# Clausal Prolepsis, Islands, and the D/C connection

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# Is C like D?

Different views on the category and function of complementizer phrases (CPs).

**CPs are nominal and argumental**

- C has nominal or D features that 'turn' the clause into an argument (Roberts 2003; Manzini and Savoia 2003, 2011; Roussou 2010).
- Related: proposals for null D structure above CPs (Kastner 2015).

**CPs are neither nominal nor argumental**

- CPs do not distribute like nominals (Stowell 1981).
- CPs are predicates, not typical arguments (Kratzer 2006; Moulton 2009, 2015; Elliott 2020; Bondarenko 2022).

# Is C like D?

**Recent work: comparing CPs with *overt* nominal/determiner structure with 'bare' CPs.**

- Nominalized CPs in Japanese and Korean (Bogal-Allbritten, Moulton, and Shimoyama 2024)
- Determiner+CP constructions in Spanish (Moulton 2020)
- **Today:** Clausal prolepsis

In each case, we find 'bare' CPs *don't* behave like they have nominal properties when compared against *bona fide* nominalized CPs (see also Bondarenko (2022)).

- Bare CPs integrate into the clause differently than DP arguments.

# Clausal prolepsis

In clausal prolepsis constructions, CPs are 'doubled' by a pronoun in argument position.

(1)  a.  I regretted **it** that I left early.
     b.  **It** stinks that it's raining.

### The DP constituent analysis

- Underlying DP constituent

- Movement separates the D from CP

- Variation: presence of NP layer

```
              DP
           /      \
          D       (NP)
          it       /  \
                (N)    CP
```
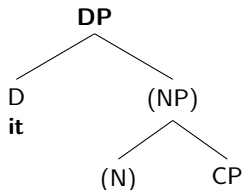
Rosenbaum 1967; Kiparsky and Kiparsky 1970; Sudhoff 2003; Hinterwimmer 2010; Angelopoulos to appear.

# Incorrect prediction for English

- The DP constituent analysis has been defended for Dutch and German (Angelopoulos to appear) and Icelandic (Thráinsson 1979; Wood 2012).

- **Rejected for English** because it incorrectly likens clausal prolepsis to complex NPs.

- This makes several incorrect predictions, including islandhood.

## Incorrect prediction for English

Extraction appears to be possible from English proleptic constructions, which is unexpected for complex NPs.

(2)  a.  ?It was my pet hamster which I didn't like it at all that he cooked and ate.
  b.  It was the actress that he saw to it that the bishop was introduced to.

Postal and Pullum 1988: 661(70–71))

## English is different

- By contrast, extraction is *not* possible from Dutch, German proleptic constructions (also Icelandic).

(3)  Wat  betreurde/ bevestigde/ zei  jij  (\***het**) [*CP* dat hij
     what regretted   confirmed    said you  it         that he
     gezegd had]?      *Dutch*
     said    had
     'What did you regret/confirm/say it that he has said?'

<div align="right">(Angelopoulos to appear, fn. 21)</div>

# Not so fast about English...

- Different judgments in the literature (e.g. Kiparsky and Kiparsky 1970 give a *)
- Examples of extraction are not properly controlled for: need comparative baselines of complex NPs and bare CPs.
    - It is sometimes reported that complex NP violations with argument *wh*-phrases are merely marginal.

(4)  a. ??What did you hear rumors that John bought?
     b. *How did you hear rumors that John bought a house?
        (Bošković 2015: 604(2/3))

- Clausal prolepsis is known to be a selective island blocking adjunct extraction (Stroik 1996; Zaring 1994).

(5)  *How did Vij see to it that the players ran ___ on race day? (#fast)

# Our judgment studies

We will show that a 2-way distinction is needed to distinguish clausal prolepsis from both bare CPs and complex NPs.

- We observe increasing *wh*-extraction costs from Bare CPs, clausal prolepsis, and Complex NPs.

| | | |
|---|---|---|
| Bare CP | What did Sam **regret that** they saw? | Small cost |
| Prolepsis | What did Sam **regret it that** they saw? | Medium cost |
| Complex NP | What did Sam **regret the fact that** they saw? | Large cost |

# The NP layer matters

- Most theories of the complex NP constraint pin it on the presence of the NP layer (Sichel 2018; Bošković 2015).
- Proposal: at least some proleptic constructions lack NP layer and are headed just by a D-shell (Rosenbaum 1967; Hinterwimmer 2010 and others).

### A simple D-shell

```
        DP
       /  \
      D    CP
      it
```
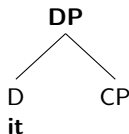
- Clausal prolepsis creates merely a (definite) DP island, not a complex NP island.

# Outline

§1 Background: quasi-argument *it* vs. proleptic argument *it*

§2 Acceptability Judgment studies

§3 DP island effects with *that*-prolepsis

§4 Generalized pronominal doubling in FACT contexts
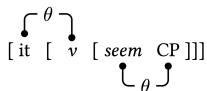
# 1. Quasi-argument *it* vs. proleptic argument *it*

**Takeaway:** *it* is a contentful, non-expletive D in clausal prolepsis

## Proleptic *it* and quasi-expletive *it*

Ruys (2010) and Longenbaugh (2019): no *it*s are expletive, but they come in two types:

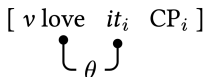**Quasi-argument *it***: *it* and CP are distinct arguments

**It** seems/turned out/appeared [$_{CP}$ that the train was on time].

$$\overset{\overset{\theta}{\frown}}{[\ \text{it}\ [\ v\ [\ \textit{seem}\ \text{CP}\ ]]]}$$
$$\underset{\underset{\theta}{\smile}}{}$$

**Proleptic *it***: *it* bears the unique theta-role, to which the CP is 'linked'

I love **it**$_i$ [$_{CP}$ that there are handouts]$_i$.
**It**$_i$ stinks [$_{CP}$ that he left early]$_i$.

$$[\ v\ \text{love}\ \ it_i\ \ \text{CP}_i\ ]$$
$$\underset{\underset{\theta}{\smile}}{}$$

# Proleptic *it* and quasi-expletive *it*

Ruys-Longenbaugh arguments: **Optionality**

(6)   *Quasi-argument it*
  a.   It seems *(that the train was on time).
  b.   *That the train is on time seems.

(7)   *Proleptic it*
  a.   I love it.
  b.   I love that the train was on time.

## Proleptic *it* and quasi-expletive *it*

Ruys-Longenbaugh arguments: **As-parentheticals**

*As*-parentheticals involve a gap which can be interpreted as the propositional argument of a predicate.

(8)     The cheese is great, as we all agree ___ .

In quasi-argument *it* constructions, the CP argument is gapped and *it* can and must remain.

(9)     *Quasi-argument* it-*constructions*
    a.   Sue is innocent, as *(it) originally appeared ___ .
    b.   M. is a capable doctor, as *(it) has seemed ___ from the start.
         (Longenbaugh 2019, (22))

# Proleptic *it* and quasi-expletive *it*

In prolepsis constructions, an *as*-parenthetical gap **cannot** co-occur with *it*, because *it* stands in for the propositional argument.

(10)    *Proleptic* it-*constructions*
    a.    The arguments were flawed, as Bill explained (*it) to me.
    b.    Three is a prime number, as Mary definitively proved (*it) to me.
    c.    Bill came on time, as (*it) was important.

(Longenbaugh 2019, (23))

## Proleptic *it* and quasi-expletive *it*

Conclusion: in proleptic *it* constructions, *it* is the theta-marked argument while the CP is merely 'linked' to it.

Two viable analyses that capture the argumental status of proleptic *it*:

- The DP/D-shell analyses
- Longenbuagh's (2019) two-constituent analysis

# The two-constituent analysis (Longenbaugh 2019)

- Likens proleptic constructions to those where one phrase *restricts* and another *saturates*, in the manner of Chung and Ladusaw (2003):
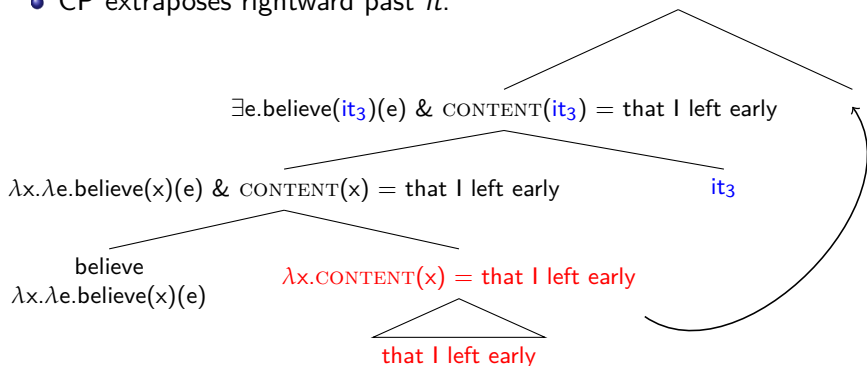
  (11)     They mountain-climbed Kilimanjaro.

- The CP restricts the embedding verb while the *it* saturates as the 'true' argument.

(12)     I love it that you came.

# The two-constituent analysis

- This relies on the predicate analysis of CPs
  - CPs denote predicates of individuals with propositional content (type $\langle e \langle s,t \rangle \rangle$), not propositions $\langle s,t \rangle$ (Kratzer 2006; Moulton 2009, 2015).
- CP merges first restricts internal argument.
- pronoun saturates open argument.
- CP extraposes rightward past *it*.

$\exists e.believe(it_3)(e)$ & $\text{CONTENT}(it_3)$ = that I left early

$\lambda x.\lambda e.believe(x)(e)$ & $\text{CONTENT}(x)$ = that I left early

$it_3$

believe
$\lambda x.\lambda e.believe(x)(e)$

$\lambda x.\text{CONTENT}(x)$ = that I left early

that I left early

# Predictions of Two-constituent analysis for extraction

The two-constituent analysis predicts extraction is possible from the CP to the same extent as a bare CP, since in both cases the CP is a complement.

- Any degradation would have to come from the effect of extraposition.
- (If you're thinking about backgrounding effects on question formation, ask me.)

## 2. Judgment studies

**Takeaway:** Clausal prolepsis constructions are more porous for extraction than Complex NPs, but less so than bare CPs.

## Experiment 1

We compared argument extraction across a triple: bare CP complement, *it*-prolepsis, and complex NPs.

- 2 × 3 study: Structure (**Bare** CP vs. **It**-prolepsis vs. the **fact**/Complex NP) × Sentence type (**wh**-question vs. **decl**arative)

| | |
|---|---|
| Jeff regretted that he failed his driving test for the second time. | Decl/Bare |
| What did Jeff regret that he failed for the second time? | Wh/Bare |
| Jeff regretted it that he failed his driving test for the second time. | Decl/It |
| What did Jeff regret it that he failed for the second time? | Wh/It |
| Jeff regretted the fact that he failed his driving test for the second time. | Decl/Fact |
| What did Jeff regret the fact that he failed for the second time? | Wh/Fact |

## Experiment 1

**Value of factorial design** (Sprouse 2007)

- The mere presence of *it* (and island structures generally) could reduce acceptability.
- Extraction itself can reduce acceptability.
- The design factors these out by comparing differences-in-differences.
- Island effect: super-additive interaction between Structure and Sentence type.

# Experiment 1

**Significance of choosing factive verbs**

- We chose factive verbs because the paradigm works well: these verbs accept prolepsis, *fact*, and bare CP complements.
- Factive islands: might depress extraction scores across the board.
  - ▶ If extraction from prolepsis is *worse* than extraction from bare CP complement of factives, this cannot be attributed to a weak island alone.
  - ▶ Factives are known weak islands, showing depressed scores even for argument extraction (Liu, Ryskin, Futrell, and Gibson 2022).
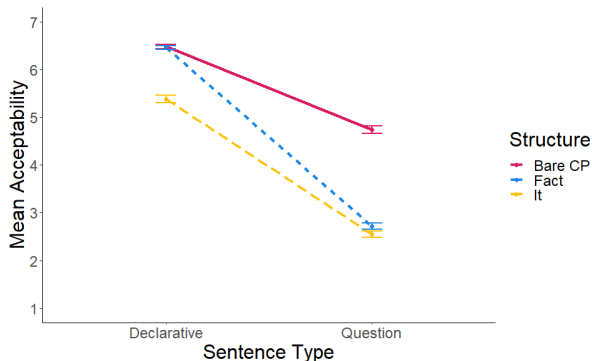
# Experiment 1 Results



Acceptability (n=95)

- Sig. effect of **Sentence type** ($\beta < 5.649$, p<.001). Extraction alone depresses acceptability.

- **It** as reference level: sig. effect of **Bare** ($\beta < 2.454$, p<.001) and **Fact** ($\beta < 1.133$, p<.001). Prolepsis depresses acceptability.

# Experiment 1 Results



Acceptability (n=95)

- **Significant interactions between Structure and Sentence Type:**
  - ▶ between **Bare** CP and **It**-prolepsis ($\beta < -0.601$, p$<$0.01). Smaller extraction penalty for **Bare** CP.
  - ▶ between **Fact** and **It**-prolepsis ($\beta < 2.770$,p$<$0.001). Larger extraction penalty for **Fact**.
- Participants use full range of acceptability; 7 fillers rated between 1 and 2.

# Experiment 1 Discussion

A two-way distinction is needed:

- Extraction from complex NP/*fact* is highly degraded.
- Extraction from *it*-prolepsis is more acceptable than complex NP, but still worse than bare CP.
    - $\rightarrow$ Must be 'shades' of weak island effects.

The two-constituent analysis (Longenbaugh 2019) does not straightforwardly predict a difference between bare CPs and proleptic constructions.

# Experiment 1 Discussion

Possible objections:

- The two-constituent analysis requires extraposition of CP.
  - ▸ Perhaps extraposition affects extraction.
- The pronoun *it* might cause processing disruption that affects judgments, as an illicit resumptive/filled gap (Stowe 1986).

  (13)    What did John regret it...

Next up: Experiment 2 to address these objections.

# Experiment 2

We compared argument extraction across a triple: bare CP complement, *it*-prolepsis, and extraposition structures.

- $2 \times 3$ study: Structure (**Bare** CP vs. **It**-prolepsis vs. **Extra**position) $\times$ Dependency length (**Short** vs. **Long**)

| | |
|---|---|
| Who would love for Benjamin to meet Sarah at the airport? | Short/Bare |
| Who would Sarah love for Benjamin to meet at the airport? | Long/Bare |
| Who would love it for Benjamin to meet Sarah at the airport? | Short/It |
| Who would Sarah love it for Benjamin to meet at the airport? | Long/It |
| Who would love most of all for Benjamin to meet Sarah at the airport? | Short/Extra |
| Who would Sarah love most of all for Benjamin to meet at the airport? | Long/Extra |

**Changes in Design**

- Extraposition condition isolates contribution of CP extraposition.
- Dependency length manipulation ensures all conditions are questions while retaining factorial design.
- *Who* instead of *what* reduces chances of a resumptive strategy for *it*.
- *For*-infinitives.

# Experiment 2 Results
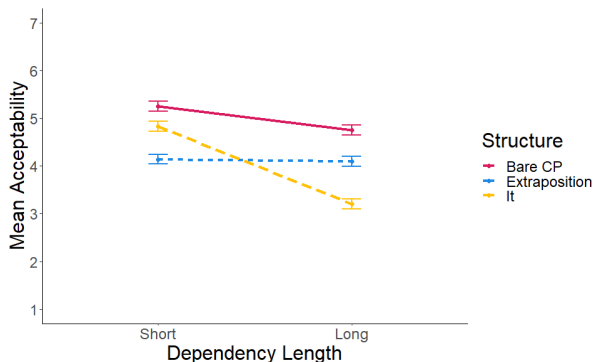


Acceptability of extraction (n=70)

- Significant effect of Dependency length ($\beta < 2.199$, p<.001)). **Long** extraction alone depresses acceptability.
- Dummy coded structure with **It** as reference level, significant effect of **Bare** ($\beta < 1.295$, p<.001) and no effect of **Extra** ($\beta < 0.099$, p<.36). Prolepsis depresses acceptability compared to **Bare** but not **Extra**.

# Experiment 2 Results
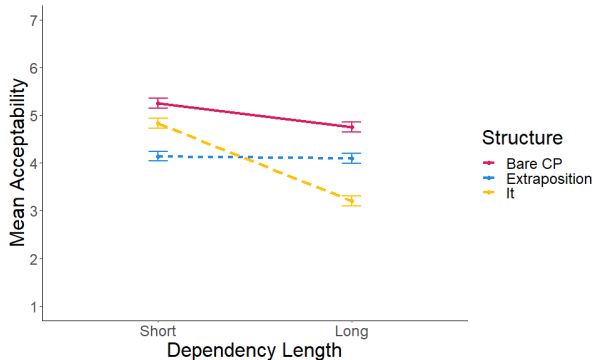


Acceptability of extraction (n=70)

- **Significant interactions between Structure and Dependency Length:**
  - between **Bare** CP and **It**-prolepsis ($\beta <$-1.419, p<0.001)
  - between **Bare** CP and **Fact**: ($\beta <$-2.074, p<0.001).
- Larger **Long** extraction penalty for **It** than **Bare** and **Extra**.

# Experiment 2 Discussion

- Replicates the larger extraction penalty for **It** than **Bare** CP observed in Experiment 1.
- Reveals that **Extra**position does not result in extraction penalty by itself.

# Explaining the 2 way contrast

- **It vs. Fact:** What makes extraction from Complex NPs worse than prolepsis?
- **It vs. Bare:** What makes extraction from prolepsis worse than bare CPs?

# It vs. Fact

**Fact Complex NP island** violation on a Bošković (2015)-style analysis:

- NP is a phase for all but its $\theta$-marked arguments.
- Extraction requires movement to an edge adjunct position of NP.
- But movement out of NP does not cross entire category, resulting in anti-locality violation.

$$[_{DP} \text{ wh } D [_{NP} \text{ t } [_{NP} [_{CP} \text{ t} \dots ]]]]$$
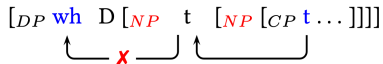
**It Prolepsis:** No NP layer, no problem! (Sichel 2018)

- Spec,CP-to-Spec,DP ok on this approach; crosses entire CP category.

$$[_{DP} \text{ wh } D [_{CP} \text{ t} \dots ]]$$
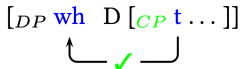
## It vs. Bare

**What accounts for the contrast between Prolepsis vs. Bare CPs?**

Suggestion: The island effect in *it*-prolepsis is a definiteness effect.

- *It* is definite and (marginally) blocks extraction.
- See similar cline in DPs (Chomsky 1973, experimental support Shen and Lim 2024).

(14)  a.  Who did you see pictures of?
      b. ?Who did you see the picture of?
      c. *Who did you see that picture of?          (Simonenko 2015)

If the D-shell analysis is correct, we should find contrasts similar to (14b,c).

In the next section I argue that we do.

## 3. DP Island effects with *that*-prolepsis

- **Takeaway:** Strengthening the D to *that* produces a more severe island violation, as expected on the D-shell analysis.

## *That*-prolepsis and extraction

In addition to *it*, the demonstrative *that* (and to some extent *this*) can be used in clausal prolepsis in English.

(15)  a.  **That** stinks that you got fired.
      b.  **This** stinks that we can't get a discount.
      c.  I really hate **that** that he always brings take-out to potlucks.

## *That*-prolepsis and extraction

Extraction is impossible from *that*-prolepsis compared to *it*-prolepsis (which is *comparatively* acceptable).

(16)  *Declarative Baseline*: I hate that that he always brings take-out to potlucks?

    a.  ?What do you hate **it** that he always brings to potlucks?
    b.  *What do you hate **that** that he always brings to potlucks?

(17)  *Declarative Baseline*: It/That was important that Sam did something for her family.

    a.  ?What was **it** very important that Sam do for her family?
    b.  *What was **that** very important that Sam do for her family?

# *That*-prolepsis and extraction

- **On the D-shell analysis**, the difference is reducible to that in (14b) vs. (14c).
    - *that* blocks extraction more strongly that *the/it* (see Simonenko 2015 for one analysis).

## *That*-prolepsis is prolepsis

*That*-prolepsis is indeed a variety of prolepsis, not a Right Dislocation (RD) structure (18).

- Ths is important since RD structures would independently be islands (Ott and De Vries 2016).

(18)    a.   He's strange, that guy on the bike.
           b.   That stinks, the grade you got on the final.

*That*-prolepsis constructions pattern with *it*-prolepsis rather than RD in at least three ways. . .

## *That*-prolepsis is prolepsis

**Prosody patterns with prolepsis not RD**

(19)  a.  That stinks *(,) the grade you got on the final.
      b.  That stinks that you failed the final.

## *That*-prolepsis is prolepsis

**Attachment site patterns with prolepsis not RD**

Right Dislocated elements are quite high and cannot easily travel with the VP in predicate fronting:

(20)    That stinks, the grade you go on the final.

(21)    He said the grade you got on the final stinks...

    a.    and stink that certainly does, the grade you got on the final

    b.    *and stink the grade you got on the final, that certainly does.

## *That*-prolepsis is prolepsis

- Proleptic-*that* constructions allow the CP to front with the VP (22b), at least to same degree as with proleptic-*it* (22a).

(22)   He said it stinks that you got fired. . .

        and stink that you got fired, it/that certainly does!

Similar with *though*-fronting:

(23)   Important that you get a good grade though it/that was, you needed to sleep.

Suggests a VP-adjoined position for CP (Reinhart 1980).

# *That*-prolepsis is prolepsis

**Complementizer omission patterns with prolepsis not RD**

*That*-omission is possible in proletpic constructions for many speakers:

(24)  a. It sucks he got fired.
      b. It's obvious there's a problem.
      c. I love it he agrees with me.

Similar tolerance of *that* omission in *that*-prolepsis:

(25)  a. Man, that sucks he got fired.
      b. Yes, that's obvious there's a problem.
      c. That's insane he would try that trick again after landing
         primo once. Dayum. (naturally occurring)

## *That*-prolepsis is prolepsis

Right-dislocated CPs do not allow *that*-omission.

- Helpful disambiguation element: *namely*.
- Right dislocated elements can have a "colon" interpretation which can be signaled by *namely* (Ott and De Vries 2012).

(26)    That was expensive, (namely) the dish you ordered.

With *namely*, COMP cannot be omitted.

(27)    That was obvious, namely ?(that) there was a problem.

# *That*-prolepsis

- is indeed prolepsis.
- acts like a demonstrative DP in strongly blocking extraction from CP.
- provides support for the D-shell analysis.

# Summary

We argued for a version of the DP constituent analysis, the D-shell analysis.

- Proleptic-*it* constructions give rise to an intermediate strength of island.
- Manipulating the content of D from *it* (i.e. *the*) to *that* produces the expected degradation in extraction if the construction were a DP.

**Bigger Takeaways**

- Cross-linguistic Variation: Dutch prolepsis are islands, so complex NPs? (Angelopoulos to appear)
  - ▸ Nature of D as determiner (*het*) vs. pronoun?
- Argues against null D heading factive CPs (Kastner 2015 and others)

4. Postlude
Generalized pronominal doubling in FACT contexts

# Factive verbs are privileged

Long-standing intuition that clausal prolepsis, although not limited to factives, is uniquely suited to factive verbs that combine overtly with *fact* (Kiparsky and Kiparsky 1970; Elbourne 2013).

(28)    Judgments from Elbourne (2013):

(106)  *Factives*
  a. I resent it that…
  b. I regret it that…
  c. I don't mind it that…
  d. I hate it that…
  e. I like it that…
  f. I love it that…

(107)  *Semi-Factives*
  a. *I know it that…
  b. *I realize it that…
  c. *I discover it that…
  d. *I see it that…

(108)  *Non-Factives*
  a. *I believe it that…
  b. *I doubt it that…
  c. *I disbelieve it that…
  d. *I suspect it that…
  e. *I think it that…
  f. *I agree it that…
  g. *I conclude it that…

# Factive verbs are privileged

- While non-factives *can* partake in prolepsis constructions (Angelopoulos to appear) they often require an overt signal of extraposition.

(29)    *Non-factive prolepsis*:

I've said/suspected/believed/thought **it** ?(all along) that non-factives can take proleptic objects.

# Revised analysis: Variation in presence of NP

- Non-factive prolepsis: projecting null NP layer
  - Silent propositional CONTENT nominal (Moulton 2020)

    *Non-factive*     [ D [$_{NP}$ CONTENT [$_{CP}$ *that...*]]]

- Factive: non-projecting N operator FACT in Spec,CP. (Old idea)

    *Factive*     [ D [$_{CP}$ FACT [$_{C'}$ *that...* ]]]

- Cross-linguistically, non-factive nominalized clauses have null NP layer, while factives do not (Moulton 2020; Bondarenko 2022).
  - 'Situation' CPs form a class with FACT (Bondarenko 2022)
  - SIT or POSSIBILITY for *for*-infinitives prolepsis.

- Suggestive evidence that non-factive prolepsis gives rise to worse extraction violations:

(30)     What did you ?hate/?*say it all along that John did?

# Non-factive prolepsis

- pronominalization: *it* arises from ellipsis of NP complement to [+Def] D (Elbourne 2001).
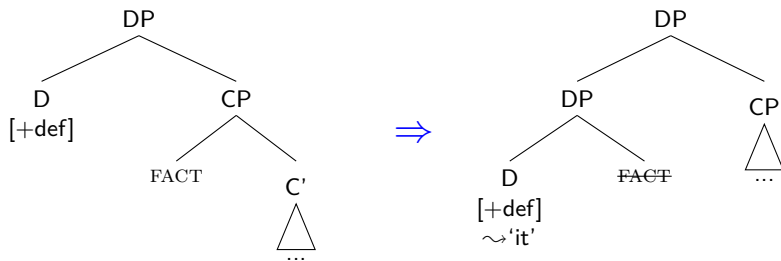- CP must extrapose to escape the ellipsis process that creates pronouns.(Elbourne 2013)
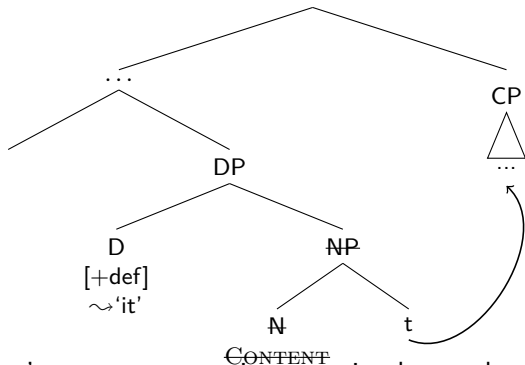


- If CP doesn't extrapose, you just get simple anpahora: *I suspect **it** too.*

## Factive prolepsis

Back to factive prolepsis...

- **Fact Re-analysis Rule:**
  Move fact to sister of D; apply pronominalization.



- Because CONTENT projects NP, economy precludes similar re-analysis in for non-factive prolepsis.

# Generalized Factive Prolepsis

There is another factive construction where prolepsis appears: **embedded exclamatives** (Elliott 1971).

(31) a. It's fantastic/amazing what a nice house he has.
   b. It's awful/surprising the prices you pay for tomatoes.
            (Elliot 1971, (61), (140))

(31b) is particularity surprising because:

- DPs generally do not associate with *it*.
- number mismatch
- not the prosody of right dislocation (Elliott 1971)
- also allow *that*-prolepsis

(32) That's awful the prices you paid!

## Generalized Factive Prolepsis

Elliott (1971): restricted to predicates that select exclamatives:

(33)    a.    It's surprising/amazing/*expensive what a nice house he has.
        b.    It's awful/*high the prices you pay for tomatoes.

- Exclamatives are factive. . .
- Zanuttini and Portner (2003) argue that exclamatives also contain a FACT operator in a Spec,CP[1].

(34)    It's amazing [$_{CP}$ FACT [$_{C'}$ *what a nice house he bought* ]]

[1]Portner and Zanuttini place FACT in a lower CP projection than we will put it.

## Generalized Factive Prolepsis

Fact Re-analysis Rule at work in Exclamative prolepsis:

(35)     [$_{DP}$ [+Def] [$_{CP}$ FACT [$_{C'}$ *what a nice house he bought* ]]]

⇓ Fact Re-analysis Rule

[$_{DP}$ [[+Def] FACT ] [$_{CP}$ *what a nice house he bought* ]]

⇓ Pronominalization

[$_{DP}$ [$_{DP2}$ **It** ~~FACT~~ ] [$_{CP}$ *what a nice house he bought* ]]

⇓ Move new DP/Pronoun (like clitic doubling?)

**It** is amazing [$_{DP}$ [$_{DP2}$ ~~It FACT~~ ] [$_{CP}$ *what a nice house he bought* ]]

- We will allow FACT in Spec,DP for DP exclamatives, as in *It's awful* **the price of gas theses days***!*
- Comparison to the Big DP analysis for clitic doubling.

New paths

- Prolepsis is more wide-spread, and cross-categorial than we thought!
- Grammaticalized elements like FACT can create pronouns in special ways.

The D/C connection

- C might *host* nominal elements, like (FACT).
- But (English) CPs are not inherently nominal, a fact which becomes more apparent when you compare them to bona fide nominalized CPs.

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# Backgrounding

(36) Was ist los?
'Whats the matter?'

    a.   Marie bedauert (es), dass Peter berühmt wird.
       'Marie regrets    (it)  that Peter will be famous.'

    b.   Marie behauptet (*es), dass Peter berühmt wird.
       'Marie asserts    (it)   that Peter will be famous.'

(Sudhoff 2016)

Angelopoulos (to appear): Factive prolepsis = weak definite; non-factive prolepsis = strong/anaphoric definite.