# INFERENCES

## LING106 KNOWLEDGE OF MEANING

DOROTHY AHN
**SECTION 2** [2/12/2016]

# WHAT DOES SEMANTICS DO FOR US?

**What does knowing meaning do for us?**

## INFERENCES!

- **ENTAILMENTS**
- **IMPLICATURES**
- **PRESUPPOSITIONS**

# ENTAILMENT

**A entails B if and only if in every situation that A is true, B is also true.**

- **For any situation s, if A is true, B must be true.**

- **To test A ⇒ B:**
  - If it is possible for A to be true and B to be false, then A does NOT entail B.

(1) John and Mary left.

(2) John left.

# ENTAILMENT

(9) This is a nice table.

(10) This has legs.

(11) Jeff is a dog

(12) Jeff barks.

- **Lexical definitions are world-specific.**
  - In our world a table (usually) has legs and dogs bark.
  - But what about $w_2$, $w_3$, etc.?

[from handout 2/8]

# ENTAILMENT

(13) John killed Mary yesterday.

(14) Mary was dead yesterday.

- **John! STOP! :(**
- [Luke] **Mary's being dead at all time yesterday**
  - [Ryan] Entailment test works because ¬(14) *says there is no point in yesterday when Mary was dead.*
  - BUT! Also weird to say that (13) entails that *there is no point in yesterday when Mary was alive.*
    - **to be dead** is a state
    - **to die** is an achievement

[from handout 2/8]

# ASSIGNMENT 1

#1

(1a) You **may** have two cookies.

(1b) You are not **obliged** to have two cookies.

#2

(2a) If you flunk **two** courses, you have to pay a fee.

(2b) If you flunk **exactly two** courses, you have to pay a fee.

(3a) Mary **or** Peter will be hired.

(3b) **Either** Mary **or** Peter, but not both, will be hired.

# ENTAILMENT

- Entailment-based relations:
- **SYNONYMY**: entails each other
  - (a) John is a year older than Mary.
  - (b) Mary is a year younger than John.
  - **They are true and false in the same worlds**

[from handout 2/8]

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  - Oracle bone inscription from the Shang Dynasty!

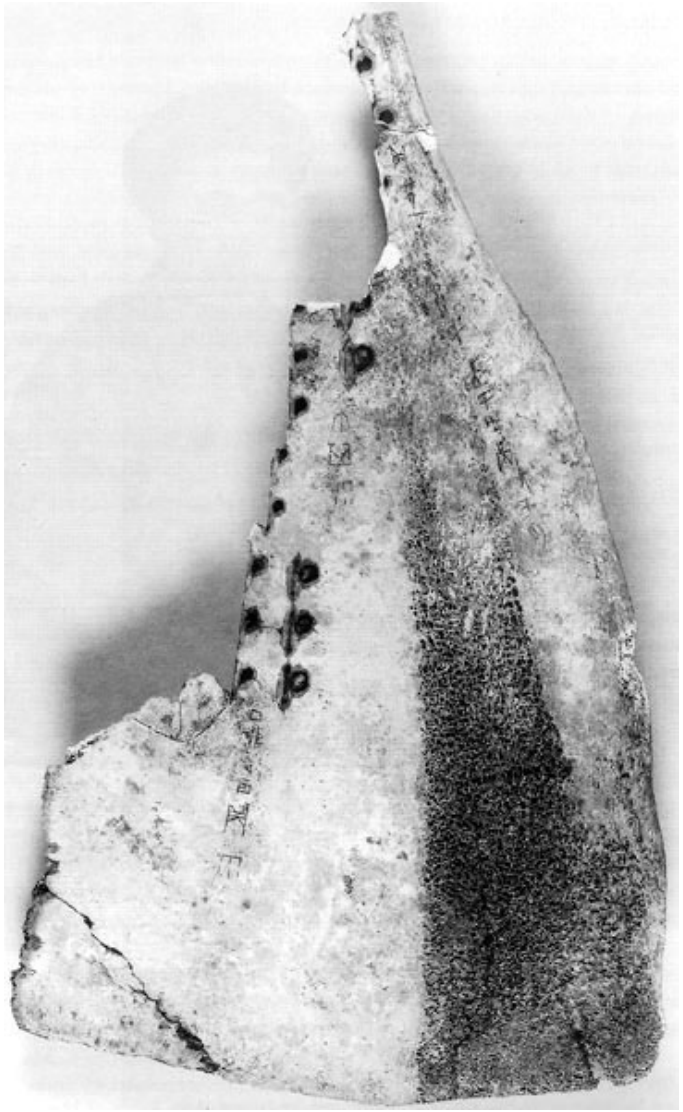
[from handout 2/8]

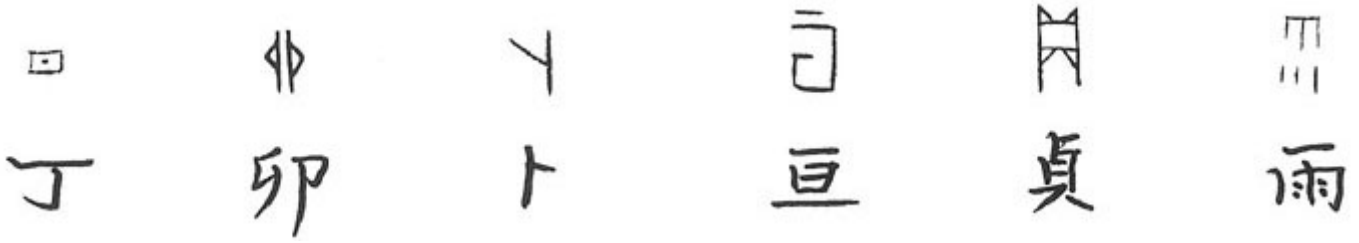
# SHANG ORACLE BONES (1200–1045 BCE)

**Oracle bone inscriptions: texts etched in tortoise plastrons or ox shoulder blades**

- Represented questions asked of the gods

**Bone heated in a fire, then cracks interpreted**





| 丁 | 卯 | 卜 | (宣) | 貞 | 雨 |
|---|---|---|---|---|---|
| **dīng** | **mǎo** | **bǔ** | **Xuān** | **zhēn** | **yǔ** |
| *(day names)* | | *crack* | *(name)* | *divine* | *rain* |

"(On) *ding mao*, cracks (were made), Xuan divined: (it will) rain."

| 不 | 其 | 雨 |
|---|---|---|
| **bù** | **qí** | **yǔ** |
| *not* | *perhaps* | *rain* |

"Perhaps (it will) not rain."

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  - (c) It will rain or it will not rain.
  - **$p \vee \neg p$ is always true!**

[from handout 2/8]

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- **CONTRADICTION**: always false $\bot$
  - (d) It will rain and it will not rain. ($p \wedge \neg p$)

[from handout 2/8]

# IMPLICATURE

- **“It will rain or it will not. Mary is Mary.”**
  - WHY would Speaker say this to me?
- **Grice 1967**: We follow some normative principles of language use when talking to each other.
  - We try to be *cooperative*
  - Gricean Maxims:
    - **Quality**: Say only what you believe to be true.
    - **Relevance**: Be relevant.
    - **Quantity**: Say as much as you can to be informative.

# IMPLICATURE

- (3) “You know, politics is politics.”
  - [Paul] Sometimes you use tautologies when you don’t know what to say.
    - Yes! **Ignorance implicature**
    - (3) implies [S doesn’t know what to say]
  - (4) It will rain or it will not rain.
    - (4) implies [S doesn’t know whether it will rain]

# IMPLICATURE

- **To test A implicates B:**
  - You can cancel B.
  - You can reinforce B without being redundant.

(5) Some students passed the test.

(6) It is not the case that all students passed.

- Some students passed the test. In fact, all students passed the test. ✓ **YES**
- Some students passed the test, and it is not the case that all students passed. ✓ **YES**

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# PRESUPPOSITION

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**A presupposes B iff**

- **B must be true for A to be asserted or denied felicitously.**
- **B must be true for A to have a truth value (to be true OR false).**
- **B is taken for granted when asserting A.**

# PRESUPPOSITION

**(5) The King of the USA is in New York.**

- Presupposes: There is a King of the USA.

In our world ($w_0$), there is no King of the USA:

- Presupposition failure
- (5) is not true; (5) is not false.
- You cannot say (5) is false because what is false is the presupposition that there is a King of the USA.

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- Presupposes: There is a King of the USA.
  - [Luke] Depends on how flexible you are in interpreting the definite article *the*.
  - (6) **A** King of the USA is in New York

- [[5]] = (there is a K.USA). HE is in NY.
- [[6]] = There is a K.USA if you go to NY.

# PRESUPPOSITION

- Testing for presupposition: **Projection**
- If B is presupposed, B is background information.
  B has to hold for us to have **any kind of felicitous conversation about A**, which depends on B.
- **P-Family**:
  - Asserting A: John stopped smoking.
  - Negating A: John didn't stopped smoking.
  - Asking A: Did John stop smoking?
  - Conditionalizing A: If John stopped smoking, …

    → In all cases, B (John used to smoke) is preserved!

# PRESUPPOSITION

- [Sam & Athena] Is presupposed material also entailed?
  - Entailment test: Contradiction to have A and ~B.
  - Presupposition: Non-sense to have A and ~B.
    - [Jenny] What is the difference?

# PRESUPPOSITION

- [Sam & Athena] Is presupposed material also entailed?
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    - [Jenny] What is the difference?

| | $A \Rightarrow B$ | $A \rightarrow_p B$ |
|---|---|---|
| A & B | ✓ | ✓ |
| A & ~B | ✗ | ??? |
| ~A & ~B | ✓ | ??? |

**(7) Only John is bringing beer.**

- Presupposes: (7p) John is bringing beer.
- Entails: (7e) Others aren't.

Let's test for contradiction/non-sense!

- ¬[[7p]] ∧ [[7]]
- ¬[[7p]] ∧ ¬[[7]]
- [[7]] ∧ ¬[[7e]]
- ¬[[7]] ∧ ¬[[7e]]

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- ¬[[7p]] ∧ ¬[[7]] ???
- [[7]] ∧ ¬[[7e]] F
- ¬[[7]] ∧ ¬[[7e]] T

# PRESUPPOSITION

**Presupposition Triggers**

- Factives
  - John **discovered** that A.
  - It is **crazy/amazing** that A.
- Operators
  - John met **the/his** King.
  - John jumped **too/again**.
- Aspectuals
  - John **stopped/continues** smoking.
- Lexical meanings
  - John **scared** Mary.

# Presuppositions are Fast, whether Hard or Soft - Evidence from the Visual World

SALT 24

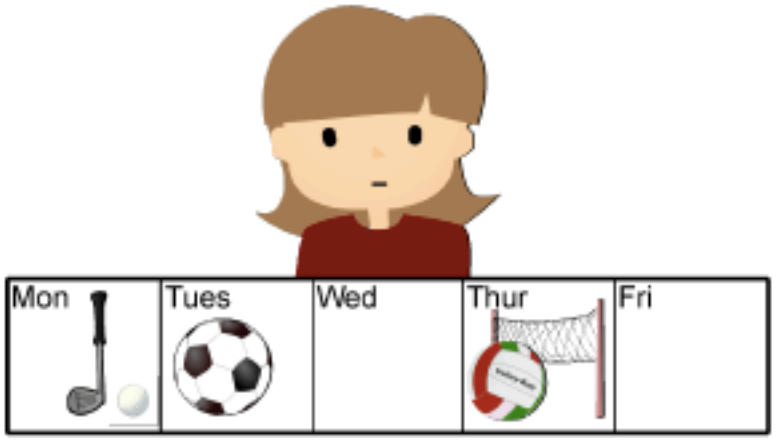
NYU

May 31st, 2014

**Florian Schwarz**

Penn
University of Pennsylvania




[Schwarz 2014]

# NOT SO SIMPLE!

- **(5) Is Mary about to give birth?**
  - [Kayla] (5) can be used to ask if Mary is pregnant.
  - Kayla asks (5), and the hearer makes some inferences:
    - Asking (5) seems to suggest that Kayla assumes it is background knowledge that Mary is pregnant. But it is not, because I'm not good friends with Mary. Kayla knows that, so she probably doesn't assume that I know the answer. Then, it must be that she is implying that Mary has a big belly. I agree, and I will answer accordingly:

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  - H: **Yea, right?**