Wh-movement basics

- A **wh-question** is a sentence that crucially contains somewhere in it a **wh-word**. Words that are informally identifiable as *wh*-words are found across the languages of the world — but the semantics of these elements is a complex and controversial topic.

- In English, we can recognize a *wh*-word by the fact that it helps trigger *wh*-movement (yes I know that's circular) and, in general, by the presence of the *wh*-morpheme.

- The term **wh-phrase** is generally used even when discussing languages in which the relevant morpheme has an entirely different shape.
Wh-movement basics

• Informally, when speakers ask a *wh*-question like *What did Bill read?* they presuppose that Bill read something, and a felicitous response to the question states the identity of the thing read. The element whose identity the speaker is trying to learn is given by the *wh*-word.
Wh-movement basics

Three warning signs of interrogative *wh*-movement

- There is a gap filled by a phrase containing an interrogative *wh-word*.
  
  (1) a. [What] did Sue put ___ on the table?
      b. [Whose dinner] did the monster devour ___ today?

- The gap position can count for rules of anaphora such as the c-command condition on reflexives.

  (2) [How much criticism of herself] can Mary tolerate ___ ?

- The gap can (appear to) be separated from its filler by multiple clause and NP boundaries.

  (3) [Who] did Mary say [that Sue would believe
      [that we had bought [a picture of ___ ]]?
Wh-movement basics

Where does the *wh*-phrase move to?

• This question is related to another question. In main clauses, in Standard English, main-clause *wh*-movement regularly co-occurs with movement of the highest auxiliary verb to C.

• The *wh*-phrase moves to a left-peripheral position to the left of C. Only one phrase can move in this manner. **Even when a question contains more than one *wh*-phrase, only one moves:**

  a. [**What**] did Mary put __ on [**which table**]?

  b. *[What] [which table] did Mary put __ on __?

Sounds like movement to the specifier of CP!
Wh-movement basics

Which pizza will the lion devour?
Wh-movement basics

Why does an interrogative C need a \textit{wh}-phrase in its specifier?

- A feature of C (call it C's +wh feature) requires interrogative C to take a \textit{wh}-specifier.

We may think of this as an EPP-type property of interrogative C.
Wh-movement basics

**Why must T move to C in matrix questions?**

- The C of main-clause questions has another property (call it a [+T] feature) which requires T to move to it as well.

- C of embedded questions does not have this feature in standard English, but does in many dialects, and is common in conversational "standard" English as well.

  % Mary wanted to know [what did Bill say about her]?

- Indian English: matrix interrogative C lacks the [+T] feature.

  **Indian English main-clause questions**
  a. What this is made from?
  b. Who you have come to see?

Feature-driven movement

Why does wh-movement obligatorily take place in the complements of certain verbs like wonder?

- Wonder does not allow a declarative that-clause as its complement — except, perhaps, with the meaning "marvel at", in (quasi-)archaic style:

  (1) *Bill wondered [that Mary had eaten fish for dinner].

- Just as wonder requires wh-movement in its CP complement, so a verb like believe forbids it:

  (2) *Bill believed [what Mary had eaten __ for dinner].

- and know allows both options:

  (3) a. Bill knew [that Mary had eaten fish for dinner].  
      b. Bill wondered [what Mary had eaten __ for dinner].
Feature-driven movement

This looks like subcategorization — for or against [+wh]

**Subcategorization properties of wonder, believe and know**

- **wonder**: [+ __ [C, +wh] ]
- **believe**: [+ __ [C, -wh] ]
- **know**: [+ __ [C, ±wh] ]

So wonder is not actually requiring wh-movement in its complement directly. Instead, the requirement arises indirectly:

1. A verb like wonder subcategorizes for an interrogative C with a +Wh feature.
2. C with this feature *attracts* a wh-phrase to it.

(Property 2 is a new sort of thing for us, but is a big deal in syntax.)
Double-filled Comp Filter

Why is C null with embedded *wh*-movement? Why can't it be pronounced?

**Doubly-Filled COMP Filter** [language-specific]
The phonologically null variant of C is obligatory unless the Specifier of CP is itself phonologically null.

Languages where things work differently...

a. Ik weet niet *wie of Jan gezien heeft.*
   I know not who if John seen has    [Dutch]

b. men shal wel knowe *who that* I am 
   [Middle English]

c. Je me demande quand *que* Pierre est parti.
   I wonder when that Pierre has left  [colloquial French]
Double-filled Comp Filter

**In longer versions of this class...**

- Although the Doubly Filled Comp Filter is not the most insightful thing we've seen this month in Intro Syntax, as an empirical observation, it plays a beautiful role in the analysis of the multiple forms that relative clauses can take in English:

  a. the person **who** $\emptyset_C$ I invited __ to the party...
  b. the person $\emptyset_{REL}$ **that** I invited __ to the party...
  c. the person $\emptyset_{rel}$ $\emptyset_C$ I invited __ to the party...
  d. *the person **who** **that** I invited __ to the party...
  e. the chair [in which] $\emptyset_C$ I was sitting __...
  f. *the chair [in which] **that** I was sitting __...
What's a *wh*-phrase

- Sometimes other material *must* accompany the *wh*-word. For example, in English the D *which* cannot move on its own. It must take the whole NP (N') with it:

  **English is strict: whole NP must accompany D**
  a. [NP Which book] did Mary buy __?
  b. *Which did Mary buy [NP __ book]?

- Cross-language variation

  **Russian is more permissive: whole NP need not accompany D**
  a. [NP Kakuju knigu] Marija kupila __?
     which book Mary bought
  b. [Kakuju] Marija kupila [NP ___ knigu]?
What's a *wh*-phrase

• Sometimes other material *must* accompany the *wh*-word.
  In some cases, English is the more permissive language. For example, English allows *stranding* of a preposition when its object undergoes *wh*-movement — but Russian does not:

  **English is permissive:**  P need not accompany its complement
  a.  [PP To [NP whom]] did Mary speak?
  b.  [NP Who] did Mary speak [PP to ___]?

  **Russian is strict:**  P must accompany its complement
  a.  [PP S [NP kem]] Marija razgovarivala ___?
      with whom Mary spoke
  b.  *[NP Kem] Marija razgovarivala [PP s [NP ___]] ?
What's a *wh*-phrase

- The phenomenon in which a phrase bigger than the *wh*-word undergoes *wh*-movement is called **pied-piping**, a fanciful term due to J.R. Ross's famous 1967 dissertation *Constraints on Variables in Syntax*. 
What's a *wh*-phrase
What's a *wh*-phrase
More evidence for feature-driven movement

What is a multiple question?

• A **multiple question** is a question that contains more than one *wh*-word. Typically, the answer to a multiple question 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.

**Question:** Who bought what?
**Answer:** Mary bought the book, John bought the magazine, Sue bought the computer, etc.

**Question:** Who did you persuade to read what?
**Answer:** I persuaded Mary to read War and Peace, I persuaded John to read Anna Karenina, and I persuaded Sue to read Crime and Punishment, etc.
More evidence for feature-driven movement

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.

The "Superiority Effect"
When TP contains two wh-phrases, and one c-commands the other, the one that undergoes wh-movement is the one closest to the interrogative C. The other wh-phrase remains in situ.

Superiority effect: subject vs. object
a. Who __ bought what?
b. *What did who buy __?

Superiority effect: higher object vs. lower object
a. Who did you persuade __ to read what?
b. *What did you persuade whom to read __?
More evidence for feature-driven movement

• The existence of the Superiority effect suggests that it is a feature on C that picks what \textit{wh} moves to it.

• We can view the feature acting as a \textbf{probe}, hunting down the tree and picking the first \textit{wh}-phrase it finds (the \textbf{goal}) as the one that will be its specifier via movement.

\textbf{Attract Closest}

When a head attracts a phrase with a particular property to its specifier, it picks the closest phrase with that property.
More evidence for feature-driven movement

If I had another class, I would have spent part of it using the notion of "probe" and "goal" to explain properties of subject movement in Passive, Raising and Unaccusative clauses as well.
Dinka long-distance wh-movement

a. Càn acâm kwín.
Can eats food
'Can [a proper name] is eating food.'

b. Bol ací wéŋ kwàl ròɔk.
Bol has cow stolen town
'Bol [another proper name] has stolen a cow in the town.'

c. Kwín acém Càn.
food eats Can
'Food, Can is eating.'

d. Wéŋ acíi Bôl kwàl.
cow has Bol stolen
'A cow, Bol has stolen.'

c. Rók acíi Bôl wéŋ kwàl.
town has Bol a cow stolen
'In the town, Bol has stolen a cow.'
Dinka long-distance *wh*-movement

Some ungrammatical examples

a. *Câm Cán kw'ín.
   eats Can food
   'Can is eating food.'

b. *Cíi Bôl wéŋ kwàl ròɔk.
   has Bol cow stolen town
   'Bol has stolen a cow in the town.'
Dinka long-distance wh-movement

Embedded clauses

a. Bòl ací luéel, [Cǎn ací kitàp ɣòɔɔ].
   Bol has said Can has book bought
   'Bol has said that Can bought a book.'

b. Bòl ací luéel, [kitàp acíi Cǎn ɣòɔɔ].
   Bol has said book has Can bought
   'Bol has said that Can bought a book.'

c. *Bòl ací luéel, [acíi Cǎn kitàp ɣòɔɔ].
   Bol has said has Can book bought
   'Bol has said that Can bought a book.'

d. *any other order besides (a-b)
Dinka long-distance wh-movement

wh-questions: single-clause

a. Yeŋú câm Cǎ̤n?
   what eats Can
   'What is Can eating?'

b. Yeŋú cíi Cǎ̤n câm?
   what has Can eaten
   'What has Can eaten?'
Dinka long-distance *wh*-movement

*wh*-questions: multi-clause

a. Yeŋà cíi Bôl luéel, [cíi kitàp ɣɔ̀ɔc]?
   who has Bol said has book bought
   'Who did Bol say [ ___ bought a book]?'

b. *Yeŋà cíi Bôl luéel, [kitàp acíi ɣɔ̀ɔc]?
   who has Bol said book has bought
   'Who did Bol say [ ___ bought a book]?'

c. Yétenô cíi Bôl luéel, [cíi ɣɔ̀ɔk kitàp ɣɔ̀ɔc]?
   Where has Bol say have we book bought
   'Where did Bol say [that we bought a book ___ ]?'

d. *Yétenô cíi Bôl luéel, [kitàp acíi ɣɔ̀ɔk ɣɔ̀ɔc]?
   Where has Bol say book have we bought
   'Where did Bol say [that we bought a book ___ ]?'
Long-distance *wh*-movement

Long-distance extraction in West Ulster English
*(you've seen this!)*

a. What all do you think [that he’ll say [that we should buy]]?  
b. What do you think [all that he’ll say [that we should buy]]?  
c. What do you think [that he’ll say [all that we should buy]]?  
d. What do you think [that he’ll say [that we should buy all]]?
Long-distance *wh*-movement

[What do you think [__ that he will claim [ __ that we should  read __]]]
Long-distance *wh*-movement
Long-distance $wh$-movement
Conclusion:

- While only interrogative C contains a semantically relevant wh-feature that attracts wh to its specifier (and is subcategorized for by verbs like wonder)...

- declarative C also contains a wh-feature that may attract wh, but this feature is semantically inert (and not subcategorized for by verbs like wonder)...

Long-distance wh-movement
Long-distance *wh*-movement

**Question:**

- Is long-distance *wh*-movement required to stop off at every specifier of CP along its path to its ultimate interrogative destination?

- If the answer is yes, then plugging up one of the intervening specifiers with an alien *wh*-phrase should make the structure unacceptable.
Islands

The "wh-island constraint":

no extraction from an embedded question

*What did Mary ask [CP2 who [__ said [CP1 __ that Bill had bought __]]]?
Islands

The Complex NP Constraint:
no extraction from a relative clause

*What did Mary meet a friend [CP2 who said [CP1 ___ that Bill had bought ___]]?
Islands

**Hypothesis:**

Movement may not cross CP without stopping at its edge.

(Edge of XP = specifier of XP)
Islands

Hypothesis:

Movement may not cross CP or NP without stopping at its edge.

(Edge of XP = specifier of XP)
Islands

The Complex NP Constraint — part 2:
no extraction from a complement to N

*Who did Mary resent [NP our claim [CP ___ that Bill had invited ___]]?
Islands

Domains from which movement is blocked are called *islands* — a term also coined by Ross (in his famous 1967 dissertation).
Islands

Other island phenomena

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

...from subjects
a. *Who are [pictures of ___] on sale at the Coop?
b. *Who would [for Mary to talk to ___] annoy Peter?

...from modifiers (adjuncts)
c. ??Who will Bill be unhappy [unless I invite ___]?
d. *To whom did Sue leave the room [because she had spoken ___]?
e. *What will Mary get mad [since I didn't finish ___]?
Islands

Coordinate Structure Constraint (CSC; Ross 1967)
1. A conjunct in a coordinate structure may not be moved out of that coordinate structure [strong effect].

2. Extraction out of a conjunct is forbidden [weak effect].

(1) CSC clause 1
a. *Which book did you read [*Harry Potter and __]?
b. *Which book did you read [__ and Harry Potter]?

(2) CSC clause 2
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 __]
Islands

Coordinate Structure Constraint (CSC; Ross 1967)
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(1) CSC clause 1
   a. *Which book did you read [Harry Potter and ___]?  
   b. *Which book did you read [___ and Harry Potter]?

(2) CSC clause 2
   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 ___]
Islands

Coordinate Structure Constraint (CSC; Ross 1967)
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2. Extraction out of a conjunct is forbidden [weak effect].

CSC clause 2
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 __]

The Across-the-Board exception:
c. How many languages does Mary [speak __ fluently] but [write __ badly]?
Islands

Why care?

Pure syntax:
The meaning of the starred examples is clear, and one might actually want to ask such things.

Where do these effects come from?

What is the general theory in which they are predicted and make sense?

The general study of island effects (for wh-constructions and others) is the study of locality conditions in syntax, which is a major enterprise.
Islands

(SLIDES WE PROBABLY WON'T GET TO)
Islands

Covert Movement

• At first sight, it looks as though Japanese (and Korean, and Mandarin Chinese, and...) has the interesting property of lacking *wh*-movement entirely:
Islands

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?'

**embedded questions**

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'


Islands

• But perhaps Japanese has \textit{wh}-movement after all — with the twist that it is the position before movement that gets pronounced, rather than the head of the chain (the position after movement).

• This might seem like believing in ghosts — that is, an untestable hypothesis — were it not for the fact that we now have a tool besides \textit{hearing} a displaced element for identifying movement: \textit{islands}!
Islands

• If the wh-phrase is modified by ittai (lit. "one body"), which has something of the flavor of "on earth" or "the hell" in what on earth or what the hell, it can be embedded in a simple that-clause, but not in a relative clause or in an adjunct:
Islands

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?'

Simple embedding:
Mary-ga [CPJohn-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?'
Islands

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 __]]'

a. Complex NP Constraint
*Mary-ga [NP [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]]?'
Islands

Adjuncts like *naze 'why' obey islands even without *ittai, but mysteriously, simple *who and *what more or less do not.

**Complex NP Constraint (Subjacency) with *naze 'why'**

*Mary-ga [NP [CP John-ni *naze hon-o ageta] hito-ni] atta-no?


'What is the reason x such that Mary met [a man who gave John a book for reason x]'
Islands
Islands

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.