On interpreting clausal complements*

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1. Introduction:

- Following Gricean principles, a speaker will not purposely utter a statement he/she believes to be false (Maxim of Quality).
- However, a speaker can truthfully utter a sentence he/she believes to be false, when this sentence is embedded under certain predicates.
- This paper is an investigation into the syntax and semantics of these constructions.

2. Plugs and holes

Karttunen (1973): distinction between *filters, holes,* and *plugs*.

- *Filters*: logical connectives: project the presuppositions of connected propositions depending on the entailment relations between them. None of Karttunen's examples of filters involve sentential complements of verbs, so they are not relevant for the present work[1]. **We will only be dealing with *holes* and *plugs*.**

- *Holes*: verbs letting the presupposition of the lower predicate through to project/be valid also in the entire clause: *factives* (know, regret, understand, is surprised) Kiparsky & Kiparsky (1971): *aspectuals* (begin, stop, continue) Newmeyer (1969)

(1) Yunju regrets that it was snowing yesterday.   (utterer, Yunju)
    (presupposed: It was snowing yesterday)
(2) Ruiqin doesn't regret that it was snowing yesterday.   (utterer, Ruiqin)
    (presupposed: It was snowing yesterday)

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[1] An example of a filter is in (i) and (ii). For detailed discussion, see Karttunen (1973).
(i) If baldness is hereditary, then all of Jack's children are bald. (Presupposes: Jack has children)
(ii) If Jack has children, then all of Jack's children are bald. (Doesn't presuppose: Jack has children)

Sentences with *factives* like (3) and (4) cannot be felicitous if vampires do not exist.

(3) #Tomoko regrets that vampires walk the Earth.   (#utterer, Tomoko)
    (infelicitous presupposition)
(4) #Yukiko doesn't regret that vampires walk the Earth.   (#utterer, Yukiko)
    (infelicitous presupposition)

- *Plugs*: verbs blocking the projection of the presupposition from the lower predicate. *Verbs of saying* (say, tell) & *verbs of attitude report* (believe, think)

(5) Jon believes that it was snowing yesterday.   (Jon)
    (NOT presupposed: It was snowing yesterday)
(6) Xu doesn't believe that it was snowing yesterday.   (noone)
    (NOT presupposed: It was snowing yesterday)

Sentences with *non-factives* like (7) and (8) can be felicitous despite the fact that (presumably) vampires do not walk the Earth.

(7) Mark thinks that vampires walk the Earth.   (Mark)
    (NOT presupposed: Vampires walk the Earth)
(8) Jang-il doesn't think that vampires walk the Earth.   (noone)
    (NOT presupposed: Vampires walk the Earth)

- *Global vs. Local plugs:*
      Global plugs: verbs of saying (say, tell)

(9) Maurice said that Marianne regrets that the Earth is flat.   (noone)
    (Presuppositions of both embedded sentences blocked by matrix predicate)

        Local plugs: attitude report verbs (think, believe)

(10) Bill believes that Fred has stopped beating Zelda.   (utterer, Bill)
    (Only presupposition of immediately following embedded sentence blocked by matrix predicate; presupposed: Fred was beating Zelda) Ex. from Karttunen (1973)

> **Karttunen** (1973, p.189): "It is interesting to observe that judgements seem to differ in such cases. It has proved difficult to get speakers to agree on what the right answer should be …"

(11) #Sandra thinks that Susana regrets that the Earth is flat.   (utterer & Sandra)
(Note that Susana does not have to believe that the Earth is flat, since Sandra can be wrong about what constitutes Susana's belief system.)

Summary:

- **#Hole + Hole + False**   Infelicitous
(12) #John *regrets* [that Peter *forgot* [that **the Earth is flat**]]]

- **Plug + Plug + False**
(13) John *believes* [that Peter *thinks* [that **the Earth is flat**]]]

- **Global Plug + Hole + False**
(14) John *said* [that Peter *regrets* [that **the Earth is flat**]]]

- **#Local Plug + Hole + False**   Infelicitous
(15) #John *believes* [that Peter *forgot* [that **the Earth is flat**]]]

- **Hole + Plug + False**
(16) John *regrets* [that Peter *thinks* [that **the Earth is flat**]]]

3. Proposal

3.1 The non-factive operator (plug operator – POp)

- Semantic differences between factive and non-factive predicates:
  - Evaluation of   - matrix clauses: actual world
                     - factive contexts: actual world
                     - non-factive contexts: not necessarily actual world

  - Factive verbs and main clauses evaluated wrt the speaker's actual world. Speaker-oriented evaluation should thus be default.
  - Interpretation of non-factive contexts is special.

- In the spirit of Nichols 2001 we propose an operator associated with non-factive verbs. Briefly:

  - CP's have associated context variable sets C <speaker, (hearer), time, world> needed for interpretation (Schlenker 1999).
  - value <+ current speaker> – the actual world is necessarily included in the evaluation set – main clauses.

  - **Factives** like *regret* do not supply a <speaker> value to the context variable set – the default value is specified <+ current speaker>.
  - **Non-factives** – the plug operator, which may supply a different value for <speaker>.

- Local plugs: the operator sets the <speaker> value only in the local CP.
- Global plugs: the operator sets the <speaker> value for all embedded CPs.

- Nichols assigns no position in the syntax to the assertive operator.
  - The syntactic differences derive from semantic properties (semantic domains of movement).

- We claim this operator has syntactic reality.

3.2 Evidence for the syntactic reality of the operator

3.2.1 Syntactic evidence
- The operator has syntactic reality, as claimed by de Cuba & Ürögdi (2001) and de Cuba (2002).
- Clausal complements to non-factive predicates take an additional CP node (CP*), while clausal complements to factive predicates do not.

- **Swedish**

(17) **Factive –** no embedded V2
    a. Rickard ångrade att han inte var hemma
         R. regretted that he not was home
    b. *Rickard ångrade att han var inte hemma
         R regretted that he was not home
         'Rickard regretted that he was not home.'

(18) **Non-factive** – embedded V2
    a. Rickard sa att han <u>inte var</u> hemma
        R. said that he <u>not was</u> home
    b. Rickard sa att han <u>var inte</u> hemma
        R. said that he <u>was not</u> home
      'Rickard said that he was not home.'

(19) **Factive** – no adjunct extraction (factive islands)
    *Hur$_t$ ångrar du att du uppträdde t ?
    how$_t$ regret you that you behaved t
    '*How do you regret that you behaved?'

(20) **Non-factive** – adjunct extraction
    Hur$_t$ tycker du att du uppträdde t ?
    How$_t$ think you that you behaved t
    'How do you think that you behaved?

- Solution: There is an extra structural position in the CP field, **CP***.

(21) [$_{CP*}$ [$_{C*}$ att [$_{CP}$ XP [$_{C}$ V] [$_{TP}$ …t$_{XP}$…t$_V$ …]]   (18b) = EV2

(22) Structure under factive verb
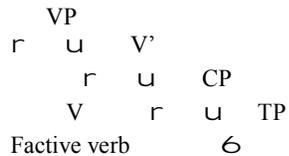
(23) Structure under non-factive verb
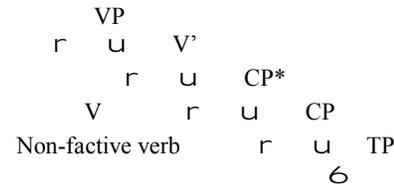
Only non-factive verbs:
- Allow EV2
- Allow extraction of adjuncts from complement clauses

Non-factive verb EV2 construction in Swedish

(24) Rickard sa att han var inte hemma
    R. said that he was not home
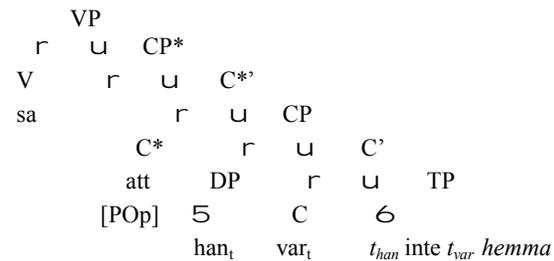
- Standard V2 movement takes place in CP phase: V to C, XP to specCP
- *att* in C* with [POp]

- **Non-factive verb complements weak islands for extraction (factive islands), while bridge verb complements are not**

Adjunct extraction not permitted in (25), permitted in (26)

(25) Factive construction

```
        VP
    ┌    ┐  V'
          ┌    ┐  CP
      V       ┌    ┐  TP
  Factive verb           5
                    ⟵ X
```
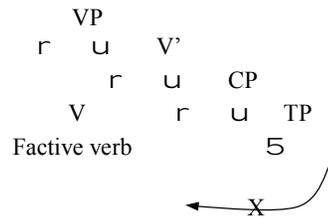
(26) Non-factive construction (without EV2)

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          VP
      ┌    ┐  V'
           ┌    ┐  CP*
       V        ┌    ┐  C*'
  Non-factive verb  CP_t    ┌    ┐
                     4    C*      t_CP
                  TP
```
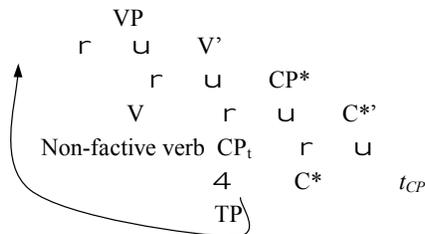
- Major difference between (25) and (26): CP moved to specCP* in (26)

- In phase-based derivation, this move could be significant for timing of phonological spell-out of lower clauses/adjuncts.

- Complement of C not spelled out until next highest phase completed – Contents of the CP in (26) get a free ride to specCP*, adjunct moves further up from there, as shown with arrow.

- Later spell-out allows for escape for adjuncts.

3.2.2 Morphological evidence

- **Hungarian**

(27) Pronominal *azt* = additional morphology in non-factive context, not possible in factive context.

    a. Azt   hiszem   hogy   Mari okos.
       that-ACC   I-think   Comp   Mary smart-is
       'I think that Mary is smart.'
    b. (*Azt)   sajnálom hogy   Mari okos.
       that-ACC   I-regret   Comp   Mary smart-is
       'I'm sorry that Mary is smart.'

(28) *Azt* not present in non-factive context = more factive reading.

    a. Azt   hiszem   hogy   Mari okos.
       That-ACC   I-think   Comp   Mary smart-is
       'I think that Mary is smart.'
    b. Hiszem   hogy   Mari okos.
       I-think   Comp   Mary smart-is
       'I have no doubt that Mary is smart.'

3.2.3 Summary

Our account:
- **Why is MSc. EV2 limited?**
  EV2 is permitted under non-factive verbs because they can select for CP*, which provides an extra syntactic position, allowing V2 movement. Since only non-factive verbs select for the extra structure, EV2 is impossible under factive verbs.

- **What limits extraction from factive islands?**
  Extraction of adjuncts is facilitated from under non-factive verbs because of the extra movement of CP to specCP*, allowing for a later spell-out of adjuncts.

- **Extra structure = non-factive interpretation (azt)**
  The removal of this structure gives a factive interpretation. Some verbs can select for either CP* or CP, with resulting differences in interpretation (due to the presence or absence of [POp]).

Nichols (2001) account:

Nichols' semantic domains for movement handle the extraction facts, but it is not clear how they would account for the Mainland Scandinavian limited EV2 facts or the effects of Hungarian *azt*.

4. Interaction with negation

- Negation on the factive predicate doesn't override the factive property of the predicate.
- If negation is sentential (30) the embedded clausal complement doesn't have to be true.

(29) #Tanya *doesn't regret* [that vampires walk the Earth.   (utterer)
     [~F]

(30) *It is not the case that* [CP*[Anne *regrets* that vampires walk the Earth. (no one)
     ~ [F]

- If factive verbs are embedded, the requirement on truth of their clausal complements is not ruled out, as shown with infelicity of (31).
- When the matrix predicate is negated, the sentence becomes acceptable, regardless of the falsity of the lowest most clause, as in (32).

(31) #John *thinks* [CP*[that Peter *regrets* [that the Earth is flat.   (#utterer, John[2])
     NF [F]

(32) John doesn't *think* [CP*[that Peter *regrets* [that the Earth is flat.   (no one)
     ~NF [F]

- The plug operator in CP* is sensitive to the negation of the non-factive predicate, removing speaker responsibility for the truth of what follows.
- Since factives do not have the CP* operator, negation of the factive predicate does not influence the requirement of truth of what follows, as in (34).

(33) #John *regrets* [that Peter *resents* [that vampires walk the Earth. (#utterer, J, P)
     F [F]

(34) #John doesn't *regret* [that Peter *hates* [that vampires walk the Earth. (#utterer, J)
     ~F [F]

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[2] Note that judgements vary on this example. Some people treat all plugs as global.

- (30) and (32) can be analyzed in the same way.
  - o The embedded clause in both are dominated by CP* with the POp.
  - o Under negation the operator simply ignores the presupposition of all the lower clause – turning the local plug into a global plug.
- (34) in contrast, does not involve the operator, therefore negation has no effect on the presuppositions.
- Karttunen notes the difference between the internal negation that acts as a hole and the external that acts as a plug. (1973, 186 fn.18)

- The structure for (32) is in (35):

(35)
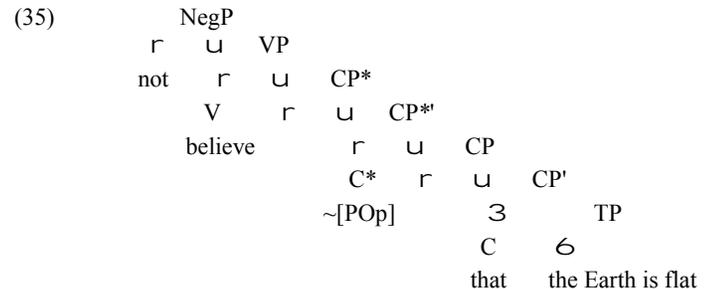
5. A different world

(36) #Carlos believes that Santa Claus regrets that the Earth is flat.
     (#utterer, Carlos)

(37) John Paul II believes that God regrets that Adam ate the apple.
     (John Paul II, fine for an atheist utterer)

(38) #John Paul II believes that God regrets that he created Adam out of Eve.
     (#atheist utterer who knows the Bible)

- For an atheist the embedded factive is evaluated wrt a different world – w_2.
  - o Part of the atheist's knowledge about w_2 = Adam ate the apple.
  - o For John Paul II w_2 = the actual world;

- *believe* can be evaluated in terms of other worlds.
    o *believe* behaves similar to *dream* or *imagine* – world creating predicates:

(39) I dreamed that John regretted that the Earth is flat.

- Plug operator changes the value of <speaker>. But here we are changing only the <world> value.

- We can reconsider variation in judgements.

6. Summary

- Non-factives are special, not factives (Nichols 2001, contra Kiparsky & Kiparsky 1970).
- There is an operator associated with non-factive interpretations (Nichols 2001).
- This operator has syntactic reality, contra Nichols 2001.
- The Plug operator (POp) can act as a local or a global plug.
- The operator is sensitive to negation.
- A negated local plug becomes a global plug.
- Believe can be understood also as a world creating predicate.

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