<table>
<thead>
<tr>
<th></th>
<th>SUBJACENCY</th>
<th>ECP</th>
</tr>
</thead>
<tbody>
<tr>
<td>the paper that I’ll kill myself if I don’t finish this week</td>
<td>*</td>
<td>OK</td>
</tr>
<tr>
<td>the way that I’ll kill myself if you word that letter</td>
<td>*</td>
<td>*</td>
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<tr>
<td>the kind of person that I'll kill myself if gets that position</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>the kind of person that I think that will apply for our position</td>
<td>OK</td>
<td>*</td>
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1. Introduction
• Transformations are subject to several independent constraints
• These diverse constraints can be reduced to the requirement for government of empty categories (ECs)
• Reformulation of ECP subsumes constraints

1.1 Road map
• Support for the ECP as a principle of the grammar based on French data
• Evidence of distinction between V and P as proper governors motivates a reformulation of the ECP is established by e distinction between V and P as proper governors
• Reformulation
  • merge the two disjoint conditions of the ECP
  • redefine boundedness of movement operations in terms of structural relationship between an EC and its antecedent
• Compare ECP analyses to movement violation analyses

2. Support for the ECP

• asymmetries in the distribution of null NP-internal QPs in French can be explained by the ECP

(1) Empty Category Principle (ECP)
An empty category [β e] must be ‘properly governed”, where α properly governs β iff α governs β and
a. α = [± N, ± V] or
b. α is coindexed with β

(2) a. The only person who I don’t know when I can get to see t₁ is John
b. *The only person who I don’t know when t₁ can get to see me is John
• β is properly governed in (2a) by V see
• β in (2b) meets neither the (a) nor (b) condition of the ECP
• French NPs containing a QP

(3) Jean n’a pas trouvé [NP [QP beaucoup] de livres].
   *John (neg) has not found many (of) books*

• In certain environments, QP within an object NP may be null

(4) Jean n’a pas trouve [NP [e] de livre]
   *John (neg) has found (of) books*

(5) Elle a trop lu [NP [e] de romans]
   *She has too many read of novels*

• Null QP is ungrammatical in subject position

(6) *[NP [e] De livres] n’ont pas ete trouves par Jean
   *(of) books (neg.) have not been found (by John)*

• Empty QP must be governed
  • In (4) and (5), [QP e] is governed by V trouve: lu

\[\text{Figure 1. Government of NP internal [QP e]}\]

• V can govern QP across NP boundary
  • by analogy to government and Case assignment by V across S’

• In (6), [QP e] is not governed within an NP in subject position

© Assuming the ECP to be a principle of the grammar provides understanding of the French data
2. The status of P

- Null QPs within NP objects of prepositions do not pattern with those in NP objects of verbs
- Establish the distinct behaviors of V and P w.r.t proper government
  - Basis for revision of the ECP
  - Assume (provisionally) that P cannot function as a proper governor
- Null QPs in prepositional object NPs

(7) *Jean n’a pas parle a t de linguistes
   John not has spoken to of linguists
(8) *Elle a trop compte sur t d’amis
   She has too much counted on (of) friends
(9) *Combien a’t’ elle ete applaudie par t de spectateurs?
   How many has she been applauded by (of) spectators?

- Constructions improve when the preposition is removed
  - non-constituent wh-movement of P + QP
    - permits V to govern [QP e] through null P

(10) ?A combien a’t-elle souri [PP [P e] [NP [QP e] de garcons]]?
   To how many has she smiled of boys?

- Comparatives

(11) Marie a ecrit autant d’articles que Jean a ecrit [e] de livres
   Mary has written as many of articles as John has written of books
- Deletion of auxiliary and verb

(12) Marie a ecrit autant d’articles que Jean [e] de livres
   Mary has written as many (of) articles as John (of) books
- Comparatives cannot be structured with null QPs in PP objects

(13) *Marie a souri a autant de physiciens que Jean a parle a [e] de linguistes
   May has smiled at as many physicists as John has spoken to of linguists
- Auxiliary and verb cannot be deleted when V complement is a PP whose NP contains a null QP

(14) * Marie a souri a autant de physiciens que Jean a de linguistes
   Mary has smiled at as many (of)physicists as John (of) linguists
• Deletion of the preposition improves the gapped construction
  – although, when no empty QP is present, preposition may not be deleted (16)

(15) ? Marie a souri a autant de physiciens que Jean [e] de linguistes

(16) Marie sourit aussi souveut a Jean que Jean *(a) Marie
      Mary smiles as often at John as John *(at) Mary

→ in (15), both preposition and QP move to front of comparative, where they are deleted

• Removal of preposition improves construction only when P is governed by V
  • movement of adjunct P in (18) does not result in grammaticality

(17) ?A combien a-t’elle souri de garcons
     At how many has she smiled of boys?

(18) *Pour combien a-t’elle souri de raisons
     For how many has she smiled of reasons?

• Preposition stranding in English
  • permitted when PP is complement (19); not when PP is adjunct (20)

(19) How many boys did she smile at?
(20) * How many reasons did she smile for?

• if P is a proper governor, there should be no complement/adjunct distinction
• V+P are reanalyzed as a ‘single unit
  • permitted in English, only under government
    – allows ‘V+P’ to govern [NP e] complement of P
  • reanalysis not permitted in French

© ECP sans P government accounts for four phenomena
• impossibility of QP deletion in NP complement to P in French
• ungrammaticality of:
  • preposition stranding in French
  • adjunct preposition stranding in English

• ungrammaticality of QP deletion in French subject NPs
• subject extraction
3. Reformulation of the ECP

- established unique status of P
  - now, will now formalize this in a different way
- eliminate stipulation regarding P as proper governor
- eliminate the disjunctive formulation of the ECP
  - ECs are subject to both the (a) and (b) conditions of the ECP
  - ECs must be governed and have an antecedent

- Government by a lexical category does not obviate the need for an antecedent

(21) Jean n’a pas trouvé de livres
    *John (neg) has found (of) books*

(22) *A-t-il trouve de livres
    *Has he found (of) books?*

- the V trouve governs the \[QP e\] in both (21) and (22)
- pas functions as antecedent in (21)
  - no antecedent is available in (22)

- Presence of antecedent does not obviate need for governor

(23) *Jean ne voudrait pas que [e] de biere lui coule dessus
    *John (neg) would not like that of beer spill on him*

- pas serves as antecedent
- \[QP e\] in object NP is not governed

3.1 Projections and Percolation Projections

- establishing relationship between EC and antecedent

(24) *Jean n’a pas parlé à de linguistes
    *John (neg) has not spoken to of linguists him*

- proper governor (P) and antecedent are present
- relation between EC and antecedent is insufficient
  - they must be “closely connected”
  
  → in (23), the antecedent pas is not contained in PP, the maximal projection of the governor of \[QP e\]
Figure 2: antecedent-EC relationship fail

- Antecedent of V-object EC

(25) Qui a-t-elle vu [NP e]?

Who has she seen?

- S’ is a projection of V

- antecedent in Comp is within the projection of the governor of [NP e]

Figure 3: S’ as projection of V

- the antecedent must be contained in the projection of the governor of the EC
(26) Empty Category Principle (preliminary version)
   An empty category $\beta$ must have an antecedent $\alpha$ such that
   (a) $\alpha$ governs $\beta$ or
   (b) $\alpha$ $c$-commands $\beta$ and there exists a lexical category $X$ such that $X$ governs $\beta$ and $\alpha$ is contained in some projection of $X$ (in the usual sense of $X'$ projection)

3.2 Superscripting and Percolation Projections

(27) Who did you vote [pp for [np e]]?
   • antecedent is not contained in PP
   • in contrast to (23), this is grammatical
   • reanalysis of V+P had been proposed earlier for English as means of governing a PP-internal EC
     • reinterpreted as shared government superscripts
   • if a category $X$ shares a superscript with its governor, the ‘percolation projection’ of $X$ is the maximal projection of its governor

Figure 3: Before and after: assignment of superscript to PP / percolation projection

(28) [S' Qui crois-tu [S' que Marie a vu?]]
   Who do you think that Mary saw?
   • the antecedent of [np e] is not contained in the maximal projection of the governor of [np e]
   • the matrix V crois can be assign superscript to its complement S'
     • the superscript on S’ ‘percolates’ down to the head of S': the lower V vu
   • an embedded V$_1$ can have as its percolation projection any higher projection of a higher V$_2$ if V$_2$ governs the S' containing the lower V$_1$.  

7
Figure 4: Percolation projection of V$^1$ to V$^2$

- Superscripting is assigned under government:
  - adjuncts cannot be superscripted
  - V can superscript
    - S' in French
    - S' and P in English

(29) Empty Category Principle (final version: Kayne’s (47))
An empty category $\beta$ must have an antecedent $\alpha$ such that
(a) $\alpha$ governs $\beta$ or
(b) $\alpha$ c-commands $\beta$ and there exists a lexical category $X$ such that $X$ governs $\beta$ and $\alpha$ is contained in some percolation projection of $X$.

4. ECP vs. Subjacency
- Subjacency conceives of ‘boundedness’ as a constraint on movement
  - motivates successive cyclic movement

- The ECP incorporates boundedness via the requirement that the EC and its antecedent be ‘closely connected’
  - the antecedent must be within the projection of the governor
  - given percolation, this does not (necessarily) require successive cyclic movement
    - i.e. (28) above does not require successive cyclic movement
• Phonological evidence

(30) Who do you wanna invite?
  • contraction of want and to indicates that no trace of wh-movement is present in the lower Comp
  • Who do you want t; to invite t; would not permit contraction across the trace

• ‘Subjacency-type’ results with the ECP

(31) *Which table does John think that on [e] you shouldn’t put anything?
  • the PP is not in a government configuration with the verb put
  • the PP is not superscripted, thus has no percolation projection
  • the antecedent which table is not within the projection of the ECs governor P

(32) Which table does John think that you shouldn’t put anything on [e]?
  • the PP is superscripted by V under government
  • PP’s percolation projection extends to the matrix S’

4.1 The CNPC
  • distinction between co-superscripting properties of V and N
    • N cannot assign a superscript to its complement XP
    • consequently, the XP has no percolation projection
    • extraction of a constituent from XP would create an EC whose antecedent would have to be located within XP

(33) John; is easy [s; t; to please [e;]]
  • in Chomsky (1977), it is suggested that the moved wh-phrase deletes, leaving no EC in Comp
  • an ECP account does not require deletion
  • assignment of superscript from V to S’
    • permits V to govern EC in Comp
    • makes the matrix clause the percolation projection of the lower V
    • both ECs have antecedents
• Evidence for lack of superscript assignment by N

(34)  *John’s easiness [S’ t; to please t]
   • N cannot assign superscript to S’
   • the trace in Comp is not governed

(35)  Mary’s recent reference [PP to [NP e] in the newspaper
   • N cannot assign superscript to PP; PP has no percolation projection
   • the [NP e] is governed by P, but has no antecedent in PP

(36)  the city’s destruction (by the enemy)
   • [NP [NP the city’s] N destruction [NP e]]
   • N can properly govern the EC
   • the antecedent is within the maximal projection of the governor

(37)  Who don’t you believe [NP the hypothesis [S’ that John loves [NP e]]]
   • V believe can superscript N; matrix S’ is the percolation projection of N
   • N cannot superscript S’, the antecedent who is not in a percolation of the lower V loves
   • if successive cyclic movement has applied, the intermediate trace in Comp of the lower S’ is not governed

4.2 Recoverability of deletions

• Superiority of ECP in accounting for tough-movement as in (33)
   • wh-phrases need not be deleted

(37)  I wonder Mary put [e] on the table
   \rightarrow (cf. I wonder what Mary put on the table)
   • inability to delete what is due to ECP requirement for antecedent
   • presumably, this makes the point that deletion is constrained for reasons of recoverability (?)
• Constraints on wh-phrase deletion

(38) *the man with you’re sure to have a good time
  • two possible derivations would have to be ruled out independently
    • wh-movement of *with whom* to Comp followed by deletion
    • topicalization of *with whom*, followed by wh-movement of *whom* to
      Comp, followed by deletion
  • both derivations are ruled out by the ECP
    • the EC occurs in an adjunct PP
    • there is no antecedent (i.e. ‘the man’) within a percolation
      projection of P
  • “the principle determining the distribution of empty categories is
    indifferent to their past”

(39) the guy who they don’t know whether he wants to come or not
(40) *the guy who they don’t know whether wants to come or not
  • given subjacency, the derivation of (39) and (40) must be distinct
    • in (39), *who* must be base generated in Comp
    • a movement violation cannot be ameliorated
  • given the ECP, wh-movement followed by pronoun insertion may be
    assumed
  • insertion of the pronoun eliminates the EC, thus no ECP violations hold

4.3 Successive Cyclicity

• successive cyclicity is still necessary
  • not as a movement constraint
    • as a mechanism for satisfying the ECP
• instances in which a complementizer appears to serve as antecedent
  • conindexation of complementizer and EC
  • how does the complementizer receive an index
    • does assignment of index to complementizer indicate
      presence of intermediate trace
• Comparatives in English and French

• in English, _as_ and _than_ serve as antecedents for null NPs

(41) As many people entered as [NP e] left
(42) More money was lost than [NP e] was found afterwards

• French comparative _que_ cannot serve as an [NP e] antecedent...

(43) *Autant de personnes sont entrées que [NP e] parties
  as many (of) persons have entered as have left
(44) *Jean a autant d’argent que Marie a [NP e]
  more of money has been lost than (neg.) found

•...but can be an antecedent for [QP e]

(45) Jean a plus d’argent que [S’ [QP e] Marie n’a [NP [QP e] d’amis]]
  John has more of money than Mary (neg.) has of friends

• French exclamative _que_ likewise serves as a [QP e] antecedent
  • there is no subject-aux inversion in (46) or (47)
  • no wh-movement is required to provide an index to _que_

(46) Qu’elle est belle!
    (that) she is beautiful (= ‘How beautiful she is!)
(47) ? Qu’elle a mangé de pommes!
    (that) she has eaten (of) apples! (= ‘What a lot of apples she’s eaten!)

  • in (48), _que_ is unable to serve as antecedent
    • despite wh-movement in this construction (subject-aux inversion)

(48) *Qu’est belle la fille dont vous m’avez parlé!
    (that) is beautiful the girl of whom you to me have spoken

• Successive cyclic movement motivated by the ECP
  • the ‘normal complementizer’ _que_ cannot serve as governor/antecedent of an
    empty QP in subject position in (49), however (50) is (marginally) acceptable

(49) *Elle ne veut pas [S’ que [S [QP e] de gens viennent chez elle]]
    She does not want that (of) people come to her place
Combien veux-tu [S' t que [S [QP e] de gens viennent chez toi?]]
how many do you want that (of) people come to your place

• successive cyclic movement is required for government of [QP e]
  • movement applies in (50): not in (49)
• the trace in Comp does not govern the lower trace, thus cannot be the antecedent

Figure 5. trace – que configuration in Comp
• rather, it is (marginally) acceptable to copy the index of the QP trace \( t \) in Comp onto que, permitting que\( _i \) to govern the lower trace
  • N.B. a null element in Comp does not block government by que

• que as coindexed antecedent to empty NP

la fille que je crois [S' ti qui\( _i \) [NP e] est arrivée la première
the girl that I think (that) has arrived first
• qui must occur as the complementizer in order for subject extraction from a tensed S to occur
• qui is the variant of que which represents co-indexation with an NP trace in Comp
• the NP trace provides an index for qui, permitting it to antecede and govern the [NP e] in subject position
• however, the NP trace in Comp must itself be governed
• in (51), the V croire governs this trace; the antecedent is in a percolation projection of V (the wh-phrase in the higher Comp)

*la fille que je tiens à ce qui arrive la première
the girl that I am anxious for it (that) arrive first

*? Combien tiens-tu à ce que de gens viennent chez toi?
How many are you anxious for it that (of) people come to your place
• in (52) and (53) the trace in Comp cannot be governed by *tenir*, accounting for their ungrammaticality

• Successive cyclic movement is required for conformity with the ECP
  • the trace provides “a (governed) bridge to an (ungoverned) subject position”

4.4 ECP vs. that-trace and doubly-filled comp filter

• Unlike the situation in French, the index of a trace in COMP cannot be copied onto a complementizer in English

(54)  *Who do you think [COMP t that [s [NP e] left first]?  
  • the trace in COMP is governed by V *think*  
  • however, the trace cannot copy its index to *that*, and cannot govern the [NP e] in subject position through *that*  
  • that-trace effect results from un gover ned [NP e]

• This analysis suggests that there is no successive cyclic movement involved in (55)

(55)  Who do you think that she’ll marry?  
  • *that* cannot be the antecedent of the object [NP e] (i.e. no index-copying)  
  • were there a trace in Comp, it would likewise be unable to serve as antecedent to due to the presence of *that*  
  • therefore, the antecedent of [NP e] can only be *who*, necessarily requiring percolation projection

• The doubly-filled comp filter

(56)  *I know who that you saw.*  
  • the presence of two overt elements in Comp creates a branching node  
    • this prevents either *who* or *that* from c-commanding the [NP e]  
    • (cf. French example (50) and Fig 5; a null element in Comp does not obstruct c-command by a complementizer)
• the ECP thus subsumes the doubly-filled COMP filter
1 Introduction to Ch. 8

- Kayne is concerned with two things in this chapter:
  1. **Empirical Starting Point:** Some ungrammatical examples of parasitic gaps (PGs) which aren’t predicted by Chomsky’s theory from *Some Consequences of the Theory of Government and Binding*.
  2. **Theoretical Starting Point:** The Empty Category Principle (ECP) as defined in ch. 3, based upon the notion of a Percolation Projection.

- Take-home messages from the work:
  1. The ECP should be (re-)defined in terms of the notion of Connectedness from graph theory (call it the CC-ECP).
  2. The CC-ECP should hold at S-Structure, not LF or D-Structure.
  3. The CC-ECP can (if one so chooses) be extended to lexical anaphors.

2 Chomsky’s ECP and Parasitic Gaps

- Recall the ECP as defined in the 1981–2 Chomsky papers, which can get the data in (2):

  (1) **Definition. (Empty Category Principle, Chomsky’s Version):**
  A nonpronominal empty category must be governed by either:
  a. a lexical category (N, V, A, . . .)
  b. a coindexed category.

  (2) a. ? a person that they spoke to *t* because they admired *pg*.
  b. * a person that they spoke to *t* because *pg* admired them.

- The verb lexically governs the *pg* in (2a) but not in (2b), and so the contrast is obtained.
- . . .but in (3–5), lexical government holds yet we still see a contrast:

  (3) a. ? the person that John described *t* without examining any pictures of *pg*.
  b. * the person that John described *t* without any pictures of *pg* being on file.
(4) a. ? the books you should read \( t \) before it becomes difficult to talk about \( pg \).
   
   b. * the books you should read \( t \) before talking about \( pg \) becomes difficult.

(5) a. ? the girl that we photographed \( t \) before meeting the husband of the sister of \( pg \).
   
   b. * the girl that we photographed \( t \) before meeting the sister of \( pg \)'s husband.

- Notice, too, that we can’t appeal to a constraint on MOVE-\( \alpha \) (i.e., Subjacency).
- **Kayne’s Claim:** A formulation of the ECP that accounts for (6) will extend to (3-5).

(6) a. the books that it became difficult to talk about \( t \).
   
   b. * the books that talking about \( t \) became difficult.

- Chomsky would treat (6) with movement of Op\( _{wh} \), but recall from Ch. 3 that Kayne wants to do this with the ECP.
- Recall also that the ECP as defined in Ch.3 couldn’t account for the following contrast, either:

(7) a. * ce qu’-elle tient à
    
    that that-she holds to
    “what she is keen on.”

   b. ce qu’-elle tient à faire
    
    that that-she holds to do
    “what she is keen on doing.”

- Instead of an ECP based on government and index percolation top-down, Kayne redefines the ECP based on the notion of a \( g \) – projection:

(8) **Definition. (G-Projection)**

\( Y \) is a \( g \)-projection of \( X \) iff:

a. \( Y \) is a projection of \( X \) (in the usual sense of \( X \)-theory) or of a g-projection of \( X \) or

b. \( X \) is a structural governor and \( Y \) immediately dominates \( W \) and \( Z \), where:

   i. \( Z \) is a maximal projection of a g-projection of \( X \) and

   ii. \( W \) and \( Z \) are in a canonical government configuration.

(9) **Definition. (Canonical Government Configuration)**

\( W \) and \( Z \) (\( Z \) a maximal projection, and \( W \) and \( Z \) immediately dominated by some \( Y \)) are in a canonical government configuration iff:

a. \( V^0 \) governs NP to its right and \( W \) precedes \( Z \) or

b. \( V^0 \) governs NP to its left and \( Z \) precedes \( W \).

- Kayne also assumes that \( P^0 \) is not a structural governor in Romance but is in English/Icelandic.
  
  – This accounts for the lack of preposition stranding in Romance – ECs formed with P-stranding will be ungoverned.

- (9) has the empirical effect of banning ECs on the branches of trees opposite the directionality of \( V^0 \) government in a language.
So Japanese (and any other SOV language) should have right-branch effects?

- This will rule out (3-5) but not (7b).
- **But**: this definition doesn’t actually ban ECs themselves on left branches, only those which are ungoverned in that position:

\[(10) \quad \text{which runner do you believe } t \text{ to have won the race?}\]

\[(11) \quad \begin{align*}
    a. & \quad * \text{ which book do you believe the first chapter of } t \text{ to be full of lies?} \\
    b. & \quad ? \text{ which book do you believe the first chapter of } t? \\
\end{align*}\]

\[(12) \quad \begin{align*}
    a. & \quad * \text{ a book that he found the first chapter of } t \text{ missing.} \\
    b. & \quad ? \text{ a book that he found the first chapter of } t \text{ missing.} \\
\end{align*}\]

- ...and for the proof that PGs care about this \( g \rightarrow \text{projection} \) definition is as in (13):

\[(13) \quad \begin{align*}
    a. & \quad * \text{ a book that he reviewed } t \text{ without believing the first chapter of } pg \text{ to be full of lies.} \\
    b. & \quad ? \text{ a book that he reviewed } t \text{ without believing the first chapter of } pg. \\
\end{align*}\]

### 3 The ECP as Connectedness

- As it stands, though, we can’t really explain why (14a) is better than (14b-14d):

\[(14) \quad \begin{align*}
    a. & \quad ? \text{ a person who people that talk to } t \text{ usually end up fascinated with } pg. \\
    b. & \quad * \text{ a person that people to whom descriptions of } t \text{ are read usually end up fascinated with } pg \\
    c. & \quad * \text{ a person who people that talk to } t \text{ usually end up fascinated with him.} \\
    d. & \quad * \text{ a person who people that talk to } t \text{ usually have money in mind.} \\
\end{align*}\]

- Why is (14a) so much better than expected under the new ECP? Kayne suggests that the crucial contrast to solve this is:

\[(15) \quad ? \text{ a person who close friends of } t \text{ admire } pg.\]

\[(16) \quad \begin{align*}
    a. & \quad * \text{ a person who you admire } t \text{ because close friends of } pg \text{ become famous.} \\
    b. & \quad ? \text{ a person who you admire } t \text{ because you know close friends of } pg. \\
\end{align*}\]

- **Kayne’s Idea**: In (15), the g-projection of \( of \) meets the g-projection of \( admire \) at a node that dominates both somewhere higher up in the tree.

\[
\text{DEFINITION. (G-PROJECTION SET)}: \\
\text{Let } G_\beta \text{ be the g-projection set of a category } \beta. \\
a. \forall \pi, \pi = \text{a g-projection of } \gamma \rightarrow \pi \in G_\beta \\
b. \beta \in G_\beta \text{ and} \\
c. \delta \text{ dominates } \beta \text{ and } \delta \text{ does not dominate } \gamma \rightarrow \delta \in G_\beta
\]
• **In Other Words:** your g-projection set is:
  1. your governor
  2. your governor’s g-projections
  3. anything else which dominates you.

(18) **DEFINITION.** (ECP-CC, first try):
Let $\beta_1 \ldots \beta_j \beta_{j+1} \ldots \beta_n$ be a maximal set of empty categories in a tree $T$ such that $\exists$ a c-commanding $\alpha$, $\forall j, \beta_j$ is locally bound by $\alpha$. Then:
  a. $\cup G_{\beta j}$ must constitute a subtree of $T$ and
  b. there must exist a $\rho$ such that $\rho \in \cup G_{\beta j}$ and $\rho$ dominates $\alpha$.

(19) A Violation of (18a):

```
1
  \alpha
    a
    person
  who
    you
      1
        1
          e = \beta_1
          admire
      1
        because
        become
        famous
          2
            close
            friends
              2
                2
                  e = \beta_2
                  of
```
(20) A Violation of (18b):

(18) A Good Example:

• However: notice that we need to rule sentences out with one of two/three conditions.
  – (18a) imposes a connectedness requirement whereas
  – (18b) imposes a distance requirement.
  – And both of these presuppose a c-command requirement.

• Because we expect c-command to hold between $\rho$ and $\alpha$, this is equivalent to saying:
(19) **Definition.** (ECP-CC, second try):
Let $\beta_1 \ldots \beta_j, \beta_{j+1} \ldots \beta_n$ be a maximal set of empty categories in a tree $T$ such that 
$\exists \alpha, \forall j, \beta_j$ is locally bound by $\alpha$. Then:
$\{\alpha\} \cup (\bigcup G_{\beta_i})$ must constitute a subtree of $T$.

- In Ch.2 Kayne argued that the ungrammatical examples below should be treated in parallel:

(20) a. * we’re trying to find out which man $t$ said that which woman $t$ was in love with him.
   b. ? we’re trying to find out which man $t$ said that he was in love with which woman $t$.

(21) * who does he think that $t$ is in love with him?

- Those facts are still accounted for under the ECP, but what we cannot explain yet is why another $wh$-phrase makes these better:

(22) ? we’re trying to find out which man $t$ said that which woman $t$ was in love with which boy.

- We also get comparable improvements with superiority violations:

(23) a. * I’d like to know where who $t$ hid it $t$.
   b. ? I’d like to know where who $t$ hid what $t$.

(24) a. * I’d like to know what who $t$ hid $t$ there.
   b. ? I’d like to know what who $t$ hid $t$ where.

- Notice, though, that the ECP-CC will take care of this (we can draw these trees if you want).
- **Prediction**: not just any old 3rd $wh$-element will fix violations such as (20). The position of this $wh$-element matters:

(25) a. * we’re trying to find out which man $t$ said to which boy that which woman $t$ was in love with you.
   b. * we’re trying to find out which man $t$ said that which woman $t$ thought that which boy $t$ would help her.

- In exx. such as (25), the $\bigcup G_{\beta_j}$ does not constitute a proper subtree, and the examples are ruled out.
- There also is evidence (in Kayne’s opinion) that we need all of the g-projection sets to be of the same type, and this is (23a).
  - We don’t want to allow the g-projection sets of $who$ and $where$ to unify, or the example would be predicted good.
  - So we redefine the ECP-CC to include this constraint on parallelism of syntactic type:

(26) **Definition.** (ECP-CC):
Let $\beta_1 \ldots \beta_j, \beta_{j+1} \ldots \beta_n$ be a maximal set of categories in a tree $T$ such that $\exists \alpha, \forall j, \beta_j$ is uniformly bound by $\alpha$. Then $\{\alpha\} \cup (\bigcup G_{\beta_j})$ must constitute a subtree of $T$.

- **NB**: after LF movement, we won’t have dis-parallelism in (23a), so Kayne also takes this to be an argument that the ECP-CC holds at S-Structure.
4 The ECP-CC and S-Structure

- This ECP-CC can also get us the observation from Chomsky (1982) that resumptive pronouns do not license parasitic gaps.
- **Crucially**: the relation between an EC and its binder at S-Structure cannot be the same as the relation between a pronoun and an operator.
  - Luckily, there seems to be some evidence for this:

(27)  

a. * which guys did you say that you didn’t know whether \( t \) were gonna be there or not?  
b. ? which guys did you say that you didn’t know whether they were gonna be there or not?

- The difference in grammaticality suggests that these instantiate fundamentally different relations.
- **More issues**: normally we consider the possessor position to be ungoverned by \( V^0 \) in the following:

(28) I know who \( t \) is reviewing whose book.
(29)  

a. ? John Smith, whose enemy’s publicization of whose mistakes is quite understandable…  
b. * John Smith, whose enemy’s publicization of whose having made a bad mistake is quite understandable…  
c. we know who \( t \) feels sorry about whose troubles/sudden disappearance.  
d. * we know who \( t \) feels sorry about whose having lost his job/suddenly disappearing.

- (29) shows us that we can’t dispense with the idea that possessors are ungoverned.
- **Kayne’s idea**: take the \( wh \)-phrase to be the whole phrase whose book in (28).
- Once we do this, we can also account for the following contrast:

(30)  

a. ? we’re trying to figure out who \( t \) said that he loved whose wife.  
b. * we’re trying to figure out who \( t \) said that whose wife loved him.

- The latter examples in (29) also lead Kayne to an interesting observation involving the following:

(31)  

a. Which/what sudden disappearance are you talking about \( t \).  
b. * Which/what suddenly disappearing are you talking about \( t \).  
(32)  

a. John Smith, whose sudden disappearance we were quite upset at \( t \)…  
b. * John Smith, whose suddenly disappearing we were quite upset at \( t \)…
• Kayne concludes from these that:

1. Pied-piping can’t be just a semantically-neutral S-Structure effect and/or
2. Some relatives can’t be analyzed as simply predicing an open sentence of the head noun.

• More broadly (see (66-7), not given here), we can give the following principle:

(33) **Definition. (wh-Phrase):**

If \( \beta \) is a \( wh \)-phrase and \( Z \in G_\beta \), then \( Z \) is a \( wh \)-phrase.

(34) **Definition. (Doubly-Filled Comp):**

The Comp of a relative clause can be filled by a complementizer or a \( wh \)-phrase (and nothing else).