

Semantics

Ling 201

Spring 2024

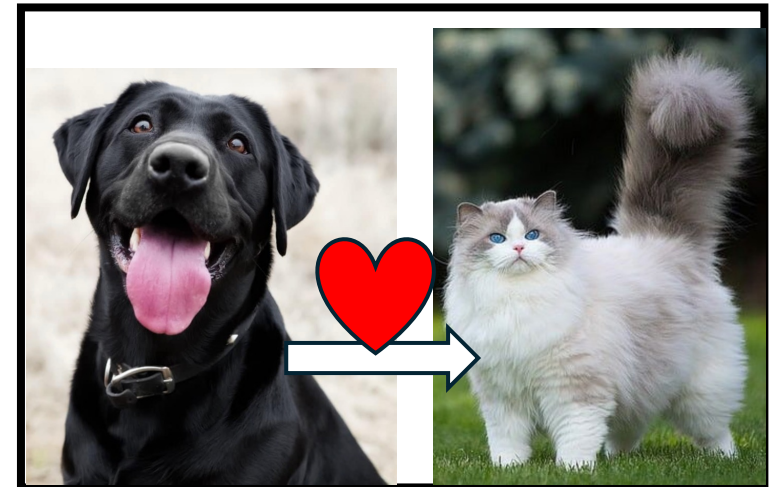
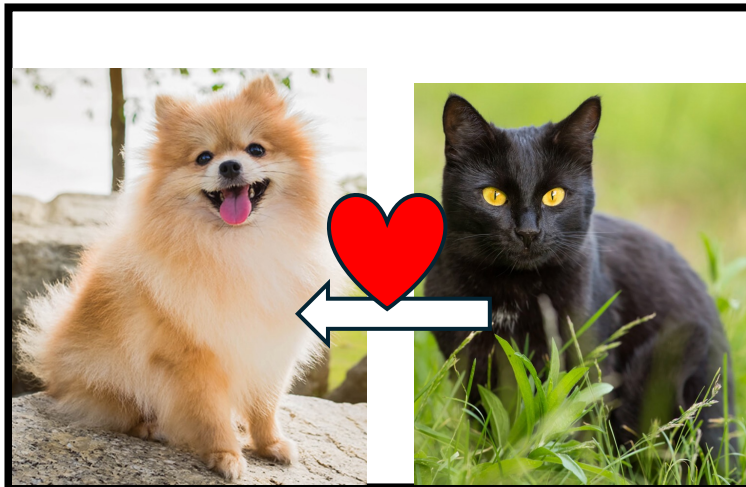
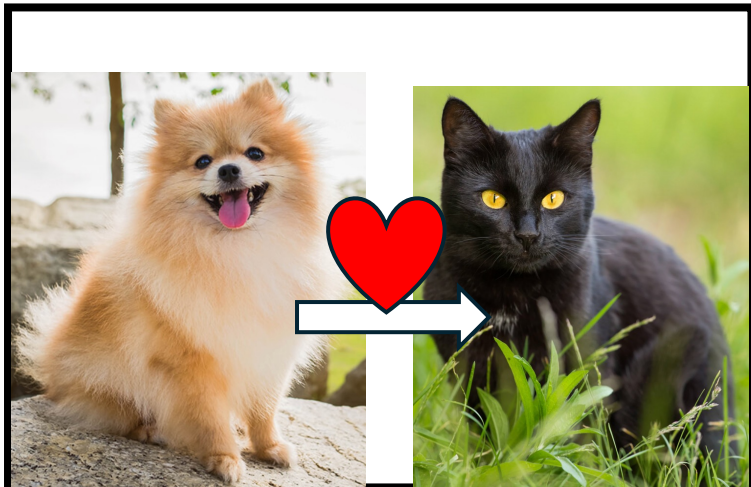
Prof. Pentangelo

Quiz #8

1. Write two sentences, (a) and (b), where (a) entails (b), and (b) does not entail (a).
2. What are the truth conditions of the sentence “Timmy ate 20 hotdogs today”?
3. In the context of linguistics, what is a proposition?

Meaning is compositional

- The meaning of a sentence doesn't follow only from the meanings of its words. It involves how those words combine syntactically, too.
- “The fluffy dog loves the black cat” has all the same words as “The black cat loves the fluffy dog” or “The black dog loves the fluffy cat,” but these are three different sentences that mean three different things.



Propositions have truth values

- “The fluffy dog loves the black cat.”
- “The black cat loves the fluffy dog.”
- “The black dog loves the fluffy cat.”

These are all propositions. They make a claim about the state of the world, and they may be true or false.

Even if you don't know if something is true or false, you know what it would require in order to be true or false.

“I am 100 feet tall.”

- Is this true?
- How do you know?

You know approximately how tall a hundred feet would be. You can see I'm not that tall.

“Joseph Pentangelo has two hands.”

- Is this true?
- How can you tell?

“Joseph Pentangelo ate scrambled eggs for breakfast.”

- Is this true?
- How can you tell?
- What would it take for this to be true?

“Dewey Defeats Truman”

- Was this true?
- How do you know?

Truth: Truman defeated Dewey in a close election. The newspaper was printed when it seemed likely that Dewey would win.



“This is a photo of a house.”

- Is this true?
- How can you tell?

For it to be a photo of a house, this house would have to have existed when the photo was taken.

Truth: The house does not exist. This image was generated by an AI platform and shared on Facebook as though it were real. Tells include the aberrant lights and bizarre dormers on the 2nd floor.



“This is a photo.”

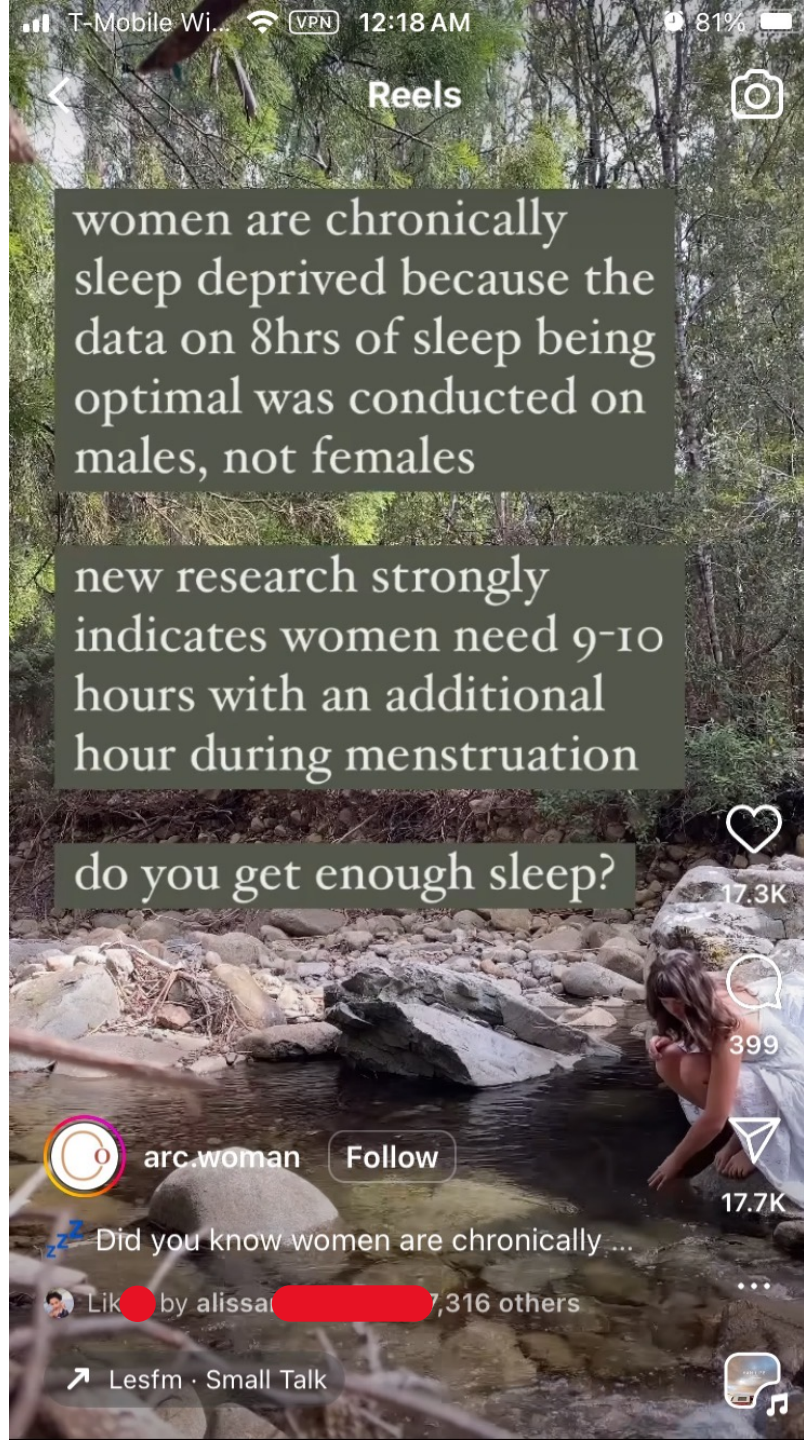
- Is this true?
- How can you tell?

Again, for this proposition to be true, the scene depicted would have to have actually happened.

Truth: This woman does not exist. This street does not exist. This is an image generated by the current, paid version of ChatGPT.



- Is this true?
- How can you tell?





women are chronically sleep deprived because the data on 8hrs of sleep being optimal was conducted on males, not females

new research strongly indicates women need 9-10 hours with an additional hour during menstruation

do you get enough sleep?

arc woman Follow

Did you know women are chronically ...

Liked by [redacted] and 19,361 others

Lesfm · Small Talk

19.3K

433

20.7K



Sam Bankman-Fried Sentenced to 6 Months in Prison

Mr. Bankman-Fried, who was convicted of stealing \$8 billion from customers of his FTX cryptocurrency exchange, faced a maximum sentence of 110 years.

📄 Share full article



💬 1.4K



- Is this true?
- How can you tell?

This is a fake headline. I edited the html on the page which is very, very easy to do. This is the real headline:

Sam Bankman-Fried Sentenced to 25 Years in Prison

Mr. Bankman-Fried, who was convicted of stealing \$8 billion from customers of his FTX cryptocurrency exchange, faced a maximum sentence of 110 years.



D snowmobilefail · Følg

3 d · 🌐

I made it from firewood by my self 🥰🥰❤️

#sledheadz

#snowmobiles

#snowmobiling

#sledding

#snowmobileislife



← This is a proposition: a statement which may be either true or false.

• Is this true?

← Each proposition has a truth value.

• How can you tell?

← In order to assess a proposition's truth value, you need to know its truth conditions.

Often, you know the truth conditions, but *not* the truth value.

Like with me having scrambled eggs for breakfast. (I didn't, by the way.)

This will become more and more prominent as more convincing AI spreads around the world.

For this to be true, the speaker would have to have made this snowmobile with firewood by themselves.

This is not true. This is not a photo, this is an image generated by an AI platform and shared on Facebook as though it were real.

👍❤️👀 8 804

534 kommentarer · 2 344 delinger

- Is this true?
- How can you tell?

These are important questions to ask yourself about everything you hear, read, or see.

This is what it means to think critically.

It doesn't mean that you shouldn't believe anything. It means that you should know what kind of evidence you need to believe something.

Objective truth is real. Either I did or I didn't eat scrambled eggs for breakfast.

How you assess truth can be hard or even impossible.

Group Task

In groups, write down three propositions:

- one true
- one false
- one indeterminate

Identify the truth conditions – what it would take for it to be true – for each proposition.

Example proposition:

“China is the most populous country in the world.”

Truth conditions:

- China would have to be a country.
- China would have to have a larger population than any other country in the world.

Truth value:

False. India recently eclipsed China as the world’s most populous country.

Group Task 2

Choose one person from each group to write your propositions on the board in a random order.

Do not label the propositions as true, false, or indeterminate on the board.

We'll work together as a class to identify which ones are which.

Proposition Relationships

Propositions can have logical relationships with other propositions.

- Entailment
- Mutual entailment
- Incompatibility

Entailment

- If one proposition is true, then another logically *must* be true.

a. All animals are cows.

b. All cows are animals.

Cows are a subset of animals. If something is a cow, then it must also be an animal.

However, there are other animals too. So just because something is an animal, that doesn't necessarily mean that it's a cow.

- One of these sentences entails the other. Which?


Entailment


- Entailment is a *logical* process. A sentence doesn't need to **actually** be true to entail another.
 - a. I have three arms.
 - b. I have three elbows.
- If you have an arm, you have an elbow. So, logically, if you had three arms, you would have to have three elbows as well.
- It doesn't matter that neither of these sentences is actually true!

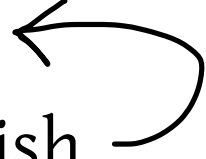
Mutual Entailment


- Same as entailment, but works both ways. This is sometimes known as a paraphrase.
 - a. Mary is a person.
 - b. Mary is a human.
- If A is true, B must also be true, **and** if B is true, then A is also true.


Entailment vs. Mutual Entailment


- a. I have visited Spain.
 - b. I have visited Europe.
- 

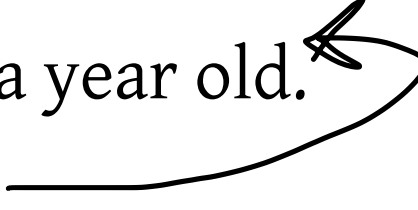
- a. I am alive.
 - b. I am not dead.
- 


- a. Jerry is a fish.
 - b. Jerry is a goldfish.
- 

- a. Jerry eats fish food.
 - b. Jerry eats.
- 

- a. I mow the lawn.
 - b. I mow the grass.
- 

- a. Mary knows how to read.
 - b. Mary is literate.
- 

- a. Jerry is over a year old.
 - b. Jerry is two.
- 

- a. I have never visited Europe.
 - b. I have never visited Spain.
- 

Incompatibility

- The opposite of entailment. If one sentence is true, the other one must be *false*.
 - a. I am alive.
 - b. I am dead.
 - a. It's a bird!
 - b. It's a plane!
 - a. I ate a burger for lunch today.
 - b. I didn't eat lunch today.
 - a. All squarbles are quarshes.
 - b. Some squarbles are not quarshes.

Midterm Review

For next time:

- *Language Files* pp. 154–170. There'll be a quiz at the start of next class.
- Blog Post #3, which is posted on the class site.