Wh-movement: multiple questions and islands, overt and covert
Incorporation
The nature of the grammar

[If you're also looking at the handouts, this summary starts with section 2 of the second wh handout.]

1. Multiple Questions

What is a multiple question?

A multiple question is a question that contains more than one wh-word, whose answer is a set of sentences in which each of the wh-words is replaced by an appropriate non-wh expression that makes the answer true.

Example:

(1) a. Question: Who bought what?
   Answer: Mary bought the book, John bought the calculator, Sue bought the computer, etc.

   b. Question: Who did you persuade to read what?

Terminology: "wh-in-situ"

A wh-phrase that does not undergo wh-movement is said to remain in situ, and is sometimes referred to as wh-in-situ.

In a multiple question in English, one wh-phrase undergoes wh-movement. Other wh-phrases remains in situ.

This means that before wh-movement takes place in a multiple question, there is more than one wh-phrase that potentially could undergo wh-movement. In fact, there is normally no freedom in such constructions.

(2) The "Superiority Effect"

When IP contains two wh-words, the one that undergoes wh-movement is the one closest to the interrogative C.

Here are some examples:

a. Who __ bought what?
   b. *What did who buy __?

(3) Superiority effect: subject vs. object

a. Who __ bought what?
   b. *What did who buy __?

(4) Superiority effect: higher object vs. lower object

a. Who did you persuade __ to read what?
   b. *What did you persuade whom to read __?

The existence of the Superiority effect suggests that C "gets to pick" what wh moves to it. We may view the C as "attracting" the wh-phrase to it. We call this the "Attract Closest" property of movement:

(5) Attract Closest

When a head attracts a phrase with a particular property to its specifier, it picks the closest phrase with that property.

2. Movement in general: the "Minimalist Program"

Let's spell out how this works in slightly more detail.

The model I am sketching here is a model associated with research in the so-called Minimalist Program. The name "Minimalist Program" comes from a 1993 paper (and 1995 book) by Noam Chomsky, and reflects work done by a number of researchers in the 1990s. There are other approaches that differ to varying degrees from "Minimalism".

- A head is made of features (properties).
- Some of these features -- called uninterpretable features -- are "active". What this means is explained in the next bullet.
- An uninterpretable feature acts as a probe, looking down the tree for the closest matching instance of the same feature -- called a goal. The relationship between probe and goal is called agreement, and sometimes expresses itself as morphological agreement.

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1 At this point, the class had not yet discussed the possibility of covert wh-movement. In this summary, "wh-movement" always refers to overt wh-movement. In a multiple question, it can be argued that the wh-phrases that do not move overtly do move covertly -- an idea that I did not stress and perhaps failed to mention in class.

2 There are exceptions that have been studied. For example, when instead of who and what we have such phrases as which person and which book, many speakers find that the Superiority effect disappears or at least weakens.

3 The handout contained a third set of examples that raises interesting questions about PPs and what "closest" means in (2). For present purposes, however, we will disregard the issue. The examples were:

   a. Who did John talk to __ about what?
   b. *What did John talk to whom about __?
If the probe also has a [generalized version of the] EPP property, some constituent that contains the goal will move to the probe, forming a specifier of the probe.

What constituent containing the goal moves?

---> If the goal (or its maximal projection) is the sister of the probe, the result is head movement.

---> Otherwise, it is usually the maximal projection of the goal that moves, but sometimes something larger. These are the mysteries of pied piping.

The same story holds for \textit{wh}-movement, as discussed below. In \textit{wh}-movement, the probe is the uninterpretable \textit{wh}-feature of C.

\textbf{In a nutshell:}

\textbf{Step 1:} If the head has an uninterpretable feature $u_F$, it acts as a probe, looks down the tree for a goal. If probe is successful $\rightarrow$ agree.

\textbf{Step 2:} If $u_F$ is also $+\text{EPP}$ $\rightarrow$ movement.

Note: The "attract closest" property holds of \textit{agree}.

\textbf{Example #1: I attracting the subject.}

Finite I in English bears uninterpretable person and number features $u_{\text{Person}}$ and $u_{\text{Number}}$. These features, along with $u_{\text{Gender}}$ ($u_{\text{Noun-Class}}$) in languages that have this, are collectively known as \textit{q-features} ("phi-features").

These $q$-features act as a probe, looking for an element that bears interpretable instances of Person and Number. If it finds such an element (e.g. a DP in Spec,VP), I agrees with it. We see this as overt number and person agreement between I and the subject:

\begin{enumerate}
  \item Subject-I agreement
    \begin{enumerate}
      \item The puppy \textit{is} in the garden.
      \item The puppies \textit{are} in the garden.
      \item I am in the garden.
    \end{enumerate}
\end{enumerate}

I also has the EPP property, which means it needs a specifier. Typically, the specifier is provided by the DP with which I agrees. That's why movement occurs: DP moves in order to become the Specifier of IP.

As a bonus, nominative case is assigned to DP in this position.

\textbf{Do we ever see Agree between I and DP without Move?}

The English expletive \textit{there} construction provides us with an example:

\begin{enumerate}
  \item \textbf{Agree (Probe-Goal relation) without movement: the \textit{there} construction}
    \begin{enumerate}
      \item There is a puppy in the garden.
      \item There are puppies in the garden
      \item There seems to be a puppy in the garden.
      \item There seem to be puppies in the garden.
    \end{enumerate}

Here, EPP for I is satisfied by \textit{there}, not by the goal DP that is discovered by the probe $\phi$-features on I. That is why I agrees not with its specifier, but with that goal DP (a puppy or puppies).

\begin{itemize}
  \item \textbf{Example #2: Interrogative C attracting a \textit{wh}-phrase.}
    \begin{itemize}
      \item In \textit{wh}-constructions, an interrogative C has an uninterpretable $u_{\text{Wh}}$ feature (what we early called "$+\text{wh}$") that acts as a probe for another element (its goal) that bears interpretable \textit{wh}. If it finds such an element, C agrees with it.
      \item If $u_{\text{Wh}}$ on interrogative C also has the EPP property -- which it does in English -- some constituent that contains the \textit{wh} goal undergoes movement to Spec,CP. That's \textit{wh}-movement!
    \end{itemize}
\end{itemize}

Wait a minute! We don't see morphological agreement between C and \textit{wh} in English. True, but we do in Kinande:

\begin{enumerate}
  \item \textbf{Wh-C agreement in Kinande (Bantu, NE Congo)}
    \begin{enumerate}
      \item IyondI $yO$ kambale alangIra.  \\
           who (cl.1) that (cl.1) Kambale saw
      \item aBahl $Bo$ kambale alangIra.  \\
           who (cl.2) that (cl.2) Kambale saw
      \item Eklh $kyO$ kambale alangIra.  \\
           what (cl.7) that (cl.7) Kambale saw
    \end{enumerate}
\end{enumerate}

(Schneider-Zioga 1987; quoted in Rizzi 1990)

\textit{4} Except as a "reminder" answer: "I'm starving, and there's nothing to eat in the house. What could we cook for dinner?" "Well... there's the puppy in the garden..." No I don't really mean it...
3. How structures are built

**Bottom to top (a standard view in the Minimalist Program)**

Structure-building is accomplished by two very similar rules: **Merge** and **Move**.

**Merge:**
5. a. Combine 2 [or more] lexical items or previously formed phrases, forming a new phrase.
   b. Designate one as the head, which labels the phrase, in accordance with X-bar theory.
   c. If necessary, before a modifier or specifier merges with a head, create a single-bar projection of the head with which the modifier merges. You could think of this as the result of merging a head with itself, if you’re so inclined (“identity merge”). No, we didn’t discuss this in class. I blurred over this. 6

**Move:**
- If an uninterpretable feature $uF$ of a head $H$ has an EPP property, it may be satisfied by the following steps:
  1. make a copy of the constituent with which $uF$ agreed (its goal);
  2. merge it as the specifier of $H$ (i.e. as a sister of $H'$ above all modifiers).

Notice that Merge differs from Move mainly in whether the material that "grows the tree" from the bottom up is provided *externally* (from the lexicon or form material already built in another "workspace") or *internally* (by copying material in the current tree).

**An older view of structure building and movement**
1. Phrase structure rules like V$\rightarrow$V DP apply, creating empty "placeholder" specifiers where needed.
2. The output of the phrase structure rules is called **Deep Structure** (or D-structure).
3. Movement applies to the output of the Phrase Structure rules, filling placeholder specifiers, as well as adjoining heads to other heads [and perhaps] adjoining phrases to phrases.
4. The output of the movement rules is called **Surface Structure** (or S-structure).

The last class provided an argument against this older view.

4. Multiple Specifiers

Sometimes, an uninterpretable feature keeps probing for new goals, even after Agree has already taken place with the closest goal. If the feature is also EPP, we find multiple movement, forming multiple specifiers. This is what we find in multiple questions in Slavic and other East European languages (including Yiddish).

What's interesting is how the $wh$ phrases are ordered. The closest $wh$ to $C$ moves first. The next-closest "tucks in" under it. Here are examples from Bulgarian:

**Bulgarian**

\[(9)\] a.  Koj kogo vižda ?
who whom sees
‘Who sees whom?’
b.*Kogo koj vižda ?
whom who sees
\[(10)\] a. Koj k´de udari Ivan ?
who where hit Ivan
‘Who hit Ivan where?’
b.*K´de koj udari Ivan ?
where who hit Ivan

This patterns suggests that $wh$-phrases move as short a distance as possible — in addition to the fact that $C$ attracts the closest $wh$-phrase that it can. These are both economy conditions.

\[(11)\] **Economy 1 ("Attract Closest")**
A probe agrees with the closest goal.

\[(12)\] **Economy 2 ("Shortest Move")**
A constituent that moves to a probe moves as closes as possible to that probe.

**Consequence:**
- of Economy 1: The first $wh$-attracted is the highest of the $wh$-phrases.
- of Economy 2: The next $wh$ forms the lowest possible specifier of CP, "tucking in" below the previous $wh$ that moved.

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5 The material in the square brackets make the structures created by Merge consistent with the phrase structures that we have assumed in this course. Many linguists have explored the alternative which restricts merge to 2 elements (binary branching)—no more and no less. This entails different structures for verbs that appear to take two complements [the square brackets in (a)], and a different view of bar-levels for the case of a modifier or specifier attaching to a head that never took a complement [case (c)].

6 An some linguists investigating what is called "bare phrase structure" theory try to do without this. But that's a story for another occasion.
5. Successive-cyclic wh-movement & Subjacency

We have seen that interrogative C bears a uWh (uninterpretable wh) feature with an EPP property. This feature causes wh-movement to Spec,CP.

Could it be the case that non-interrogative C (the C that introduces a declarative clause: that, a, for) also may bear uWh? If so, wh-movement would “stop off” at intermediate specifiers of CP on its way to its final location.

(13) [CP What do you think [CP (that) he’ll say [CP (that) we should buy ___ ]]]

Answer: yes! This is called the "successive cyclic" property of wh-movement.7

All-stranding evidence

- As so often in this course, there is "stranding" evidence for successive cyclic wh-movement. The evidence comes from West Ulster English (N. Ireland), studied by James McCloskey of UC Santa Cruz (and discoverer of the fuck-all data from an earlier unaccusativity problem set).
- As you remember from the previous summary, expressions like what all and who all in West Ulster English optionally strand their all in positions from which wh-movement takes place. In an earlier summary, we saw examples of all-stranding in the original position (more accurately, the case position) of the wh-phrase. The examples we looked at then were the following:

(14) W. Ulster all stranding in the case position
   a. What all did you give ___ to the kids?
   b. What did you give ___ all to the kids?

(15) a. Who all did you send ___ to the shops?
    b. Who did you send ___ all to the shops?

(16) a. Tell me what all you got ___ for Christmas.
    b. Tell me what you got ___ all for Christmas.

In fact, all may also be stranded in any Spec,CP that lies between the original position of the wh-phrase and its final position.

(17) W. Ulster all stranding in specifier of declarative CP with complementizer that
   a. What all did he say [CP ___ that [IP he wanted ___ ]]?
   b. What did he say [CP ___ that [IP he wanted ___ all]]?
   c. What did he say [CP all ___ that [IP he wanted ___ ]]?

(18)W. Ulster all stranding in specifier of declarative CP with complementizer o
   a. What all did he say [CP ___ o [IP he wanted ___ ]]?
   b. What did he say [CP ___ o [IP he wanted ___ all]]?
   c. What did he say [CP all ___ o [IP he wanted ___ ]]?

(19) W. Ulster all stranding in specifier of declarative infinitive with complementizer o
   a. What were you trying [CP ___ all o [IP to say ___ ]]?
   b. What did you mean [CP ___ all for [IP me to do ___ ]]?

(20) W. Ulster all stranding in specifier of declarative infinitive with complementizer for
   a. Who did you arrange all for your mother to meet at the party?
   b. *Who did you arrange for your mother all to meet at the party?

(21) W. Ulster all stranding in specifier of declarative CP with complementizer that: two levels of embedding!
   a. What all do you think [CP that he’ll say [CP that we should buy ___ ]]?
   b. What do you think [CP all that he’ll say [CP that we should buy ___ ]]?
   c. What do you think [CP that he’ll say [CP all that we should buy ___ ]]
   d. What do you think [CP that he’ll say that we should buy ___ all]?

Binding evidence

Principle A also provides evidence for successive cyclic wh-movement through intermediate specifiers of CP.

(22) Binding evidence for successive cyclicity
   a. Principle A applies in highest Spec,CP
      [1 Tom asked [2 [which picture of himself] Mary thought [3 that the kids liked ___ ]]
   b. Principle A applies in intermediate Spec,CP
      [1 Tom asked [2 [which picture of herself] Mary thought [3 that the kids liked ___ ]]
   c. Principle A applies in the lowest position
      [1 Tom asked [2 [which picture of themselves] Mary thought [3 that the kids liked ___ ]]

We can check that Principle A is otherwise acting normally (i.e. nothing "wild" is going on in (22)) by noticing that the antecedent still must c-command the reflexive:

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7 Like many terms in syntax, this one is a holdover from an earlier model of syntax, that included a notion called the "cycle". I won't burden you with the explanation here, but I also didn't want you to be scratching your head over the term.
(23) The non-c-command condition:

a. *[1 Tom's sister asked  2 [which picture of himself] Mary thought [3 that the kids liked __]]

b. *[1 Tom asked  2 [which picture of herself] Mary's brother thought [3 that the kids liked __]]

c. *[1 Tom asked  2 [which picture of themselves] Mary thought [3 that the kids's teacher liked __]]

[Beginning of the handout entitled: Wh-movement, Islands, Incorporation and Covert Movement]

6. Successive cyclic movement and the Subjacency Condition

I introduced the evidence for successive cyclic wh-movement for a reason. It looks as though wh-phrases are lucky that they may stop at intermediate specifiers of CP on the way to their ultimate destination. Under certain circumstances, when a wh-phrase may not stop at an intermediate specifier of CP because it is occupied by another wh-phrase, the result is ungrammaticality.

Wh-islands

This phenomenon is found when one tries to extract a wh-phrase from a declarative clause contained in an embedded question. The effect is called the wh-island constraint:

(24) The "Wh-island constraint"
   (case 1: *crossing a that-clause and then an interrogative)
   
   \[ \downarrow \] *What did Mary ask [CP2 who said [CP1 that Bill had bought __]]? \[ \downarrow \]

In example (24), even though what may move to Spec,CP1, it may not move to Spec,CP2 - since that specifier is occupied by who. Consequently, the second step of wh-movement must cross two CPs. It has been suggested that this is not allowed.

Complex NPs

In fact, not only can wh-movement not cross more than one CP at a time -- it apparently cannot cross a DP and a CP in the same step. This phenomenon is called the Complex NP Constraint (where "complex NP" means an NP -- a.k.a. DP -- containing a CP). There are two situations to consider: CP complements to N and relative clause modifiers of N'.

Constraints on extraction out of particular domains are called island conditions. Domains out of which extraction is forbidden are called islands.

(25) The "Complex NP Constraint"

a. CP complement to N is an island
   *Who did Mary resent [DP our claim [CP that Bill had invited __]]?

b. A relative clause (CP modifier of N') is an island
   *What did Mary want to meet [DP the man [CP who had said __]]?

We can understand the complement case of the Complex NP Constraint as a prohibition against crossing not merely two CPs, but also a CP and a DP. This is called the Subjacency Condition. The nodes that the subjacency condition cares about are called Bounding nodes (also known as barriers):

(26) The Subjacency Condition
   Movement may cross at most one bounding node at a time.

(27) Bounding nodes: CP, DP.

Important: To understand the Complex NP Constraint as a case of Subjacency, we must suppose that D, unlike C, cannot bear the uWh feature. Thus, successive cyclic movement of wh is not allowed through Spec,DP. In this sense, DPs are just like CPs whose specifier is otherwise occupied.

(28) *Who did Mary resent [DP our claim [CP that Bill had invited __]]?

[I didn't have time to teach this bit, but here it is anyway...]

Wh-islands again

Actually, for many speakers, simpler examples than (24) are bad:

(29) Wh-island constraint (cross just an interrogative)
   ??What did [IP Mary ask [CP who [IP _ bought __]]]?

A suggestion due to work of the Italian linguist Luigi Rizzi might explain this. He suggested that the bounding nodes for English actually include IP rather than CP:

(30) Bounding nodes (version 2): IP, DP.

As the underlining in (29) makes clear, this will handle the case at hand. Subtly different predictions are made for other configurations, however. For example if IP rather than CP is a bounding node, successive cyclic movement from a declarative clause will always have to stop in Spec,CP. If CP rather than IP is a bounding node, the lowest Spec,CP may be skipped. I leave it to you to verify this!
7. Another island condition: the Condition on Extraction Domains (CED)

The statement in (31) also appears to be true:

(31) **Condition on Extraction Domains**
Wh-movement is forbidden from non-complements.

For example, extraction from subjects is forbidden:

(32) *Who are [pictures of __] on sale at the Coop?

(33) *Who would [for Mary to talk to __] annoy Peter?

And extraction from adjuncts:

(34) a. ??Who will Bill be unhappy [unless I invite __]?
    b. *To whom did Sue leave the room [because she had spoken __]?
    c. *What will Mary get mad [since I didn't finish __]?

Note: Extraction out of a relative clause is forbidden both by Subjacency and by the CED. Is this overkill? Or does it perhaps explain why the island effects are particularly strong with relative clauses? You decide!

8. The unity of movement: CED effects on head movement

The CED is particularly interesting, because if the linguist Mark Baker (MIT class of 1980) is correct, it governs all types of movement, not just wh-movement. In particular, it governs a species of head movement known as Incorporation:

**V to V incorporation**
Chichewa:
(35) a. Mtsikana a-na-ch-its-a kuti mtsuko u-gw-e.
    girl do-cause that waterpot fall

   b. Mtsikana a-na-gw-ets-a mtsuko.
    ...make pot fall... ----> fall-make pot...

Japanese:
(36) John-ga Mary-ni susi-o tabe-sase-ta.

**P to V incorporation**
Kinyarwanda:
(37) a. Umwaana y- a- taa-ye igitabo mu maazi
    child SP-past-throw-ASP book in water

b. Umwaana y- a- taa-ye-mo amaazi igitabo
   [SP=subject agreement prefix]

**N to V incorporation**
Mohawk:
(21) a. Ka-rakv ne [sawaitis hrao-nuhs-a]
    3N-be.white John 3M-house-SUF

b. Hrao-nuhs-rakv ne sawaitis

**Generalization**: incorporation moves the head of the complement of X to X itself. There is no incorporation from subjects or from adjuncts. Baker suggested that this is a CED effect.

For a great non-technical discussion of related issues, see Baker's book *The Atoms of Language*. Give it to your friends for Christmas!

9. The Coordinate Structure Constraint (CSC)

Finally, another island constraint:

(38) **Coordinate Structure Constraint**
1. A conjunct in a coordinate structure may not be moved out of that coordinate structure [strong effect]; and
2. Extraction out of a conjunct is also forbidden [weak effect]

(39) **CSC1**
   a. *Which book did you read *Harry Potter* and __?
   b. *Which book did you read __ and *Harry Potter*?

(40) **CSC2**
   a. [*] How many languages does *Mary speak__ fluently* and has a translator's certificate from the UN?*
   b. [*] What kind of chocolates did John open [a jar of jelly-beans] and [a box of __]

**but:**
   c. What kind of chocolates did John [go to the store] and [buy __]

Interestingly, it appears possible to simultaneously extract a single wh-phrase from two or more conjuncts at once -- a possibility we will not explore further here. This is called "Across the Board" (ATB) movement, and appears to by-pass the CSC:

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9 More precisely, he argued that it followed from a unification of Subjacency and the CED into a general theory of "Barriers", as proposed by Chomsky in a 1986 monograph. I blur these details here.
10. A theory of movement (review)

We have presented the following idea:

- **Movement is "Internal Merge", i.e.**
  1. make a copy of a constituent inside the current tree; and
  2. merge the copy, forming a specifier (or adjoined position)

It will convenient to assume the following:

- **The copies formed by movement are coindexed and form an object called a chain.**
- **Lower copies in a chain are called traces.**

(42)  [CuWh] Mary bought which book -->
      [which book_i  [CuWh] Mary bought which book_i]

Chain: (which book, which book)

How does the phonological component of the grammar talk to the syntax? So far, it looks like (43) is the operative principle:

(43) **Pronunciation Principle:**
     Pronounce the top member of the chain.

In this summary, however, we see some evidence that suggests that (43) is not always correct, at least not on the surface of things...

11. Covert Movement

At first sight, it looks as though Japanese has the interesting property of lacking wh-movement entirely:

(44) **Japanese: matrix questions**
    a. John-ga Mary-ni nani-o ageta no?
        John-NOM Mary-DAT what-ACC gave Q
        'What did John give to Mary?'
    b. John-ga naze kubi-ni natta no?
        John-NOM why was fired Q
        'Why was John fired?'

Japanese, in essence, has "John gave what to Mary" and "John was fired why" where English has comparable examples with wh-movement. Of course, so does English, in particular contexts (e.g. "remind me" questions, echo questions, etc.). But Japanese really goes whole hog and leaves wh phrases in situ even in embedded questions, where this is impossible in English [I'm slightly reordering the presentation in the handout]:

(45) **Embedded questions also show wh-in-situ**
     Mary-ga [CP John-ga nani-o katta-ka] sitte-iru
     Mary-NOM John-NOM what-ACC bought-Q know
     'I know what John bought' [lit. 'I know John bought what']

- One might wonder, however, if Japanese has wh-movement after all, but with the twist that it is the *trace* (the position before movement) that gets pronounced, rather than the head of the chain (the position after movement). This would seem like believing in ghosts — that is, an untestable hypothesis — were it not for the fact that we now have a tool besides *hearing* a displaced element for identifying movement: *islands*!
- The question is: Is the relation between (I) the position in which we hear a Japanese wh-phrase and (II) the position to which it would move in a language like English sensitive to islands? Can an island boundary intervene between these two positions? If so, we have evidence that Japanese has wh-movement after all, and we just don't hear it.
- It turns out that if the wh-phrase is modified by *ittai* (lit. "one body"), which has something of the flavor of "on earth", it can be embedded in a simple *that*-clause, but not in a relative clause or in an adjunct:

(46) **Baseline:**
    Mary-ga John-ni [ittai nani-o] ageta-no?
    Mary-NOM John-DAT on-earth what-ACC gave Q
    'What on earth did Mary give to John?'

10 To a Japanese speaker, this sentence, and others like it, sounds more natural if the nominative marker -ga is replaced with the topic marker -wa. Our examples ignore this fact, in the interests of clarity.
(47) **Simple embedding:**
Mary-ga [cp John-ga [ittai nani-o] yonda to] itta-no?
Mary-NOM John-NOM on-earth what-ACC read that said-Q
What on earth did Mary say that John read?

(48) **Complex NP Constraint:**
Mary-NOM John-NOM on-earth what-ACC read fact-ACC
wasureteiru-no?
remembered-Q
What on earth did Mary remember [the fact [that John read __]]?

(49) a. **Complex NP Constraint**
*Mary-ga [DP [CP John-ni ittai nani-o ageta] hito-ni] atta-no?
Mary-NOM John-DAT on-earth what-ACC gave man-DAT met - Q
What on earth did Mary meet [the man [who gave __ to John]]?

b. **CED effect**
*Mary-ga [John-ga [ittai nani-o] yomu mae-ni] dekaketa-no?
Mary-NOM John-NOM on-earth what-ACC read before left - Q
What on earth did Mary leave [before John read __]?

- If *ittai* is omitted, the sentences are not so bad for most speakers, which is a mystery that we will leave unsolved for now.

- Actually, there is an exception to the mystery. Adjuncts like *naze* 'why' obey islands even without *ittai:*

(50) a. **Complex NP Constraint (Subjacency) with *naze* 'why'**
*Mary-ga [DP [CP John-ni naze hon-o ageta] hito-ni] atta-no?
What is the reason x such that Mary met [a man who gave __ to John x]?

b. **Adjunct island effect (CED) with *naze* 'why'**
*Mary-ga [John-ga naze hon-o yomu mae-ni] dekaketa-no?
Mary-NOM John-NOM why book-ACC read before left - Q
What is the reason x such that Mary left [before John read a book for reason x]?

- This parallels English, where island effects are often squishy with extraction of DPs but quite robust with extraction of adjuncts.

(51) a. ??What did Mary resent [the fact that they had fixed __ with a wrench]?
b. *How did Mary resent [the fact that they had fixed the car __]?
c. *Why did Mary resent [the fact that they had fixed the car __]?
(50) (on the readings indicated by the bracketing)

**The point:** Japanese wh-phrases (ignoring the mystery mentioned above) act just as if they had moved to Spec,CP — obeying island conditions! The only difference is that the movement is **covert.** It doesn't change the phonology. We don't **hear** the effects of movement.

12. **Tentative conclusion: the model**

In Japanese, when a verb selects a +Q complementizer, the requirement of wh-movement to specifier of CP is met by "covert movement" in the embedded clause.

**How this fits in the model:**

(52) **Possibility #1 (the "Y" model)**
Wh-movement may happen before or after Spellout -- the point at which the syntactic derivation makes contact with phonology. Movement after Spellout is covert, since it does not feed the phonology. The Pronunciation Principle in (43) is correct.

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merge & move (overt)
----->
Spellout

merge & move, covert and overt -- interspersed
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(53) **Possibility #2 (the "single output" model)**
Wh-movement always happens the same way. The Pronunciation Principle is wrong. The EPP property of certain heads dictates that you pronounce the new top of the chain formed by movement. The EPP property of other heads dictates that you pronounce the old top of the chain formed by movement.

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merge & move, covert and overt -- interspersed
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Which is right? Stay tuned...
13. Overt Move and Overt Merge are interspersed

In examples like (54), John is contained within a subcategorized complement of picture and claim. As we can see, it appears to trigger a Principle C effect:

(54) BT(C) effects in complements of N inside wh-phrases
   a. *[Which picture [complement of John] does he think we like best?]
   b. *[Whose claim [complement that John is a fool]] did he resent most?

This is not surprising. Before wh-movement, John was c-commanded by he in both examples:

(55) (54a-b) before wh-movement: complements to N already merged
   a. *... he think we like [which picture of John] best?
   b. *... he resent [whose claim [complement that John is a fool]] most?

Notice that if the complement to picture in (54a) were merged with picture after wh-movement took place, we'd expect no Principle C effect. Likewise for the complement to claim in (54b). The fact that we detect a Principle C effect means that subcategorization requirements in a Minimalist model must be satisfied immediately. The first thing that a head merges with must be its subcategorized complements.

Now note, however, an important discovery by the linguist David Lebaux. In examples that are just like (54a-b), except that John is contained inside a modifier rather than a complement to N, the Principle C effect disappears (for many speakers):

(56) Disappearance of BT(C) effects in adjuncts inside wh-phrases
   a. [Which picture [modifier near John]] does he think we like best?
   b. [Whose claim [rel. clause that John overheard]] did he resent most?
   [Which book [rel. clause that John bought]] did he like best?

What could be going on? Suggestion: the adjuncts in (56a-b) were not merged to their sister N' until after wh-movement took place. In other words:

Account of the goodness of (56a-b):
   Step 1: construct which picture/claim/book and merge with V.
   Step 2: build the rest of the CP and do wh-movement of which picture/claim/book.
   Step 3: now Merge the modifier/adjunct to the wh-moved DP. Note that the modifier/adjunct never appears in a position c-commanded by he!

Before wh-movement in (56a-b), then, all that we had was:

(57) (56a-b) before wh-movement: adjunct not yet merged
   a. ... he think we like [which picture] best?
   b. ... he resent most [which claim] most?
   ... he like [which book] best?

Nothing to violate Principle C! Only after wh-movement are the adjuncts near John and the relative clauses added — and there's still no c-command of John by he to trigger a principle C effect!

By contrast:

Account of the badness of (54):
   Subcategorization properties must be satisfied immediately in the course of tree-building. Merge of the complement of picture/claim cannot be delayed until after wh-movement

[This material will not be on the final exam!]

14. Overt Merge follows Covert Move

There is a phenomenon called "Adjunct Extraposition" which you can see in (58). The thing to pay attention to is the fact that the adjuncts near John's side of the table and that John bought are not next to the N' that they modify. That's the point of the adverbs yesterday and a lot, which are presumably modifiers of V:

(58) Adjunct Extraposition
   a. We liked the pictures yesterday near John's side of the table.
   b. Mary liked the book a lot that John bought.

You might think that this is just rightward movement of an adjunct, but here's an alternative:

Alternative Analysis:
   Covertly move the object up and to the right, then overtly merge the adjunct to it! The adjunct, but not the N' it modifies, will be pronounced on the right of the VP:

Why think the alternative is correct? Because the N' plus its adjunct obligatorily seem to require semantically wide scope:

(59) a. Mary wants to visit a city near Paris.
   [ambig: a particular city [wide scope] or any one will do [narrow scope]
   b. Mary wanted to visit a city yesterday near Paris.
   [unambiguous: a particular city]
(60) a. Mary needs a book that describes Canada.
   [ambig: any book will do (narrow scope), or a particular book (wide scope)]

   b. Mary needed a book today that describes Canada.
   [unambiguous: a particular book]

There's much more to say, and many more arguments to be made, but we're done for now.

The point is: if this story is right, then covert move can be followed by overt merge. That supports the "single output model" in (53) over the "Y" model in (52). That's an interesting result, at least for people like me. I ended the course with this rather difficult (and sketchily presented) material, just to show you some cutting-edge work that ties together many loose ends from the last two weeks.

The end.