

# Generative AI and Language Understanding: Part 6

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# This is the era of Generative AI

## Microsoft to Invest \$10 Billion in OpenAI, the Creator of ChatGPT

The tech giant aims to remain at the forefront of generative artificial intelligence with its partnership with OpenAI.

<https://chat.openai.com/chat>

ChatGPT		
Examples	Capabilities	Limitations
"Explain quantum computing in simple terms" →	Remembers what user said earlier in the conversation	May occasionally generate incorrect information
"Got any creative ideas for a 10 year old's birthday?" →	Allows user to provide follow-up corrections	May occasionally produce harmful instructions or biased content
"How do I make an HTTP request in Javascript?" →	Trained to decline inappropriate requests	Limited knowledge of world and events after 2021

<https://bard.google.com>



Bard is still in its experimental phase. Chatting with it and rating its responses will help improve the experience.

### What's Bard all about?

We've long seen the potential to make information and computing much more accessible through conversational AI. Two years ago, we unveiled [LaMDA \(Language Model for Dialogue Applications\)](#), a conversational AI model capable of fluid, multi-turn dialogue, and last year, we launched

If you're interested in the more technical details, LaMDA is a Transformer-based model, the machine-learning breakthrough [invented by Google in 2017](#). The language model learns by "reading" trillions of words that help it pick up on patterns that make up human language so it's good at predicting what might be reasonable responses.

# Semantic Opposition

- **Semantic Opposition** (Pustejovsky, 2000):
  - John mended the *torn* dress
  - John mended the *red* dress
- Consider the condition of the dress.
  - *Is it still red?*
  - *Is it still torn?*
  - Where does that knowledge come from?

# Semantic Opposition

SA

John mended the torn dress. Is the dress torn?



Based on the given sentence "John mended the torn dress," it can be inferred that the dress was torn at some point in time, but it has been mended by John. Therefore, as of now, the dress is not torn anymore.



SA

John mended the red dress. Is the dress red?



Yes, the dress is red. The sentence "John mended the red dress" implies that the dress in question is red.



# Synset

- According to Princeton WordNet, *mend* is in the same synonym set (synset) as *repair* and some other verbs.

The verb mend has 2 senses (first 2 from tagged texts)

1. (5) repair#1, **mend**#1, fix#1, bushel#1, doctor#3, furbish up#1, restore#4, touch on#3 -- (restore by replacing a part or putting together what is torn or broken; "She repaired her TV set"; "Repair my shoes please")
2. (1) **mend**#2, heal#1 -- (heal or recover; "My broken leg is mending")

# Semantic Opposition

SA John fixed the torn dress. Is the dress torn?

It can be inferred that the dress was torn before John fixed it.

Presupposition only

SA John repaired the torn dress. Is the dress torn?

The given sentence, "John repaired the torn dress," implies that the dress was torn before John repaired it. Therefore, the dress was torn, but it is not torn anymore after John repaired it.

# Semantic Opposition

- Synset: {*repair, fix, restore, mend, ...* }

John restored the torn dress. Is the dress torn?


It is implied that the dress was torn before John restored it. So, yes, the dress was torn before John restored it.

Presupposition only

# Semantic Opposition

- Other accomplishment verbs:
  - The waiter filled the *empty* glass
  - Mary fixed the *flat* tire

SA The waiter filled the empty glass. Is the glass empty?

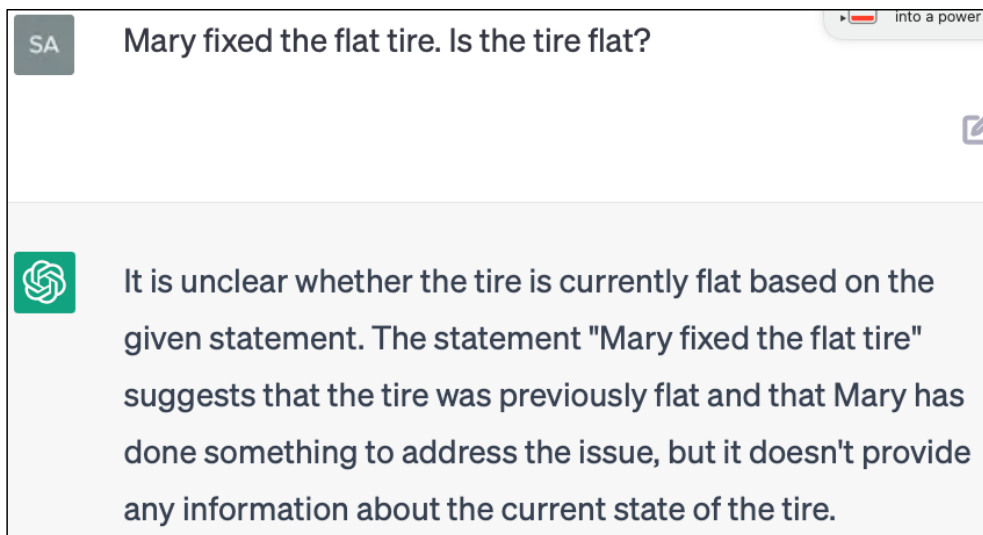
 Based solely on the information given in the sentence, it can be inferred that the glass was empty before the waiter filled it.

Presupposition  
only



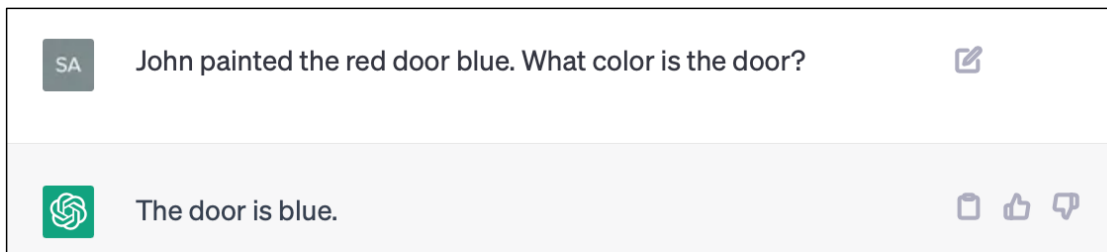
# Semantic Opposition

- Other accomplishment verbs:
  - The waiter filled the *empty* glass
  - Mary fixed the *flat* tire








# Semantic Opposition

- Activity verbs and resultatives:
  - John painted the *red* door *blue*
  - John swept the *dirty* floor
  - John swept the *dirty* floor *clean*









The screenshot shows a chat interface with two messages. The first message is from a user with the initials 'SA' and asks, 'John painted the red door blue. What color is the door?'. The second message is from GPT-4o and answers, 'The door is blue.'.

SA	John painted the red door blue. What color is the door?	
	The door is blue.	  

# Semantic Opposition

- Activity verbs and resultatives:
  - John swept the *dirty* floor
  - John swept the *dirty* floor *clean*

<p>SA John swept the dirty floor. Is the floor dirty?</p>	<p>SA John swept the dirty floor clean. Is the floor dirty?</p> 
<p> Yes, based on the given statement, the floor is dirty. The statement "John swept the dirty floor" suggests that the floor was dirty and John took action to clean it.</p> <p>  </p>	<p> Yes, according to the sentence "John swept the dirty floor clean", it is implied that the floor was dirty before John swept it clean.</p>