building]. FACT/WHY
  - b. The Byzantine Emperor predicted [the fall of the Roman Empire]. FACTIVE

Once again, passivization shows variation in concordance with the interpretation. Recall that verbs like *explain*, whose complement can be DP or CP, show the DP reading when their complement is passivized and made into a subject. Verbs like *say* do not give a special reading, regardless of whether their complement is a DP or a CP. We predict that factivity follows in tow with interpretation, and this is indeed the case. Consider the following verbs:

- **Explain:** Factive with a DP, nonfactive with a CP.
- **Observe:** When selecting for a DP individual, gives the reading “track an individual” (factive).  
When selecting for a CP proposition, gives the reading “say as observation” (nonfactive).

<sup>8</sup>The gamma denotes an example retrieved via Google, <http://answers.yahoo.com/question/index?qid=20121106114105AAAYwuDm>

<sup>9</sup><http://thinkprogress.org/politics/2011/07/08/263264/olson-cantor-shorting-treasury/>

<sup>10</sup><http://www.facebook.com/pages/I-Dont-Believe-The-Fact-That-Teachers-Have-Extra-Eyes-Behind-Their-Heads/280518226833>

<sup>11</sup>Thanks to Dylan Bumford for discussion of this point.

- **Guess:** When selecting for a DP individual, gives the reading “guess the identity of” (factive). When selecting for a CP proposition, gives the reading “say as a guess” (nonfactive).
- **Say:** Nonfactive with either a DP or a CP.
- **Reiterate:** Nonfactive with either a DP or a CP.
- **Support:** Nonfactive, can only take a DP individual.

(97) Passivization, patterning with (74).

- |       |  |          |
|-------|--|----------|
| a.    | That the building collapsed was explained by the mayor.  | FACT, DP |
| b.    | That the building collapsed was observed by the mayor.   | FACT, DP |
| c.    | That John is the killer was guessed (at) by the fortune teller.                                      | FACT, DP |
| ----- |  |          |
| d.    | ? That the building collapsed was said by everyone.  | NON      |
| e.    | That the water is safe to drink was reiterated by the mayor.   | NON      |
| f.    | That this is the right way of analyzing the sentence is supported by the ban on movement to Spec,TP. | NON      |

Whether or not a sentential subject will be factive is thus fully predictable.

The **impersonal passive** affects factivity:

- (98) **It was explained** by the Mayor that the building collapsed. NON/SAY
- (97a) That the building collapsed was explained by the mayor. FACT/WHY

There is another remark to be made regarding the impersonal passive. It can accommodate verbs like *agree* or *hope*, which never take a DP as a direct object:

- (99) a. \* John **agreed/hoped** [<sub>DP</sub> the book / lunch].
- b. It was **agreed/hoped** [<sub>CP</sub> that they would go to lunch / that they would finish the book].

This may suggest that no movement is involved in the impersonal passive construction at all, no DP moving from object to subject..

Why the impersonal passive gives rise to nonfactives is unclear, as is its structure, but two points can be made. One, that this is a similar situation to the clefting example (34) on page 9:

- (100) We regretted that [it was precisely this book that had been destroyed].

Two, that this may constitute an additional argument against the silent FACT analysis of factives (Kiparsky and Kiparsky 1970; Kayne 2008). If a transformation extraposes the factive clause, such an extraposition should leave us with either version in (101), making the wrong prediction regarding factivity.

- (101) a. [*it* FACT \_\_\_\_ [*was explained by the mayor*]] [*that the building collapsed*]
- b. [*it* \_\_\_\_ [*was explained by the mayor*]] [FACT *that the building collapsed*]



Finally, **raising** predicates are nonfactive since they are the kind of verb that cannot take a DP complement at all.

(102) % That John went to Cambridge {turned out / appears / seems} to be false.

This subsection ended up examining counterexamples to the claim that sentential subjects are factive: the verb *believe* led us to passive verbs and (raising) unaccusative predicates.<sup>12</sup> The point was to understand what factors might influence the factivity of sentential subjects. Some promising avenues for further data collection include verbs of attitude such as *believe*, the impersonal passive and clefting constructions, and raising constructions.

### 5.3 The Syntactic Claim

To recap, these are the claims made about sentential subjects. In the simple case, sentential subjects in active-voice clauses are factive. We now have an analysis of this observation: sentential subjects are Overt Definite Factives, and so they are both factive and nominal.

We also have an account of passive constructions. First, take Selected Embedded Nonfactives like *say*, *reiterate* or *support*. We have argued earlier that their complements may be CPs. Yet a large literature has converged on the analysis that sentential subjects are in fact DPs (Hartman 2012). Our theory should thus make these clauses factive.

To address this issue we need to consider raising verbs like *seem*. It is clear that they cannot take a DP argument (Alrenga 2005:175; Lohndal 2013:3):

(103) \* [<sub>DP</sub> This / The Giants' loss] really seems.

(104) [<sub>DP</sub> This / the Giants' loss] really sucks.

Yet they can take sentential subjects, even though sentential subjects are DPs. It appears that any CP must be made into a DP in one way or another using a dummy D<sup>0</sup> before it can become a sentential subject. Hartman (2012) calls this a Last Resort principle, for instance. Takahashi (2010) uses a more elaborate system, checking EPP and focus features. Whatever the proper analysis may be, raising verbs require a dummy DP shell irrespective of our analysis here. The Selected Embedded Nonfactives receive a similar shell.

What our analysis does do is privilege the relationship between a verb and its argument. This means that the relationship between V and the object holds even when the object is promoted to subject, regardless of which theory of the passive we adopt:

- **Raising verbs:** Dummy D<sup>0</sup> inserted, nonfactive reading.
- **Selected Embedded Nonfactives:** Dummy D<sup>0</sup> inserted, nonfactive reading.
- **Selected Embedded Factives:** Keep their Δ, factive reading.
- **Verbs sensitive to the form of their complement (e.g. *explain*, *guess*):** Allow a DP complement with a special, factive reading, and so the sentential subject will be factive.

There remains one more piece to the puzzle: the distribution of sentential subjects.

<sup>12</sup>In the future I would like to examine the behavior of the raising predicates *tend* and *keep*. Their sentential subjects appear to be factive, contrary to other raising verbs. However, they are also different than canonical raising verbs, e.g. :

(i) John seems/appears/\*keeps/\*tends to be doing alright.

## 5.4 Sentential Subjects and MCP

A recent study of sentential subjects (Lohndal 2013) has argued that they are an MCP themselves, that is, that sentential subjects can only appear in main clauses much as fronting can only occur in main clauses. The system developed here makes no claim regarding their MCP-hood, but the issue is worth considering. On the face of it, there is no obvious reason for sentential subjects to be an MCP: as nominal clauses they ought to appear wherever a nominal can appear. We briefly explore the three domains noted by Lohndal.

**Embedded finite clauses** From the work of Koster (1978) and Alrenga (2005) it appears that sentential subjects do not make good subjects in embedded finite clauses (judgments as in Lohndal 2013):

- (105) a. ?\* Mary is unhappy because [[for her to travel to Tahiti] is no longer necessary].  
 b. Mary is unhappy because [her trip to Tahiti is no longer necessary].

However, my judgment on (a) agrees with that of four other native speakers I have consulted, namely that it is not all that bad. Another issue is the use of sentential subjects headed by *for*, as in the other examples given:

- (106) a. I {think/said/believe} that [[for us to smoke] really bothers her].  
 b. ?\* I regret that [[for us to smoke] bothers her so much].  
 c. ?\* Mary wishes that [[for us to smoke] bothered her more than it did].

These *for*-sentential subjects are not covered by the analysis presented in this paper, only *that*-sentential subjects. The two might be separate phenomena for all we know, since the *for* constructions are not factive but modal or imperfective in some sense:

- (107) a. # For the building to collapse never happened.  
 b. ? For the building to collapse may or may not happen.  
 c. # That the building collapsed may or may not have happened.

As I have no theory of *for*-sentential subjects to provide, but given that they are different from the canonical *that*-sentential subjects discussed in this paper, we will proceed to the next domain.

**ECM and infinitives** Generally, sentential subjects cannot be subjects of infinitival complements (Alrenga 2005:178), although they are fine as subjects in raising constructions (Delahunty 1983:388):

- (108) [That Fred failed his exams] seems to bother his family more than it bothers him.  
 (109) ?\* John believes that [(that) the cult members cloned a baby] to be true.

However, ECM structures have been argued by Alrenga to be incompatible with sentential subjects (Alrenga 2005:195):

- (110) a. John believes [this story] to be true.  
 b. \* John believes [that Bill is sick] to be true.

Once again, the verb *believe* rears its counterfactual head. Alrenga's paper does not examine other ECM verbs, but recent work has suggested that sentential subjects under ECM verbs might not be ruled out after all (Haegeman 2010:17):

- (111) a. I found [that no one left such a boring party early] remarkable.  
 b. I thought [that no one would leave such a boring party early] unlikely.

Not all speakers agree that the sentences in (111) are acceptable. For these speakers an extraposed version is preferred, though the constraint motivating the use of this construction is unclear:

- (112) a. I found it remarkable [that no one left such a boring party early].  
 b. I thought it unlikely [that no one would leave such a boring party early].

Pending further evidence to the contrary, then, this example of MCP-hood is put aside as well: sentential subjects are compatible with ECM constructions.

**A-bar movement across sentential subjects** Here, too, all of Lohndal's examples use the *for*-sentential subject. The claim is that extraction across the sentential subject is banned in embedded clauses (b) but not in main clauses (c). Example (d) is introduced here to show amelioration of this effect when the sentence is not verb-final:

- (113) a. John said that [for you to stop smoking] would please Sandy.  
 b. \*I wonder who [for you to stop smoking] would please \_\_\_\_.  
 c. Who does [that the world is ending] upset \_\_\_\_ so terribly that they have decided to abandon the planet?  
 d. ?I wonder who [for you to stop smoking] would please \_\_\_\_ tremendously.

However, I do not share the judgment on (b) and would look to elicit judgments for versions with a *that*-sentential subject as well:

- (114) ??I wonder who [that the Mayor resigned his post yesterday] surprised \_\_\_\_.  
 (115) ??I wonder who [that the Mayor resigned his post] caught \_\_\_\_ off guard.

This concludes our short treatment of the claim in Lohndal (2013), and with it our review of sentential subjects.

## 5.5 Summary

In this section we suggested that sentential subjects are Overt Definite Factives, thereby accounting for two observations made previously: that they are factive and that they are nominal. We also looked at the counterexamples to these generalizations: nonfactive sentential subjects, which stem from passivized verbs of a certain kind (their interpretation does not depend on their selectional requirements) and unaccusative (raising) verbs. We then examined the recent claim according to which sentential subjects are in themselves a Main Clause Phenomenon and concluded that there is no clear-cut evidence for that at the moment.

With the analyses of selection, extraction, fronting and sentential subjects completed, there are a few alternative accounts to consider.

## 6 Alternatives

### 6.1 Factivity

#### 6.1.1 Bulgarian PP DP CP

Krapova (2010) has proposed an account of factive clauses based on Bulgarian data which resembles our Selected Embedded Factives to a certain extent. Her account embeds the CP in a DP, but then embeds the latter in an additional PP layer. The Bulgarian data are different than the kind surveyed here, though: the embedding predicates in question are not factive but emotive, and the  $C^0$  involved is the relativizer rather than the factive complementizer. As to the analysis, we have no need for a silent embedding  $P^0$ , preferring the general case of a DP and leaving it to be selected by a  $P^0$  in Bulgarian if necessary.

#### 6.1.2 Referentiality Operator

As discussed earlier in the context of extraction and fronting, Haegeman and Ürögdi (2010a) use a referential operator which moves to a projection between TP and CP, intervening between the left periphery and any material in the embedded clause. This allows them to rule out both extraction and fronting in factive clauses. However, this operator is an additional theoretical device which our account does not require; it is never overt in any language, unlike determiners. Its exact position is also disputed (Aboh 2010; Lipták 2010).

Their discussion of referentiality—mentioned on page 10—is also imprecise, as pointed out by Bhatt (2010).

(116) The basics of the referentiality account (Haegeman and Ürögdi 2010a:137):

- a. Non-factive predicates take either a referential or a non-referential clause, while factive predicates can take only referential clauses.
- b. **Referential clauses** denote a proposition with no illocutionary force. A referential clause cannot be an utterance unto itself.
- c. **Non-referential clauses** involve a conversational move, i.e. an assertion or speech act. Factive verbs cannot embed speech acts because speech acts must contain novel information (de Cuba and Ürögdi 2009).

For this account, then, a referential clause is made up of a proposition, made referential by an operator, embedded in illocutionary force, (117a). The result is referential thanks to the referential operator and utterable thanks to  $\text{Force}^0$ ; in their system, the referential clause is not a DP. Our analysis embeds the factive proposition in a DP, resulting in a factive (or “referential”) element. The  $D^0$  endows the proposition with factivity (or referentiality, thinking back to RESPONSE STANCE and NON-STANCE verbs), turning it into a DP along the way, (117b).

- (117) a.  $[\text{Force}^0 [\text{Op}_{\text{referential}} [\text{proposition}]]] \leftrightarrow \text{it}_{\text{referential}}$   
 b.  $[\text{D}^0_{\text{referential}} [\text{proposition}]] \leftrightarrow \text{D}^0 \text{it}_{\text{referential}}$

As mentioned before, the claim that referential clauses have no illocutionary force whatsoever seems premature. Furthermore, the notion of referentiality as used in this theory is not well-defined, and it is not clear whether or not it is indeed empirically different from factivity (Kallulli 2010; Bhatt 2010; Haegeman and Ürögdi 2010b).

This theory has two additional shortcomings when compared to the one developed here: it is not built to account for the difference in interpretation between DPs and CPs, but more importantly, it predicts that sentential subjects should be CPs and not DPs (due to their factivity/referentiality). As we have seen, though, sentential subjects are DPs.

Although the prospect of unifying MCP and extraction effects under one analysis constitutes a creative approach to MCP effects, we must reject this analysis.

### 6.1.3 Defective phases

A different tack is pursued by Basse (2008) (adopting and adapting de Cuba 2007), who treats factive clauses as defective phase heads lacking an Edge Feature (the EPP feature needed to escape the phase). In his system, the factive left periphery **lacks** an [ASSERTION] feature, in effect creating the mirror image of the operator account. Fronting is then ruled out, since there is no left periphery to move to. Basse's system must still account for the general possibility of *wh*-extraction from factive clauses, which it does by suggesting that objects are probed by the matrix V: its [ACC] feature probes into the embedded clause, finding the object within it. The degradedness (in some languages) or ungrammaticality (in others) of long-distance extraction from factive clauses is then said to be a result of multiple agreement: first the lower V checks [ACC] on the object and then the matrix V does the same.

This system is not without its drawbacks. Firstly, it is unclear why the higher V must trigger movement of the lower object, rather than checking its feature *in situ*. Secondly, it is not just objects that can be extracted: as noted by the CED, it is complements that can be extracted (Huang 1982). Thus, extraction of the complement of V is as good as extraction of the complement of P, meaning that this movement cannot be reduced to accusative case checking.

(118) Repeated from (16):

- a. What do you remember [(that) John **stole** \_\_\_\_]? [V DP]
- b. Where do you remember [John came **from** \_\_\_\_]? [P DP]

There is an interesting datapoint in Basse's discussion, however. As we have seen, extraction from nonfactives is usually easier than extraction from factives. Basse presents data suggesting that the picture is reversed in infinitival clauses: there, extraction from infinitives is easier from factives than from nonfactives. It was argued by Obata (2006) that extraction from infinitival clauses ameliorates island effects. Obata and Basse associate this with movement from A, but not A-bar, positions (all data and judgments here are from Basse's paper).

- (119) a. ?? **Which book** did Tom ask Kate [when he should buy t<sub>which</sub> t<sub>when</sub>]?  
 b. **Which book** did Tom ask Kate [when to buy t<sub>which</sub> t<sub>when</sub>]?

Take the island violation in (120): the nonfinite version is supposedly better with factives than with nonfactives (judgments as reported in Basse 2008).

- (120) \* Which dog<sub>j</sub> did Tom ask Kate [how<sub>i</sub> **he should** [<sub>vP</sub> DOG<sub>j</sub> report/say HOW<sub>i</sub> [<sub>CP</sub> DOG<sub>j</sub> that they lost DOG<sub>j</sub>]]]?  
 FINITE, FACTIVE/NONFACTIVE
- (121) ? Which dog<sub>j</sub> did Tom ask Kate [how<sub>i</sub> **to** [<sub>vP</sub> DOG<sub>j</sub> **report** HOW<sub>i</sub> [<sub>CP</sub> DOG<sub>j</sub> that they lost DOG<sub>j</sub>]]]? NONFINITE, FACTIVE
- (122) ??\* Which dog<sub>j</sub> did Tom ask Kate [how<sub>i</sub> **to** [<sub>vP</sub> DOG<sub>j</sub> **say** HOW<sub>i</sub> [<sub>CP</sub> DOG<sub>j</sub> that they lost DOG<sub>j</sub>]]]? NONFINITE, NONFACTIVE

This is a welcome result for Basse's theory, since it involves juxtaposition of A-movement and A-bar movement on the one hand with finiteness on the other hand: extraction out of factives is A-movement to check [ACC], while extraction out of nonfactives is ordinary A-bar *wh*-movement (see Basse 2008:61 for details). This is another case for which data need to be gathered systematically (no further examples were given in Basse's paper). Still, it is possible to reanalyze these sentences as follows, with the factive CP enclosed in a DP and the adjunct starting off lower than the object. The object in the factive version (123a) now has to make fewer stops along the way. The number of stops makes a difference if we are trying to remedy Basse's account, since in his framework the number of stops creates a gradable effect on acceptability, depending also on whether the moved element stops in an A-position or an A-bar position. Note that in (a), *dog* does not move through Spec,CP of the embedded clauses since the factive clause in his system is defective and lacks an Edge Feature.

- (123) a. ? Which  $dog_j$  did Tom ask Kate [ $how_i$  to [ $_{vP}$  DOG $_j$  **report** [ $_{DP}$  [ $_{CP}$  that they lost DOG $_j$ ]] HOW $_i$  ]]?  
 b. ??\* Which  $dog_j$  did Tom ask Kate [ $how_i$  to [ $_{vP}$  DOG $_j$  **say** [ $_{CP}$  DOG $_j$  that they lost DOG $_j$ ]] HOW $_i$  ]]?

## 6.2 Embedding

### 6.2.1 Takahashi (2010): Clausal Complements Cannot be DPs

Moving on to analyses of clausal complementation, Takahashi (2010) makes a principled difference between clausal complements and sentential subjects. In his system, clausal complements are CPs but sentential subjects are DPs. The argument is two-pronged: first, he claims that sentential subjects must be DPs and cannot be CPs. Then, he claims that clausal complements must be CPs and cannot be DPs.

For sentential subjects, consider different classes of verbs. Some, like *capture*, select for a DP (the data build on the work of Alrenga, Koster and others):

- (124) a. John **captured** the turkey/vampire.  
 b. This formulation of the rule {**expresses/captures/reflects/brings out**} \*(the fact) that these nouns behave differently.  
 c. We can **attribute** {the observed behavior of these consonants/\*that these consonants behave exceptionally} to the fact that they are coronals.

Some, like *hope*, select a CP:

- (125) a. Most baseball fans {**hoped/felt/wished/insisted/reasoned**} that the Giants would win the World Series.  
 b. \* John **hoped** the story/turkey/vampire.

But sentential subjects can only appear for the *capture*-class, DP-selecting verbs. Hence, sentential subjects must be DPs. Takahashi relies on the Moved Clausal Complement Generalization, attributed to Alrenga (2005) following Webelhuth (1992): *A clausal complement is allowed to move only if its base-generated position is one in which a DP is allowed to appear.*

- (126) a. D<sup>0</sup> That these consonants behave exceptionally is **captured** by the fact that they are coronals.  
 b. \*? That the Giants would win the World Series was {**hoped/felt/wished/insisted/reasoned**} by most baseball fans.

A similar argument is made for clausal complements being CPs. If they were really DPs then their covert D<sup>0</sup> should be able to license them, contrary to fact.

- (127) a. \* This formulation of the rule captures (D<sup>0</sup>) that these nouns behave differently.  
 b. \* I insisted on (D<sup>0</sup>) that Sonia attended the interview.

Our proposal draws on C-Selection and S-Selection to explain these data. For instance, although *capture* C-Selects for a DP it does not S-Select for a factive proposition. It is just not a factive verb, ruling out (127a).

Technically, Takahashi suggests that a DP merged as complement of the verb must raise in order to satisfy an EPP feature on Topic<sup>0</sup> and some uninterpretable feature on D<sup>0</sup>. The reason he does not think sentential subjects are base-generated high in the tree is mainly due to reconstruction effects as in (128c):

- (128) a. [Which of his<sub>i</sub> students] did [every professor]<sub>i</sub> talk to?  
 b. \* [Which of his<sub>i</sub> students] talked to [every professor]<sub>i</sub>?  
 c. [D<sup>0</sup> That some student from his<sub>i</sub> class cheated on the exam], I think (that) [every professor]<sub>i</sub> gave serious consideration ~~to D<sup>0</sup> that some student from his<sub>i</sub> class cheated on the exam.~~

There are a number of reasons to shy away from Takahashi's system. Firstly, the division of sentential subjects and clausal complements to DPs and CPs, while appealing, cannot account for the interpretation data introduced in this paper. The prediction under this system would be that no clausal complement will be headed by an overt D<sup>0</sup>, though we have seen counterexamples to this claim. In fact, Basque is given as support for the sentential-subject-as-DP hypothesis due to its overt D<sup>0</sup>, but the existence of [D<sup>0</sup> CP] strings is subsequently ignored (Takahashi 2010:353). Even if this is too strict a reading of the proposal, a weaker version would still treat CP complements as DPs with a null D<sup>0</sup>; this fails to explain why CP complements show predictable interpretations while DP complements might license different meanings. Secondly, the use of an EPP feature on Topic<sup>0</sup> and a stipulated uninterpretable feature on a covert D<sup>0</sup> are technical necessities which our theory does not require. Finally, the theory makes a typological prediction according to which a language might exist such that it has an overt D<sup>0</sup> on sentential subjects but no D<sup>0</sup> on clausal complements; this does not seem to be the case (though more languages need to be examined).

Our data pose trouble for Takahashi's theory, but do his data pose trouble for ours? Recall the main argument from reconstruction, elaborated upon here from (128): a moved clausal complement can be interpreted in its base-generated, low position. The Topic analysis of sentential subjects (Koster 1978) predicts that a sentential subject will not show reconstruction effects since the CP does not start off low. The following examples are presented as evidence against the Topic analysis (Takahashi 2010:350):

- (129) a. [That some student from his<sub>i</sub> class cheated on the exam] seems to [every professor]<sub>i</sub> to be captured by this document.  
 b. [That some student from his<sub>i</sub> class cheated on the exam] seems to [every professor]<sub>i</sub> to be believed (in) by Mary.  
 c. [That a student from his<sub>i</sub> class cheated on the exam] doesn't seem to [any professor]<sub>i</sub> to be given serious consideration by the dean.

These facts do not immediately bear on the question at hand: the predicate in all of these examples is *seem*, a canonical raising verb which never takes a DP as its argument (see Alrenga 2005:197 and Lohndal 2013:4 for discussion of verbs like *seem* and *suck* in the context of sentential subjects). What the facts do show is that raising constructions do not start off as Topics. This is fine as far as the approach we



are developing is concerned: raising arguments starting off low is not problematic for any part of the analysis.

As far as non-raising verbs are concerned, there is no reason to think that they start off low. Example (a) is Takahashi's, (b)–(c) are mine:

- (130) a. \* That a student from his<sub>i</sub> class cheated on the exam doesn't show [any professor]<sub>i</sub> that he<sub>i</sub> should conduct exams differently.  
 b. \* That his<sub>i</sub> students cheated on the exam disgusts [every professor]<sub>i</sub>.  
 c. \* That his<sub>i</sub> students cheated on the exam indicates to [every professor]<sub>i</sub> that he<sub>i</sub> should conduct his<sub>i</sub> exams differently.

The data presented by Takahashi thus support his argument against Koster's analysis but are not problematic for our theory.

### 6.2.2 Moulton (2013, To appear): Clausal Complements Cannot be CPs

At the other end of the theoretical ring we find the recent work in Moulton (2009, 2012, 2013, To appear), in which much of the investigation is based on the notion that a CP cannot saturate a predicate's arguments (contrasting with our proposal). This is drawn from three kinds of data.

For one, the facts from Higgins (1972) and Stowell (1981) on the equative semantics of nominalizations and CPs:

- (131) a. The explanation (is) that John left  
 b. John's claim (was) that he would go.

Moulton takes this to imply that CPs are not arguments. As far as I can tell, this only means that CPs can act as appositives, not that they cannot be arguments: even DP arguments of nominalizations need the syntactic glue provided by *of* and do not attach "directly."

- (132) The enemy's destruction \*(of) the city.

Another point is that CPs can attach to elements that take no arguments: *story* does not require an argument at all costs as in (a), but it can take a CP (b). The CP is taken to be a modifier like the PP in (c).

- (133) a. \* I don't believe John's story of that.  
 b. I don't believe John's story that he left.  
 c. I don't believe John's story of his escape.

Yet this only means that CPs can act as modifiers, not that they cannot be arguments.

Most interestingly, nominalizations of clause-taking predicates produce objects, not events (going back to the Higgins-Stowell facts and Grimshaw 1990):

- (134) a. The observation that Fred left (\*in two minutes) surprised me.  
 b. \* I witnessed his observation that the patients were unhappy.  
 c. I decided that he was a fraud in 5 minutes.  
 d. \* My decision that he was a fraud in 5 minutes.

However, it is not necessarily the case that events are ruled out here. For (c–d), for example, one can talk about *my decision that he was a fraud after 5 minutes*, clearly implying a bound event.<sup>13</sup>

Moreover, if CPs cannot saturate arguments, why is (135) grammatical but (136) ungrammatical? They should both be ungrammatical since a DP must be there to saturate the argument.

(135) I predicted [that the the world would not end in December 2012].

(136) \*I predicted [ ].

The answer would have to be that the CP is lifted into a DP with a covert  $D^0$  in (135), and we would then presumably need a way to rule out a covert  $D^0$  in (136).

The predictions this theory would make regarding extraction and fronting are unclear.

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## 7 Conclusion

The novel data for this paper come in two flavors: differences in **interpretation** depending on the kind of complement, and differences in **factivity**. We summarize the main arguments brought forward and consider possible extensions.

### 7.1 Summary of the Arguments

**Factivity** Factive clauses are DPs: crosslinguistic data shows that they may be headed by an overt  $D^0$ , which is always definite. The definiteness serves to pick out an actual-world referent, i.e. a factive one. MCP effects and extraction effects can be viewed in terms of extraction from a Complex NP Island (for Selected Embedded Factives) or an adjunct island (for Overt Definite Factives). In both cases the embedded clause has a reduced left periphery. This reduced left periphery is a technical implementation of the reduced illocutionary force of presupposed utterances as opposed to assertions. It is made available through selectional relations between the matrix verb, the selected determiner and the embedded complementizer.

**Embedded clauses** Clausal complements can be CPs or DPs: different meanings arise depending on the kind of complement. In other words, there is a form-meaning isomorphism in which CPs are appositives to the intransitive form of the verb and DPs are objects with potentially unpredictable meaning. Sentential subjects are similar to embedded factives crosslinguistically. They, too, are DPs containing a factive relative clause.

**Selection** The lexical semantics of the matrix predicate interacts directly with the  $D^0$  and  $C^0/Force^0$  it embeds, accounting for patterns of factivity, interpretation and polarity. By considering whether a certain predicate selects for a CP or a DP we are able to predict syntactic and semantic effects. Selection for a CP corresponds to selection for a proposition, whereas selection for a DP corresponds to selection for an individual. The crosslinguistic data corroborate the claims made here.<sup>14</sup>

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<sup>13</sup>Judgments admittedly vary on this example. See (Moulton 2013:7) for further discussion of this point, which may be problematic for the account presented here.

<sup>14</sup>See van Urk and Richards (2013) for a recent investigation of the V-CP relationship in view of extraction facts.

## 7.2 Future Work

There were quite a few points along the way in which we left some minor issues to further research or additional data gathering; this is a high priority for the next iteration of this work. Additional avenues include:

**An illocutionary V-D-C spine** Adger and Quer (2001) have shown a syntactic-semantic thread running through “unselected embedded questions” between a matrix predicate, the  $D^0$  embedding the complement clause, and the embedded  $C^0$ . Our study reaches similar conclusions for factive predicates. It is not implausible to expect similar interactions in additional domains, besides polarity-sensitive items and factive items. Put otherwise, the question is what is the nature of the semantically-sensitive determiner  $\Delta$ .

This includes the  $C^0$ /Force $^0$  itself, which affects interpretation (as the literature on COMP-dropping attests). A full-blown investigation into embedded clauses will need to take the *that*-trace effect seriously (Sántha 1980; Ritter and Szabolcsi 1985).

**Chinese** The predicate *explain* in Chinese roughly translates as ‘explain’ in the DP “explain why” and as ‘explain say’ in the CP version, ‘say by way of explanation.’<sup>15</sup> Whether this is systematic and applies to predicates such as *observe* remains to be seen, as does whether there is interaction with factivity similar to that which we have seen in this paper.

**Veridicality** Giannakidou’s concept of “veridicality” is another angle on the factivity/referentiality debate, which has not been explored here (Giannakidou 1999). Perhaps it could shed light on cases like that of [*believe the fact that ...*].

**Wh-expletives** Overt Definite Factives are similar in some ways to the *wh*-expletive construction as discussed by Horvath (1997); Lahiri (2002) and others. A direct comparison, including factivity and interpretation, remains to be made.

**Clausal features** In some languages the kind of clause (main or embedded, perfective or imperfective) correlates with a different form of the verb. For example, in Japanese there are two kinds of complementizers, nominalizer-like complementizers that pattern with determiners (they take case markers, can be coordinated with DPs, act as objects of postpositions and so on) and those that pattern with “ordinary” complementizers (Hiraiwa 2010). The former are factive and appear with matrix verbs in the END FORM, which is the form of the verb in main clauses. The latter are nonfactive and appear with matrix verbs in the ADNOMINAL FORM, which is used in relative clauses and nominalizations.

In the case of Hungarian, differences in factivity and interpretation are even collapsed together, such that one entails the other: perfective prefixes on the matrix verb entail a factive reading for the embedded clause.

Granted, the Japanese and Hungarian phenomena may be unrelated. Still, once these data are properly reviewed, we might uncover new ways in which Force $^0$  interacts with Fin $^0$ . That is a technical question, though. The broader theoretical point would be what it is about subordinate clauses that makes them “more factive” or “more nominal” in some languages. We have shown here that the two notions are strongly related.

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<sup>15</sup>Vera Zu, p.c. (Oct 2012)

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