

## 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<sup>1</sup> 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 remain 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.<sup>2</sup>

Here are some examples:

<sup>1</sup> 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.

<sup>2</sup> 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) **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 \_\_?<sup>3</sup>

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.

<sup>3</sup> 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 *wh*-movement, as discussed below. In *wh*-movement, the probe is the uninterpretable *wh*-feature of C.

**In a nutshell:**

- Step 1:** If the head has an uninterpretable feature *uF*, it acts as a probe, looks down the tree for a goal. If probe is successful --> **agree**.  
**Step 2:** If *uF* is also +EPP --> **movement**.

Note: The "attract closest" property holds of *agree*.

**Example #1: I attracting the subject.**

Finite I in English bears uninterpretable person and number features *uPerson* and *uNumber*. These features, along with *uGender* (*uNoun-Class*) in languages that have this, are collectively known as  **$\phi$ -features** ("phi-features").

These  $\phi$ -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:

**(6) Subject-I agreement**

- The puppy *is* in the garden.
- The puppies *are* in the garden.
- I *am* in the garden.

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.

**Do we ever see Agree between I and DP without Move?**

The English expletive *there* construction provides us with an example:

**(7) Agree (Probe-Goal relation) without movement: the *there* construction**

- There ~~is~~ a puppy in the garden.
- There ~~are~~ puppies in the garden
- There ~~seems~~ to be a puppy in the garden.
- There ~~seem~~ to be puppies in the garden.

Here, EPP for I is satisfied by *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*).

[The DP with which I agrees in the *there* construction must typically be an "indefinite DP" semantically, e.g. *There is a puppy in the garden* not *There is the puppy in the garden*, with *there* expletive.<sup>4</sup> The exact nature of the definiteness effect in *there* constructions is quite an interesting matter, which you might get a chance to study in the Semantics class — 24.903. There has been much research on the question.]

**Example #2: Interrogative C attracting a *wh*-phrase.**

- In *wh*-constructions, an interrogative C has an uninterpretable *uWh* feature (what we early called "+*wh*") that acts as a probe for another element (its goal) that bears interpretable *wh*. If it finds such an element, C agrees with it.
- If *uWh* on interrogative C also has the EPP property -- which it does in English -- some constituent that contains the *wh* goal undergoes movement to Spec,CP. That's *wh*-movement!

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

**(8) Wh-C agreement in Kinande (Bantu, NE Congo)**

- IyondI yO kambale alangIra.  
who (cl.1) that (cl.1) Kambale saw
- aBahI Bo kambale alangIra.  
who (cl.2) that (cl.2) Kambale saw
- EkIhI kyO kambale alangIra.  
what (cl.7) that (cl.7) Kambale saw  
(Schneider-Zioga 1987; quoted in Rizzi 1990)

<sup>4</sup> 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: <sup>5</sup>

- 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.<sup>6</sup>

#### 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).

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#### 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.

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<sup>5</sup> 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)].

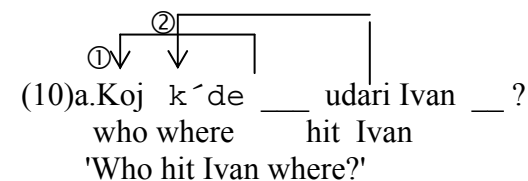
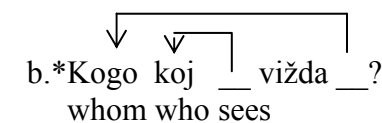
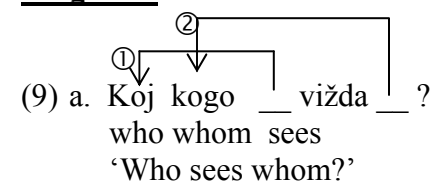
<sup>6</sup> An some linguists investigating what is called "bare phrase structure" theory try to do without this. But that's a story for another occasion.

### 4. Multiple Specifiers

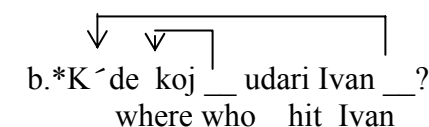
Sometimes, an uninterpretable feature keeps probing for new goals, even after Agree has already taken place with the closest goal. If the feature is also EPP, we find multiple movement, forming multiple specifiers. This is what we find in multiple questions in Slavic and other East European languages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



[NB: *Ivan* is the subject. The verb is in *C*]



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. 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, ø, 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)  $[\text{CP } \downarrow \text{What do you think } [\text{CP } \_ \text{ (that) he'll say } [\text{CP } \_ \text{ (that) we should buy } \_ ] ] ]$

**Answer: yes !** This is called the "**successive cyclic**" property of *wh*-movement.<sup>7</sup>

### 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**

- What all did you give  $\_$  to the kids?
- What did you give  $\_$  all to the kids?

- (15)
  - Who all did you send  $\_$  to the shops?
  - Who did you send  $\_$  all to the shops?

- (16)
  - Tell me what all you got  $\_$  for Christmas.
  - 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.

<sup>7</sup> 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.

- (17) **W. Ulster *all* stranding in specifier of declarative CP with complementizer *that***
- What all did he say  $[\text{CP } \_ \text{ that } [\text{IP } \text{he wanted } \_ ]]$ ?
  - What did he say  $[\text{CP } \_ \text{ that } [\text{IP } \text{he wanted } \_ \text{ all}]]$ ?
  - What did he say  $[\text{CP } \text{all } \_ \text{ that } [\text{IP } \text{he wanted } \_ ]]$ ?

(18) **W. Ulster *all* stranding in specifier of declarative CP with complementizer  $\emptyset$**

- What all did he say  $[\text{CP } \_ \emptyset [\text{IP } \text{he wanted } \_ ]]$ ?
- What did he say  $[\text{CP } \_ \emptyset [\text{IP } \text{he wanted } \_ \text{ all}]]$ ?
- What did he say  $[\text{CP } \text{all } \_ \emptyset [\text{IP } \text{he wanted } \_ ]]$ ?

(19) **W. Ulster *all* stranding in specifier of declarative infinitive with complementizer  $\emptyset$**

- What were you trying  $[\text{CP } \_ \text{ all } \emptyset [\text{IP } \_ \text{ to say } \_ ]]$ ?
- What did you mean  $[\text{CP } \_ \text{ all for } [\text{IP } \text{me to do } \_ ]]$ ?

(20) **W. Ulster *all* stranding in specifier of declarative infinitive with complementizer *for***

- Who did you arrange all for your mother to meet at the party?
- \*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!**

- What all do you think  $[\text{CP } \text{that he'll say } [\text{CP } \text{that we should buy } \_ ]]$ ?
- What do you think  $[\text{CP } \_ \text{ all that he'll say } [\text{CP } \text{that we should buy } \_ ]]$ ?
- What do you think  $[\text{CP } \text{that he'll say } [\text{CP } \_ \text{ all that we should buy } \_ ]]$ ?
- What do you think  $[\text{CP } \text{that he'll say that we should buy } \_ \text{ all}]$ ?

### Binding evidence

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

(22) **Binding evidence for successive cyclicity**

- Principle A applies in highest Spec,CP**  
 $[\text{I Tom asked } [\text{I } [\text{which picture of himself}]] \text{ Mary thought } [\text{I } [\text{that the kids liked } \_ ]]]]$
- Principle A applies in intermediate Spec,CP**  
 $[\text{I Tom asked } [\text{I } [\text{which picture of herself}]] \text{ Mary thought } [\text{I } [\text{that the kids liked } \_ ]]]]$
- Principle A applies in the lowest position**  
 $[\text{I Tom asked } [\text{I } [\text{which picture of themselves}]] \text{ Mary thought } [\text{I } [\text{that the kids liked } \_ ]]]]$

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:

(23) **The non-c-command condition:**

- a. \*<sub>[1]</sub>Tom's sister asked [<sub>2</sub> [which picture of himself] Mary thought [<sub>3</sub> that the kids liked \_\_\_]]
- b. \*<sub>[1]</sub>Tom asked [<sub>2</sub> [which picture of herself] Mary's brother thought [<sub>3</sub> that the kids liked \_\_\_]]
- c. \*<sub>[1]</sub>Tom asked [<sub>2</sub> [which picture of themselves ] Mary thought [<sub>3</sub> 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**)

\*What did Mary ask [<sub>CP2</sub> who said [<sub>CP1</sub> \_\_\_ that Bill had bought \_\_\_]]?

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*.<sup>8</sup> 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' (and D'):

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

<sup>8</sup> Notice that *who* must move first to Spec,CP2 by Attract Closest. One might wonder whether examples like (24) are also ruled out by Attract Closest, since after *who* has moved to Spec,CP2, it is closer to the highest C than *what* is. This is a reasonable question -- one that might undermine the arguments for the necessity of an independent Subjacency Condition. But there is more to it than this, a topic I won't develop here.

(25) **The "Complex NP Constraint"**

- a. **CP complement to N is an island**  
 \*Who did Mary resent [<sub>DP</sub> our claim [<sub>CP</sub> that Bill had invited \_\_\_]]?
- b. **A relative clause (CP modifier of N') is an island**  
 \*What did Mary want to meet [<sub>DP</sub> the man [<sub>CP</sub> 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 [<sub>DP</sub> our claim [<sub>CP</sub> \_\_\_ 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 [<sub>IP</sub> Mary ask [<sub>CP</sub> who [<sub>IP</sub> \_\_\_ 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.<sup>9</sup>

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:

<sup>9</sup> 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.

- (41) **"Across the Board" (ATB) exceptions**  
 a. How many languages does Mary [speak \_\_\_ fluently] and [have a translator's certificate for \_\_\_]?  
 b. What kind of chocolates did John open [a jar of \_\_\_] and then [a box of \_\_\_]

## 10.A theory of movement (review)

We have presented the following idea:

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

It will be 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) [C uWh] Mary bought which book -->  
 [*which book*<sub>*i*</sub> [C uWh] Mary bought which book<sub>*i*</sub>]

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<sup>10</sup> 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?'

<sup>10</sup> 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-ga [DP [CP John-ga [ittai nani-o] yonda] koto-o]  
 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**<sup>11</sup>  
 \*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?  
 Mary-NOM John-DAT why book-ACC gave man-DAT met - Q  
 'What is the reason *x* such that Mary met [a man who gave John a book for reason *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 \_\_\_]?  
 (on the readings indicated by the bracketing)

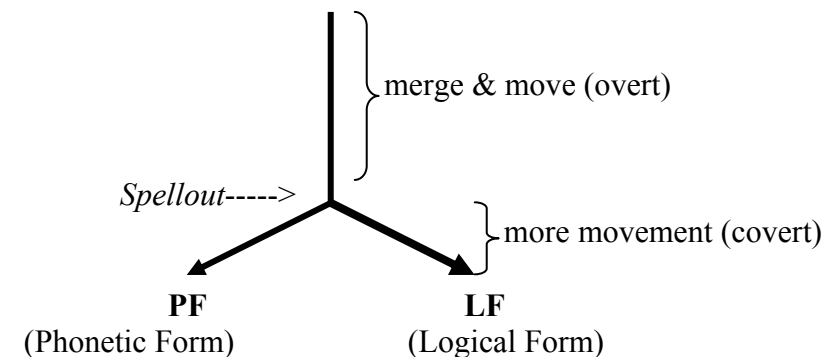
**The point:** Japanese *wh*-phrases (ignoring the mystery mentioned above) act just as if they had moved to Spec,CP — obeying island conditions! The only difference is that the movement is **covert**. It doesn't change the phonology. We don't *hear* the effects of movement.

## 12. Tentative conclusion: the model

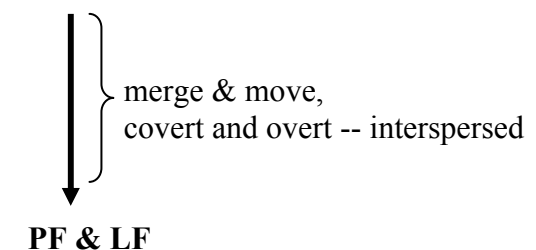
In Japanese, when a verb selects a +Q complementizer, the requirement of *wh*-movement to specifier of CP is met by "covert movement" in the embedded clause.

### 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.



- (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.



Which is right? Stay tuned...

<sup>11</sup> As you can see, relative clauses precede their N' in Japanese.



### 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 [<sub>complement</sub> of John<sub>i</sub>]] does he<sub>j</sub> think we like \_\_ best?
- b. \*[Whose claim [<sub>complement</sub> that John<sub>i</sub> is a fool]] did he<sub>j</sub> 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<sub>j</sub> think we like [which picture of John<sub>i</sub>] best?
- b. \*... he<sub>j</sub> resent [whose claim [<sub>complement</sub> that John<sub>i</sub> 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 of N, the Principle C effect disappears (for many speakers):

(56) **Disappearance of BT(C) effects in adjuncts inside *wh*-phrases**

- a. [Which picture [<sub>modifier</sub> near John<sub>i</sub>]] does he<sub>j</sub> think we like \_\_ best?
- b. [Which claim [<sub>rel. clause</sub> that John<sub>i</sub> overheard \_\_ ]] did he<sub>j</sub> resent \_\_ most?  
[Which book [<sub>rel. clause</sub> that John<sub>i</sub> bought \_\_ ]] did he<sub>j</sub> 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<sub>j</sub> think we like [which picture] best?
- b. ....he<sub>j</sub> resent most [which claim] most?  
....he<sub>j</sub> 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

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[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.