# The syntactic representation of implicit arguments?

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## 1 Implicit arguments

A variety of implicit arguments: missing selected DPs and CPs

(1) Implicit indefinite arguments (Fodor and Fodor 1979, Dowty 1980, Mittwoch 1980)

   a. John {baked|ate|hunted|fought|served the guests|flirted}.

   b. John {baked a cake|ate a carrot|fought his brother|served the guests the salad|flirted with Abby}.

(2) Implicit definite arguments (Fillmore 1986)

   a. Susan {noticed|understood|saw}.

   b. Susan {noticed|understood|saw} the error|that something was wrong.

(3) Implicit reflexive arguments

   a. Maxwell {shaved|bathed|scratched}.

   b. Maxwell {shaved|bathed|scratched} himself.

(4) Implicit reciprocal arguments

   a. Adam and Beth {kissed|screwed|divorced}.

   b. Adam and Beth {kissed|screwed|divorced} each other.

The same groups with missing selected PPs

(5) John {fought (with someone)|flirted (with someone)|was shooting (at something)}.

(6) Susan {agreed (to it|with it|us)|looked (at it)}.

(7) Maxwell is proud (of himself). (? sort of)

(8) Adam and Beth {are married (to each other)|broke up|argued (with each other)}.

Near minimal pairs: no implicit argument possible

(9) John ingested|created|overcooked *(something).

(10) Susan noted|comprehended|realized *(something|that something was wrong).

(11)  Maxwell combed *(himself|his hair).

(12)  Adam and Beth despise *(each other).

Properties to be captured:

1. implicit arguments are lexically dependent (some predicates license them, others don't)

2. implicit indefinite arguments always take narrowest possible scope

3. implicit arguments don't occur as subjects or objects of transitive prepositions

- All these point to a lexical operation on predicates, or an encoding of syntactic optionality in the lexical entry:

(13)  a.  $eat$ $\begin{bmatrix} \text{CAT} & \begin{bmatrix} \{\text{V, -AUX}\} \\ \text{CLASS} \quad trans \end{bmatrix} \\ \text{SEL} & \begin{bmatrix} \text{COMP} \quad (\text{D}) \end{bmatrix} \end{bmatrix}$

b.  $ingest$ $\begin{bmatrix} \text{CAT} & \begin{bmatrix} \{\text{V, -AUX}\} \\ \text{CLASS} \quad trans \end{bmatrix} \\ \text{SEL} & \begin{bmatrix} \text{COMP} \quad \text{D} \end{bmatrix} \end{bmatrix}$

The power of parentheses:
Levin and Rappaport 1987 (also Sadock 1991, Pollard and Sag 1994, Bresnan 2001, Radford 2000, Culicover and Jackendoff 2005, etc.)

(14)  a.  Jack served$_1$ the guests (a cream soup).

serve$_1$  [ NP$_1$  (NP$_2$)]  subcategorization frame

b.           |          |                  linking rules

$< \underline{\theta_e},$    $\theta_1,$      $\theta_2 >$            theta-grid

(15)  a.  Jack served$_2$ a cream soup (to the guests).

serve$_2$  [ NP$_2$  (PP$_{to1}$)]  subcategorization frame

b.           |          |                  linking rules

$< \underline{\theta_e},$    $\theta_2,$      $\theta_1 >$            theta-grid

(16)  Fodor and Fodor 1980: meaning postulate
x $read_i$ iff $\exists y$ x $read_t$ y

(17)  Dowty 1981: lexical rule
DETRANSITIVIZATION
If $\alpha \in P_{TV}$, then $F(\alpha) \in P_{IV}$ (where $F(\alpha) = \alpha$).
TRANSLATION RULE:
$\lambda x \exists y[\alpha'(\hat{P}[Py])(x)]$

(18) Gillon 2007: diacritic-triggered VP-interpretation rules
Let $D$ be the domain of the model and let $G$ be the set of ordered pairs, or graph, of the binary relation assigned to a lexical entry with the argument frame of $< \underline{NP}; NP, q >$. Then, the function assigned to $q$ assigns $\{x : \exists y \in D$ and $< x, y > \in G\}$ to the VP node of the V node dominating the lexical entry.

# 2 The problem of the *uneven distribution* of voice mismatch under ellipsis

**Background: Ellipsis is licensed by semantic identity**

(19)  a. $[_{TP_A}$ Max has [five dogs]$_F$], but I don't know [how many cats$_F$] $<[_{TP_E}$ he has $t]>$.

b.
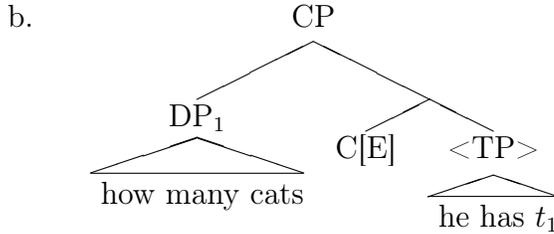


c. $[\![E]\!] = \lambda p : e\text{-}GIVEN(p).p$, where an expression $E$ is $e\text{-}GIVEN$ iff E has a salient antecedent $A$ such that, modulo $\exists$-type shifting, $A \rightarrow$ F-clo$(E)$ and $E \rightarrow$ F-clo$(A)$ (Merchant 2001, 2004)

d. F-clo$([\![TP_A]\!]) = \exists x[have(x)(Max)]$

e. $[\![TP_E]\!] = \exists x[have(x)(Max)]$

## 2.1 High/Big ellipses: No voice mismatches

In fragment answers, sluicing, gapping, and stripping, elided material and antecedent phrase must match in voice.

(20)  Fragment answers

a. Q: Who is sending you to Iraq? A: *By Bush.

b. German

   i. Q: Wer     hat den Jungen untersucht? A: * Von einer Psychologin.
      *who*.NOM *has the boy    examined?     by   a     psychologist*

      'Q: Who examined the boy? A: [intended:] (He was examined) by a psychologist.'

   ii. Q: Von wem     wurde der Junge untersucht? A: * Eine
      *by   who*.DAT *was    the boy    examined      a*
      Psychologin.
      *psychologist*.NOM

      'Q: Who was the boy examined by?' A: [intended:] A psychologist (examined him).'

(21) Sluicing (data discussed in Merchant 2001, Chung 2005)

    a. *Joe was murdered, but we don't know who. <murdered him>

    b. *Someone murdered Joe, but we don't know who by. <he was murdered>

(22) Illicit German voice mismatches, intended nonsubject correlate: $\text{act}_A \rightsquigarrow \text{pass}_E$; $\text{pass}_A \rightsquigarrow \text{act}_E$

    a. \* Peter hat jemand ermordet, aber sie wissen nicht, wer.
       *Peter has someone murdered but they know not who*.NOM

      '(lit.) Peter murdered someone, but they don't know who.'

    b. \* Peter wurde ermordet, aber sie wissen nicht, wer.
       *Peter was murdered, but they know not who*.NOM

      '(lit.) Peter was murdered but they don't know who.'

(23) Illicit German voice mismatches, intended subject correlate: $\text{act}_A \rightsquigarrow \text{pass}_E$; $\text{pass}_A \rightsquigarrow \text{act}_E$

    a. \* Jemand hat Peter ermordet, aber sie wissen nicht, von wem.
       *someone has Peter murdered but they know not by whom*.DAT

      '(lit.) Someone murdered Peter, but they don't know by whom.'

    b. \* Jemand wurde ermordet, aber sie wissen nicht, wen.
       *someone was murdered, but they know not who*.ACC

      '(lit.) Someone was murdered but they don't know whom.'

(24) Nonelliptical controls

    a. ? Peter hat jemand ermordet, aber sie wissen nicht, wer von ihm
       *Peter has someone murdered but they know not who*.NOM *by him*
      ermordet wurde.
      *murdered was*

      'Peter murdered someone, but they don't know who was killed by him.'

    b. Peter wurde ermordet, aber sie wissen nicht, wer ihn ermordet hat.
      *Peter was murdered but they know not who*.NOM *him murdered has*
      'Peter was murdered but they don't know who murdered him.'

    c. ? Jemand hat Peter ermordet, aber sie wissen nicht, von wem er
       *someone has Peter murdered but they know not by whom*.DAT *he*
      ermordet wurde.
      *murdered was*

      'Someone murdered Peter, but they don't know who he was murdered by.'

    d. ? Jemand wurde ermordet, aber sie wissen nicht, wen man
       *someone was murdered, but they know not who*.ACC *one*
      ermordet hat.
      *murdered has*

      '?Someone was murdered but they don't know who they murdered.'

(25) Gapping

    a. *Some bring roses but lilies by others.

    b. *Lilies are brought by some and others roses.

(26) Stripping/Bare Argument Ellipsis

    a. *MAX brought the roses, not by AMY!

    b. *Der Junge wurde von einer Psychologin untersucht, und ein
       *the   boy   was   by   a      psychologist examined,  and a*
       Kinderarzt         auch.
       *pediatrician.*NOM *too.*
       'The boy was examined by a psychologist, and a pediatrician examined him,
       too.'

### 2.1.1 Low/Little ellipsis: Voice mismatches possible

(See Sag 1976, Hankamer and Sag 1976, Dalrymple et al. 1991, Hardt 1993, Fiengo and May 1994, Johnson 2001, Kehler 2002, and Arregui et al. 2006 for further examples, discussion, and qualifications)

(27) Active antecedent, passive ellipsis

    a. The janitor must remove the trash whenever it is apparent that it should be. <removed>

    b. ... there was really no one at the meeting who could answer the question the way it should be. <answered> ('Member comments', Evergreen, Newspaper of the Hyde Park Cooperative Society, Vol. 60.2, February 2007)

    c. [Prison guards deserve their good salaries] Proposing to reduce their numbers to save money would be endangering them even more than they are. <endangered> (Letter to the editor, San Jose Mercury News, June 24, 2004; cited in Sag 2006:2 (10))

    d. Actually, I have implemented it [=a computer system] with a manager, but it doesn't have to be. <implemented with a manager> (Kehler 2002:53)

    e. Steve asked me to send the set by courier through my company insured, and it was. <sent by courier through my company insured> (Kehler 2002:53)

(28) Passive antecedent, active ellipsis

    a. The system can be used by anyone who wants to. <use it>

    b. This information could have been released by Gorbachev, but he chose not to. <release it> (Hardt 1993:37)

    c. This problem was to have been looked into, but obviously nobody did. <look into this problem> (Kehler 2002:53)

    d. 'Slippery slope' arguments can be framed by consequentialists (though I wouldn't in this case). (Richard Dawkins, *The God delusion* (2006), Houghton Mifflin, New York, p. 293)

    e. Some of us are retired, some want to, some don't want to and some cannot! (Yale Class of 1962 newsletter, 11/15/2006; http:// www2.aya.yale.edu/ classes/yc1962/ reunion0607.html accessed on March 7, 2007)

## 2.2 Analyzing the uneven distribution of 'voice mismatch'

Posit: voice morphology expressed on the verb is determined by a functional head, Voice, which is external to the VP (Kratzer 1996, Collins 2005):

(29)   a.  Someone murdered Joe. | Kapjos skotose ton Petro.

b.

```
                    TP
            ┌────────┴────────┐
          DP₁                 T′
        ┌──┴──┐           ┌───┴───┐
    Someone    T      VoiceP
    Kapjos        ┌──────┴──────┐
                Voice            vP
               [Active]      ┌───┴───┐
                          t₁ murder_V Joe_DP
```

$DP_1$: Someone / Kapjos; Voice [Active]; $vP$: $t_1$ murder$_V$ Joe$_{DP}$
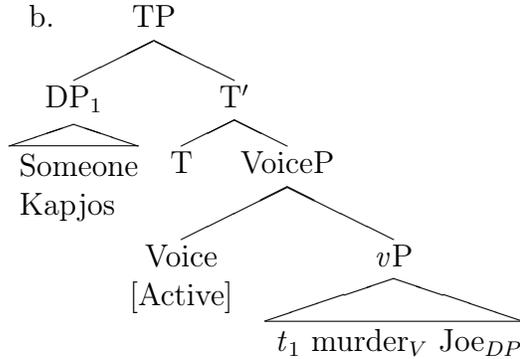
**Different targets for deletion:**

1. In high ellipses (sluicing, etc.), a clausal node that necessarily includes Voice

2. In low ellipses (VP-ellipsis), the verbal projection that is complement to Voice

(30)   a.  *Joe was murdered, but we don't know who.

b.

```
                    TP_A
            ┌────────┴────────┐
          Joe₁               ...
                        ┌─────┴─────┐
                       was          vP
                              ┌──────┴──────┐
                           t_was          VoiceP
                                      ┌──────┴──────┐
                                    Voice            vP
                                  [Passive]    ┌──────┴──────┐
                                            Arg v_trans murder Joe₁ᵗ
```

$TP_A$; Joe$_1$; was; $vP$: $t_{was}$; VoiceP; Voice [Passive]; $vP$: $Arg\ v_{trans}$ murder Joe$_1^t$

c.

```
                CP
         ┌──────┴──────┐
       who₁            ...
              ┌─────────┴─────────┐
             C              <|TP_E|>
                        ┌──────┴──────┐
                       t′₁           ...
                             ┌────────┴────────┐
                             T              VoiceP
                                       ┌──────┴──────┐
                                     Voice            vP
                                   [Active]     ┌──────┴──────┐
                                             t₁ v_trans murder Joe
```

CP; who$_1$; C; $\langle\boxed{TP_E}\rangle$; $t'_1$; T; VoiceP; Voice [Active]; $vP$: $t_1\ v_{trans}$ murder Joe
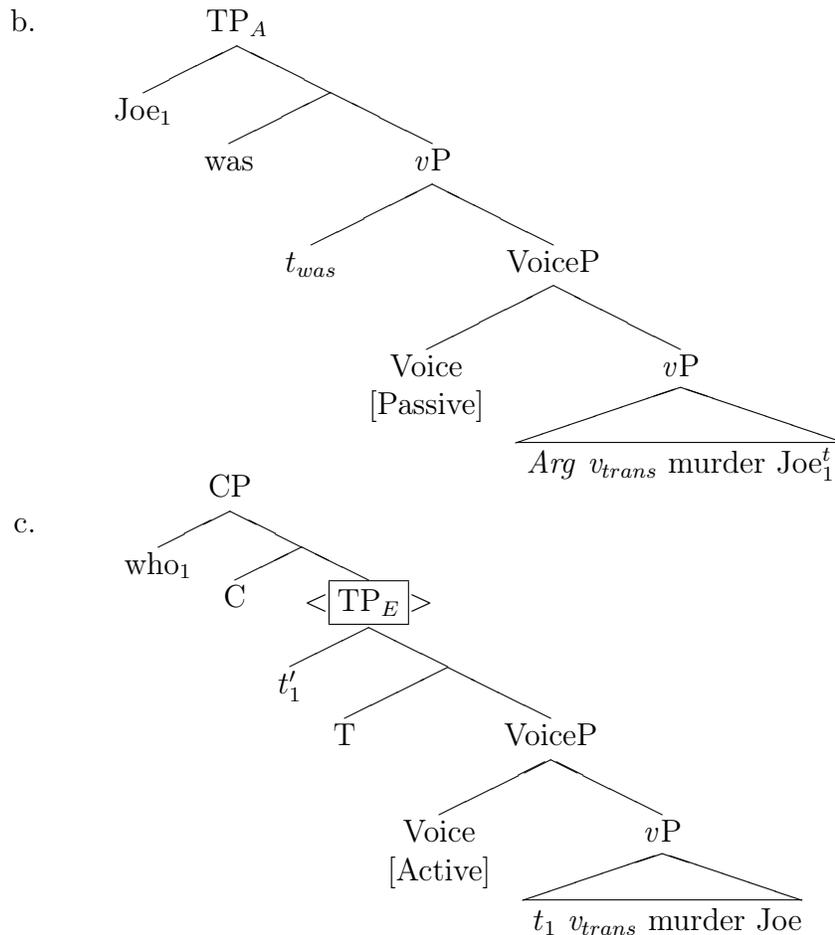
TP deletion includes Voice head; $TP_A \neq TP_E$

(31) The auxiliary isn't the culprit:

* O Petros skotoθike, ala ðen kserume pjos.
  *the Petros.*NOM *killed.*PASS.*3s but not we.know who.*NOM

('(lit.) Petros was killed, but we don't know who.')

(32) a. This problem was to have been looked into, but obviously nobody did.
  b. [$_{DP}$ This problem ]$_1$ was to have   $v$P

been   VoiceP

Voice   $v\mathrm{P}_A$
[Passive]

*Arg*
$v_{trans}$   VP

look_into   $DP_1^t$

this problem

c.   TP

nobody$_2$
did   VoiceP

Voice   <| $v\mathrm{P}_E$ |>
[Active]

$t_2$
$v_{trans}$   VP

look_into   $DP_1$

this problem
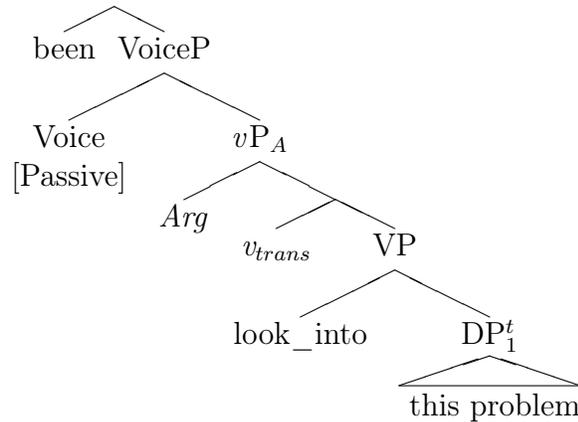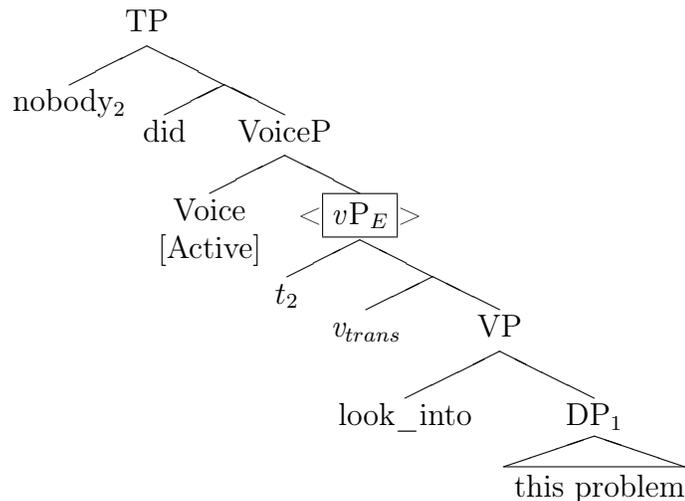
Conclusion: VP-deletion does not include the Voice head

NB: English′ is impossible: where voice mismatches are possible in high ellipses, and impossible in low ellipses

### 2.2.1 Another argument, from morphology

Warner 1985, Lasnik 1995, Potsdam 1997, Roberts 1998 (see also McCloskey 1991, Goldberg 2005 for related points)

(33) In general, English verbs in $VP_A \sim VP_E$ pairs (both regular and irregular) don't require morphological identity

a. Emily played beautifully at the recital and her sister will, too. <play beautifully at the recital>

b. Emily took a break from her studies, and her sister will, too. <take a break from her studies>

c. Emily sang the song {because|the way} she wanted to. <sing the song>

(34) Forms of *be* do require morphological identity

a. Emily will be (beautiful) at the recital, and her sister will, too. <be (beautiful) at the recital>

b. *Emily was beautiful at the recital and her sister will, too.

c. Emily will be elected to Congress just like her sister was.

d. *Emily was elected to Congress {because|just like} she really wanted to.

• Lasnik's analysis: Forms of *be* are inserted fully inflected, while other verbs get their inflection (via Agree with T) in the course of the derivation.

Conclusion: Identity is between syntactic phrase markers

(As in Fiengo and May 1994, Lasnik 1999, Heim and Kratzer 1998, Chung 2005, Elbourne to appear, etc., not merely *semantic* identity or another inferential relation (Merchant 2001, Culicover and Jackendoff 2005, Ginzburg and Sag 2000, etc.))

## 2.3 Other mismatches: Inflectional feature variance

(35) Greek $\phi$-features

O   Giannis ine perifanos,   ala i   Maria ðen ine (perifani).
*the Giannis is   proud.*MASC *but the Maria not is   proud.*FEM

'Giannis is proud, but Maria isn't (proud).'

(36) a. Probe/trigger: DP[$\phi$:3smasc]
b. Goal: A[$\phi$:_]
c. Agree(DP,A;$\phi$) ⤳ A[$\phi$:3smasc]

(37) **Idea:**
Whenever we find an apparent mismatch, the trigger is *outside* the ellipsis site, while the goal is inside.

## 2.4 Other examples of lexical splits

Examples of 'lexical' information apparently triggered from outside the word it surfaces on.

'High' gender (Yatsushiro and Sauerland 2006)

(38) Selbst die beliebteste    Kanzler-in         aller  Zeiten macht Fehler.
*even   the most.popular chancellor-FEM of.all times   makes mistakes*

    a. 'Even the most popular female chancellor of all time can make a mistake.'

    b. 'Even the most popular chancellor of all time can make a mistake.'

Dependent plurals (Sag 1976:143–150)

(39) Dependent plurals allow for singular deletions

    a. John's uncles are bachelors, but Betsy claims her uncle isn't. <a bachelor>

    b. The women gave lectures at museums, and Sam volunteered to, also. <give a lecture at a museum>

(40) Inherent plurals do not:
John has living parents, and Bill does, too.
=<have living parents>, ≠<have a living parent>

## 2.5 Argument structure alternations

Argument structure alternations are *not* allowed under ellipsis

### 2.5.1 Subject/non-subject alternations

(41)   a. This can freeze. Please freeze it.

    b. Bill melted the copper vase, and the magnesium vase melted, too.

    c. Maria still tried to break the vase even though it wouldn't break.

(42)   a. This can freeze. *Please do. (Johnson 2004:7)

    b. *Bill melted the copper vase, and the magnesium vase did, too. (Sag 1976:160 (2.3.48)

    c. *Maria still tried to break the vase even though it wouldn't. (Houser, Mikkelsen, and Toosarvandani 2007)

(43)   a.

b. *Please

```
              TP
         (you₂)
              do        VoiceP
                   Voice[Act]   <vP_E>
                            t₂
                               v_trans    VP
                                        freeze this
```
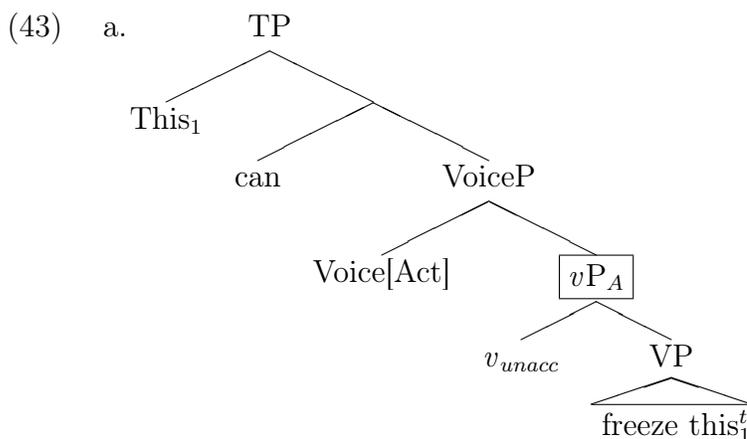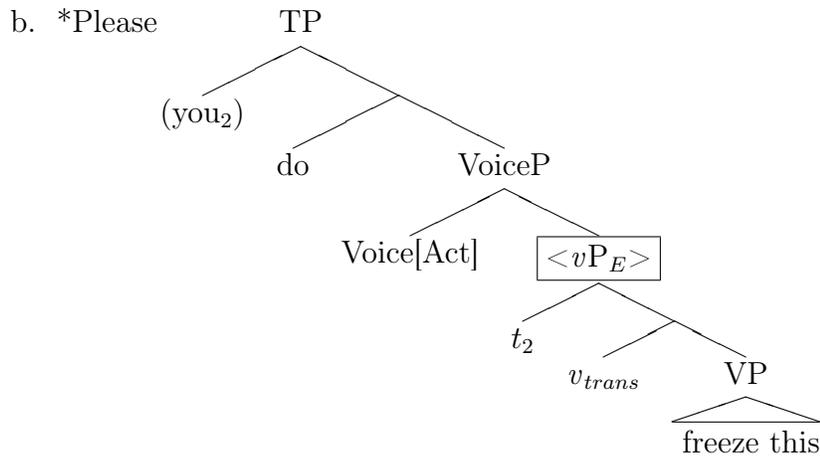
Middles

(44)  a. They market ethanol well in the Midwest.
　　　b. They sell Hyundais in Greece.
　　　c. Studios generally release action films in the summer.

(45)  a. Ethanol markets well in the Midwest.
　　　b. Hyundais don't sell in Greece.
　　　c. This kind of movie generally releases in the summer.


(46)  a. *They market ethanol well in the Midwest, but regular gas doesn't.
　　　b. *They sell Hyundais in Greece because Hondas don't.
　　　c. *Studios generally release action films in the summer, and big-name comedies generally do as well.

(47)  a. *Ethanol markets well in the Midwest, though they don't in the South.
　　　b. *Hyundais don't sell in Greece because dealers don't.
　　　c. *This kind of movie generally releases in the summer, though a studio might in the winter if it's Christmas-themed.


### 2.5.2 Internal argument alternations

(48)  Chung, Ladusaw, and McCloskey 1995 'serve'
　　　a. They served₁ someone something.
　　　b. They served₂ something to someone.

(49)  a. They served₁ the guests <u>something</u>, but I don't know <u>what</u>.
　　　b. They served₂ <u>something</u> to the guests, but I don't know <u>what</u>.
　　　c. They served₁ <u>someone</u> the meal, but I don't know <u>who</u>.
　　　d. They served₂ the meal <u>to someone</u>, but I don't know <u>(to) who(m)</u>.

(50)  a. *They served₁ <u>someone</u> the meal, but I don't know <u>to whom</u>.

b. *... to whom <they served$_2$ the meal $t$>

(51)  a.  They embroidered$_1$ something with peace signs.

        b.  They embroidered$_2$ peace signs on something.

(52)  a.  *They embroidered$_1$ something with peace signs, but I don't know what on <they embroidered$_2$ peace signs $t$>.

        b.  *They embroidered$_1$ something on their jackets, but I don't know with what <they embroidered$_2$ their jackets $t$>.
(On image impression reading of *with what*, not manner reading.)

(53)  a.  *They embroidered something with peace signs, but I don't know what on <they embroidered peace signs $t$>.

        b.



        c.
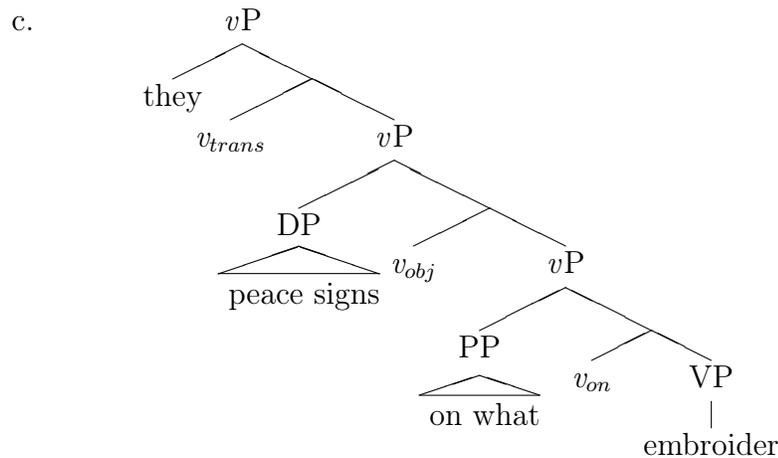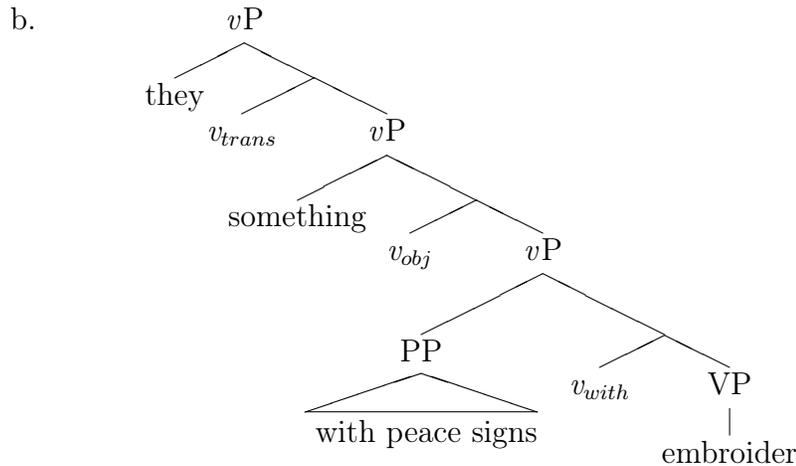


If all such alternations reflect distinct heads in the numeration (Hale and Keyser 1993, 2002, Kratzer 1996, Jelinek 1998, Bowers 1993, Basilico 1998, Pylkkänen 2003, Anagnostopoulou 2003, and many others), and if the identity condition on ellipsis is syntactic and not semantic, then different heads in the antecedent (e.g., the head that introduces the double object in *serve someone something*) will not be identical to the heads in the elided phrase (e.g., the set of heads that yield *serve something to someone*).

# 3 Implicit arguments and ellipsis: A rock and a hard place

Problem: phrases with *implicit* indefinite arguments provide licit antecedents to elided phrases with *explicit* extracted arguments:

(54)  a. John ate, but I don't know what$_1$ <John ate $t_1$>.

  b. We need know both when the patient is required to eat, and what$_3$ she is allowed to <eat $t_3$>.

(55)  a.
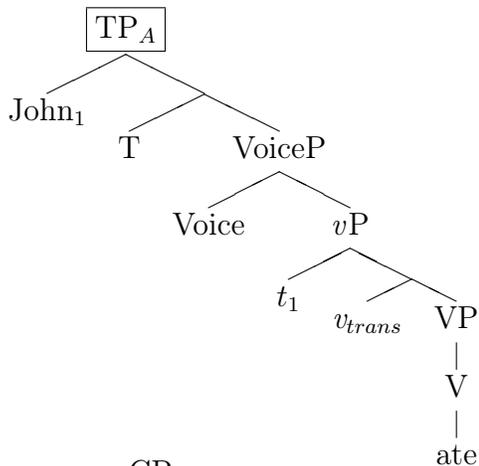


  b.
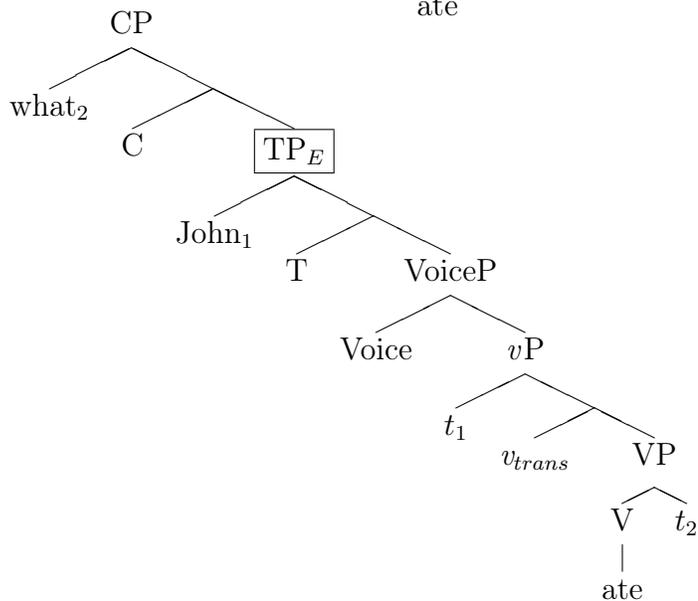


Further wrinkle: implicit *PPs* can be elided, but implicit *prepositions* can't be:

(56)  a. Mary was flirting, and everyone wants to know [with who]$_2$ <Mary was flirting $t_2$>.

  b. *Mary was flirting, but they wouldn't say who <Mary was flirting with $t$>.

(57)  a. They sent the package—find out who to <they sent the package>!

  b. *They sent the package—find out who <they sent the package to>!

## 3.1  Option 1: Ramp up the syntax of implicit arguments

(58)  a.  Posit a syntactically present, if unpronounced, null argument in implicit argument slots: *Arg*.

   b.  $Arg_{DP}$

   c.

```
                    TP_A
                   /    \
            John_1       \
                 /  \     \
                T    VoiceP
                    /      \
               Voice        vP
                           /  \
                         t_1   \
                          v_trans  VP
                                  /  \
                                 V    Arg_DP
                                 |
                                ate
```
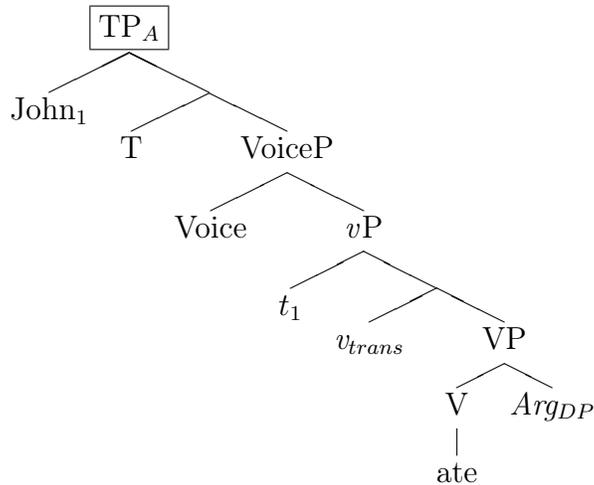
(59)  Special properties of *Arg*

   a.  Always takes narrowest possible scope (Fodor and Fodor 1980, Dowty 1981, Mittwoch 1982)

      i.  (cf. van Geenhoven's 1996 proposals for incorporated indefinites): $[\![Arg]\!] = \lambda P_{<e,st>}\lambda e_s.\exists z[[P(z)](e)]$
   and assume *Arg* cannot QR (like modified numerals, polarity items, etc., see Liu 1991)

      ii.  Or, stipulate that *Arg* can only combine with the verb via *Restrict* in Chung and Ladusaw 2004's sense.

   b.  Only occurs as verbal object

      i.  $Arg \begin{bmatrix} \text{CAT} & [\text{D}] \\ \text{INFL} & \begin{bmatrix} \text{CASE}\_ \\ \text{VFORM}\_ \end{bmatrix} \end{bmatrix}$

      ii.  Stipulate that *Arg* is a verbal enclitic

   c.  Is lexically dependent (only occurs with some, not all verbs)

      i.  Introduce a diacritic (the 'parenthesis' feature) on *Arg*'s CAT feature list, and allow e.g. *eat*, but not *ingest*, to select for this (just like the selectional features needed on traditional accounts of the $M - have - be_{prog} - be_{pass} - V$ order):

      ii.  $Arg \begin{bmatrix} \text{CAT} & [\text{D, }p:+] \\ \text{INFL} & \begin{bmatrix} \text{CASE}\_ \\ \text{VFORM}\_ \end{bmatrix} \end{bmatrix}$

iii. *eat*
$$\left[\begin{array}{ll} \text{CAT} & \left[\begin{array}{ll} \{\text{V, -AUX}\} & \\ \text{CLASS} & trans \end{array}\right] \\ \text{SEL} & \left[\text{COMP} \quad \text{D}\right] \end{array}\right]$$

iv. *ingest*
$$\left[\begin{array}{ll} \text{CAT} & \left[\begin{array}{ll} \{\text{V, -AUX}\} & \\ \text{CLASS} & trans \end{array}\right] \\ \text{SEL} & \left[\text{COMP} \quad \text{D}[-p]\right] \end{array}\right]$$

- All the same features would have to apply in implicit PPs as well.

This way madness lies?

(60) Arnold was angry, but I don't know
   a. who at
   b. what at
   c. what about

(61) They did it, but I don't know with whose help (Chung 2005).

Are regular TPs bristling with unpronounced nodes corresponding to all possible kinds of implicit arguments? (Ludlow 2004:yes; Stanley: presumably yes) Or can they simply be inferred? (Recanati 2007, etc.)

## 3.2   Option 2: Posit a semantic difference between active/passive and other alternations

(62)   a. If the Voice head were not semantically neutral (and neither are the various heads that regulate caustative~inchoative alternations, etc.), then the all we'd need is a semantic theory of ellipsis licensing and any theory of implicit indefinites we like.
   b. ACT($v$P), PASS($v$P)
   c. ⟦ACT⟧, ⟦PASS⟧ = ??

## 3.3   Option 3: Develop a new theory of ellipsis licensing

(63)   The E feature imposes
   a. *e-GIVENness*, and
   b. **No new morphemes requirement** (adapted from Chung 2005):
      $\forall m[(m \in M_E \wedge m \neq t) \rightarrow \exists m'(m' \in M_A \wedge m = m')]$,
      where $M_E$ is the set of morphemes in the elided phrase marker and $M_A$ is the set of morphemes in the antecedent phrase marker. ($M_E - t \subseteq M_A$)

(Any non-trace morpheme $m$ that occurs in an elided phrase must have an equivalent overt correlate $m'$ in the elided phrases's antecedent.)

(64)   a.   John ate, but I don't know what$_1$ <John ate $t_1$>.
       b.



       c.
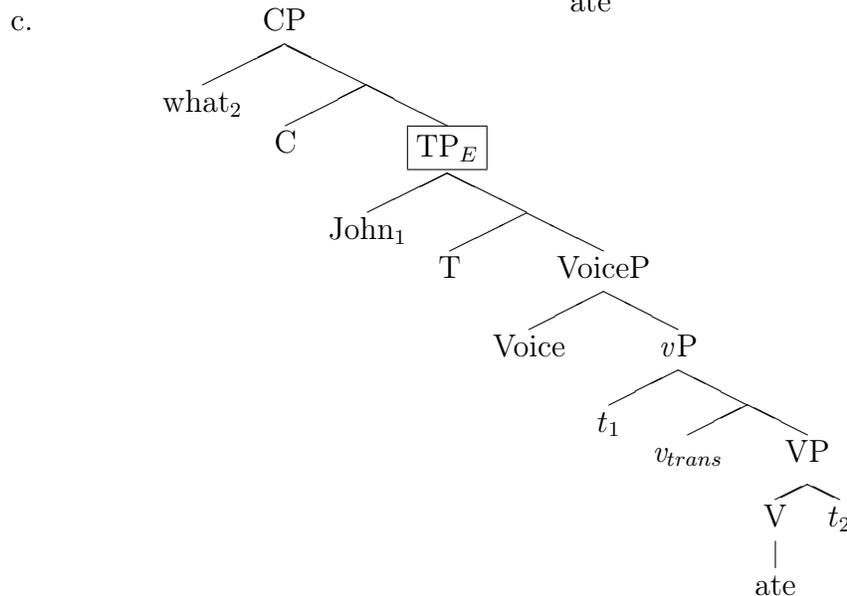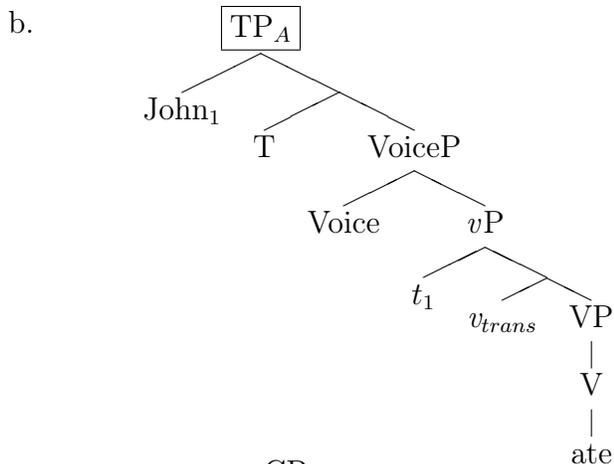


       d.   F-clo($\llbracket TP_A \rrbracket$) = $\llbracket TP_A \rrbracket$) = $\exists x[ate(x)(john)] \leftrightarrow$
            F-clo($\llbracket TP_E \rrbracket$) = $\llbracket TP_E \rrbracket$) = $\exists x[ate(x)(john)]$
       e.   $M_A$ = {John, T, Voice, $v_{trans}$, ate} $\supseteq$
            $M_E - t$ = {John, T, Voice, $v_{trans}$, ate}


(65)   a.   Mary was flirting, and everyone wants to know [with who]$_2$ <Mary was
            flirting $t_2$>.
       b.   F-clo($\llbracket TP_A \rrbracket$) = $\llbracket TP_A \rrbracket$) = $\exists x[flirt(x)(mary)] \leftrightarrow$
            F-clo($\llbracket TP_E \rrbracket$) = $\llbracket TP_E \rrbracket$) = $\exists x[flirt(x)(mary)]$
       c.   $M_A$ = {Mary, T, was, Voice, $v_{unerg}$, flirting} $\supseteq$
            $M_E - t$ = {Mary, T, was, Voice, $v_{unerg}$, flirting}

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(66)  a. *Mary was flirting, but they wouldn't say who <Mary was flirting with $t$>.

　　b. F-clo($[\![TP_A]\!]$) = $[\![TP_A]\!]$) = $\exists x[flirt(x)(mary)]$ $\leftrightarrow$
　　　 F-clo($[\![TP_E]\!]$) = $[\![TP_E]\!]$) = $\exists x[flirt(x)(mary)]$

　　c. $M_A$ = {Mary, T, was, Voice, $v_{unerg}$, flirting} $\boxed{\neq}$
　　　 $M_E - t$ = {Mary, T, was, Voice, $v_{unerg}$, flirting, with}


(67)  a. The janitor must remove the trash whenever it is apparent that it should be. <$[_{vP}$ removed $t]$>

　　b. F-clo($[\![vP_A]\!]$) = $[\![vP_A]\!]$) = $\exists x[remove(the\_trash)(x)]$ $\leftrightarrow$
　　　 F-clo($[\![vP_E]\!]$) = $[\![vP_E]\!]$) = $\exists x[remove(the\_trash)(x)]$

　　c. $M_A$ = {$v_{trans}$, remove, the, trash} $\supseteq$
　　　 $M_E - t$ = {$v_{trans}$, remove}


(68)  a. *Someone murdered Joe, but we don't know who by <$[_{TP}$ Joe was murdered $t]$>.

　　b. F-clo($[\![TP_A]\!]$) = $[\![TP_A]\!]$) = $\exists x[murder(joe)(x)]$ $\leftrightarrow$
　　　 F-clo($[\![TP_E]\!]$) = $[\![TP_E]\!]$) = $\exists x[murder(joe)(x)]$

　　c. $M_A$ = {T, Voice[ACT], someone, $v_{trans}$, murder, Joe} $\boxed{\neq}$
　　　 $M_E - t$ = {T, was, Voice[PASS], 'someone', $v_{trans}$, murder, Joe}


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