Syntax,
with a high probability of Semantics flurries by the end of the class
The timing of movement interactions: CED effects

Who did you buy [a book about __]?  
Who did [friends of ___] buy a book?
The timing of movement interactions: CED effects

Who did you buy [a book about ___]?
* Who did [friends of ___] buy a book?

CED (Condition on Extraction Domains):
You can't move out of something in Spec IP.
Who was [a book about __] bought?
* Who was [a book about __] bought?
a result of two operations:

was bought [a book about who]

**NP-movement:**

[a book about who] was bought __
a result of two operations:
was bought [a book about who]

**NP-movement:**
[a book about who] was bought __

**wh-movement:**
Who was [a book about __] bought __ ?

--> *CED: no extraction from Spec IP
But why not do the operations in the opposite order?

was bought [a book about who]

wh-movement:
who was bought [a book about ___]
But why not do the operations in the opposite order?

was bought [a book about who]

**wh-movement:**
who was bought [a book about __]

**NP-movement:**
Who was [a book about ___] bought ___?
But why not do the operations in the opposite order?

was bought [a book about who]

**wh-movement:**

who was bought [a book about __]?

**NP-movement:**

Who was [a book about ___] bought ___?

Here CED wasn't violated--should be okay?
**Cyclicity**: a condition on the order in which operations may occur.

For an operation $\alpha$, let the **cyclic node** for $\alpha$ be the lowest node dominating all the positions affected by $\alpha$. 
what did you buy?
what did you buy?
NP C' cyclic node for head-movement

C cyclic node for wh-movement

NP what

C did

IP

I' you

NP

VP

V buy?

CP
Cyclicity:

If the cyclic node of an operation $\alpha$ is dominated by the cyclic node of another operation $\beta$, $\alpha$ must take place before $\beta$. 
was bought a book about who
I was bought a book about who

NP-movement
I was bought a book about who.
wh-movement: violates CED
Doing the operations in the opposite order would satisfy CED:

was bought [a book about who]

wh-movement:

who was bought [a book about who]

NP-movement:

Who was [a book about __] bought __ ?

but Cyclicity is violated:
Cyclicity guarantees that NP-movement must precede wh-movement.
Semantics
meaning relations involving words:

• synonymy (purchase, buy)

• antonymy (male, female)
getting a little fancier with word meaning:

**intension**: the function for determining the reference of a word/phrase

**extension**: the value of that function
getting a little fancier with word meaning:

**President of the US**

**intension:** winner of the election

**extension:** George Bush
getting a little fancier with word meaning:

the current temperature

intension: what the thermometer says

extension: 45 degrees (or whatever)
using intensions and extensions:

A is B  Norvin is a syntactician
A is C  Norvin is in the room
-->B is C  A syntactician is in the room
using intensions and extensions:

A is B  The temperature is rising
A is C  The temperature is 45º
-->B is C  45º is rising
(??!!)
using intensions and extensions:

\[ \text{intension} \]

A is B

A is C

\[ \text{extension} \]

The temperature is rising

The temperature is 45º

45º is rising

--> B is C
using intensions and extensions:

Mom, Dad, I want to marry a Norwegian.
using intensions and extensions:

Mom, Dad, I want to marry a Norwegian.

...her name's Ingrid, and she's from Oslo.
using intensions and extensions:

Mom, Dad, I want to marry a Norwegian.

...her name's Ingrid, and she's from Oslo.
...I hear they make great wives.
meaning relations involving sentences:

- entailment

John killed the ant.
The ant is dead.

A entails B if whenever A is true, B is true.
meaning relations involving sentences:

- entailment

John killed the ant.
The ant is dead.

Norvin is Don's nephew.
Don is Norvin's uncle.
meaning relations involving sentences:

• entailment

John killed the ant.
The ant is dead.

Norvin is Don's nephew.
Don is Norvin's uncle.

If John is here, then Mary is here, and John is here.
Mary is here.
meaning relations involving sentences:

- entailment

careful! entailment relations aren't about whether the sentences actually are true:

President Vest is a bachelor
President Vest is unmarried
meaning relations involving sentences:

- equivalence

A and B are in an *equivalence* relation if they entail each other.

Mary ate the bagel. The bagel was eaten by Mary.
meaning relations involving sentences:

- contradiction

A and B **contradict** each other if each entails that the other is false.

Noam is here.
Noam is not here.
meaning relations involving sentences:

- presupposition

The present king of France is bald.
meaning relations involving sentences:

- presupposition

The present king of France is bald.
There is a present king of France.
meaning relations involving sentences:

- presupposition

crucially different from entailment, in that A's presuppositions remain if we negate A, wonder about A, etc...

The present king of France is bald.
The present king of France is not bald.
Is the present king of France bald?
-->There is a present king of France.
meaning relations involving sentences:

• presupposition vs. entailment:

The present king of France is bald.

entails: he has no hair.
meaning relations involving sentences:

- presupposition vs. entailment:

The present king of France is bald.

entails: he has no hair.

The present king of France is not bald.
Is the present king of France bald?
-->lack this entailment.
more fun with presuppositions:

Have you stopped beating your wife?
more fun with presuppositions:

Have you stopped beating your wife?

I regret having been born in 1857.
more fun with presuppositions:

Have you stopped beating your wife?

I regret having been born in 1857.

(okay, fine. I don't regret having been born in 1857, then.)
meaning relations involving sentences:

- **implicature**: something you would generally infer from hearing a sentence, though it may not be true.
meaning relations involving sentences:

- implicature

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<td>Speaker wants you to open the window.</td>
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meaning relations involving sentences:

- implicature

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<td>&quot;Somebody's T-I-R-E-D&quot;</td>
<td>Speaker doesn't want child to understand.</td>
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meaning relations involving sentences:

- implicatures can be cancelled.

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<td>&quot;Can you open the window?&quot;</td>
<td>&quot;...I'm studying physical fitness in MIT students&quot;</td>
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<td>&quot;Where's the salt?&quot;</td>
<td>&quot;...I'm making a map of the kitchen&quot;</td>
</tr>
<tr>
<td>&quot;I'm 21&quot;</td>
<td>&quot;...in fact, I'm 31.&quot;</td>
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Utterance  "Somebody's T-I-R-E-D"

Implicature cancelled  "I'm pledging a fraternity, and for my hazing I have to spell the last word of each S-E-N-T-E-N-C-E"
...presuppositions, on the other hand, can't be cancelled:

The king of France is bald...
...oh, and, by the way, there is no king of France.
summarizing:

a sentence A's...

• **entailments**: have to be true if A is true.
summarizing:
a sentence A's...

• **entailments**: have to be true if A is true.
• **presuppositions**: have to be true if A is true, or if A is false, or...
summarizing: a sentence A's...

- **entailments**: have to be true if A is true.
- **presuppositions**: have to be true if A is true, or if A is false, or...
- **implicatures**: are probably true if A is true, but might be false, and can be cancelled.
or, to put it another way:

is P an entailment, a presupposition, or an implicature of A?
or, to put it another way:

is P an entailment, a presupposition, or an implicature of A?

- Does P have to be true if A is true or false (or questioned, etc...)?
  --> **Presupposition**
or, to put it another way:

is P an entailment, a presupposition, or an implicature of A?

- Does P have to be true if A is true or false (or questioned, etc...)?
  --> **Presupposition**
- Does P have to be true if A is true?
  --> **Entailment** (if it's not a presupposition)
or, to put it another way:

is P an entailment, a presupposition, or an implicature of A?

• Does P have to be true if A is true or false (or questioned, etc...)?
  -->{Presupposition}
• Does P have to be true if A is true?
  -->{Entailment} (if it's not a presupposition)
• Does P have to be true? if not:
  -->{Implicature}
Practice:

Bill isn't aware that Susan is pregnant.
Practice:

Bill isn't aware that Susan is pregnant.

Susan is pregnant.
You should tell Bill.
Practice:

Bill isn't aware that Susan is pregnant.

Susan is pregnant.  --> presupposition
You should tell Bill.  --> implicature
Practice:

My wife isn't here.
Practice:

My wife isn't here.

I want you to give me a ride home.

I have a wife.

My wife is someplace else.
Practice:

My wife isn't here.

I want you to give me a ride home. -->implicature

I have a wife. -->presupposition

My wife is someplace else. -->entailment
Practice:

If she wins a fellowship, Alice can finish writing her thesis.
Practice:

If she wins a fellowship,
   Alice can finish writing her thesis.

Alice is writing her thesis.
If she doesn't win a fellowship,
   Alice can't finish writing her thesis.
Practice:

If she wins a fellowship,
    Alice can finish writing her thesis.

Alice is writing her thesis. --> presupposition
If she doesn't win a fellowship,
    Alice can't finish writing her thesis.
    --> implicature