Philosophy of Language

Lecture 3: Tense and modality

Zoltán Gendler Szabó
CreteLing 2019
Thursday, July 18

0. The oddity of mathematical discourse

Modern semantics is based on ideas developed by mathematicians (like Frege and Tarski) to better understand mathematical theories. But mathematical theories are special: they are atempoal and amodal.

7+5=12

We tend to think that this sentence is not only true, but true eternally and necessarily. Still, this is not something the interpretation of the sentence reveals: the semantics stays clear of temporal and modal matters.

So, what kind of expressions are tenses and modals? A natural idea is that they are quantifiers over times and possibilities.

1. Are tenses and modals quantifiers?

1. The traditional view

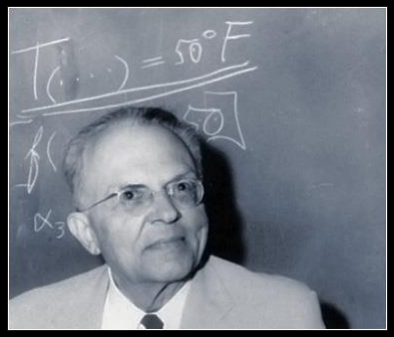
No.

The traditional view (inherited from Aristotle) has been that quantifiers modify the subject, while tenses and modals modify the copula.

Socrates	is	snub-nosed.
simple subject	simple copula	simple predicate
Some philosopher	is	snub-nosed.
quantified subject	simple copula	simple predicate
Socrates	was	snub-nosed.
simple subject	qualified copula	simple predicate
Socrates	cold be	snub-nosed.
simple subject	qualified copula	simple predicate

1. Are tenses and modals quantifiers?

2. The modern view



Yes, but ….

The modern view (going back to Carnap) has been that tenses and modals are sentential operators interpreted as quantifying over moments and worlds.

P(Socrates be snub-nosed) is true at m iff
Socrates be snub-nosed is true at some moment (before m)

◊(Socrates be snub-nosed) is true at w iff
Socrates be snub-nosed is true at some world (accessible from w)

This brings a split between syntax and semantics: interpretation requires more structure than what syntax provides. (Hence, the relativization of truth to moments and worlds.)

1. Are tenses and modals quantifiers?

3. The postmodern view

Yes.

The postmodern view (defended, among others, by Schlenker) posits variables ranging over times and worlds:

∃m. Socrates be snub-nosed(m) is true iff
some moment (before now) satisfies Socrates be snub-nosed

∃w. Socrates be snub-nosed(w) is true iff
some world (accessible from actuality) satisfies Socrates be snub-nosed

This removes the split between syntax and semantics. (And the need to relativize the truth-predicate to anything other than an assignment.)

1. Are tenses and modals quantifiers?

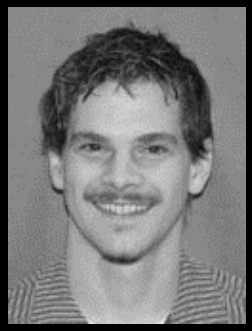
4. Expressive power

An argument once popular against admitting moment or world variables in logical form is that natural language tenses and modals lack the expressive power of full quantification. This has been called into question by many researchers.

In fact, what Schlenker called the pervasive symmetry in the way natural languages refer to and generalize over individuals, times, and possibilities has been used to turn the argument around: given the parallels, the default assumption should be that natural languages employ a unified system for expressing generality.

1. Are tenses and modals quantifiers?

5. Pronouns, tenses, modals



The observation that tenses display all the characteristic behavior of pronouns is due to Barbara Partee. Matthew Stone has stressed the exact analogy with modals.

Deictic

I left the stove on.
You would make me feel loved.

Anaphoric

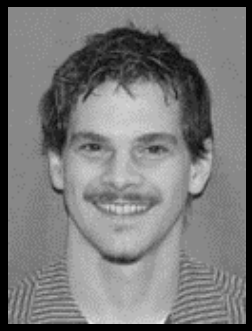
I left the stove on an you did not warn me.
Had you bought me flowers you would have made me feel loved.

Bound

Whenever I go to work I leave the stove on.
If a man were to be given flowers he would be happy.

1. Are tenses and modals quantifiers?

5. Pronouns, tenses, modals



Deictic

I left the stove on at m.

You would make me feel loved at w.

Anaphoric

I left the stove on at m an you did not warn me at m.

Had you bought me flowers at w you would have made me feel loved at w.

Bound

Whenever I go to work at m I leave the stove on at m.

If a man were to be given flowers at w he would be happy at w.

1. Are tenses and modals quantifiers?

6. Instances

Arguably, moments of time and possible worlds are too specific to be deictically identified. We might think of times as intervals of moments and possibilities as sets of possible worlds.

If we really do have deictic uses of tenses and modals, they can be used to define instances. I will assume that the relevant demonstrative is then. I will also assume that then is ambiguous between a temporal and a modal reading and I will indicate these by indices.

1. Are tenses and modals quantifiers?

7. Sometimes

Suppose Sometimes you cleaned out the car is true iff you cleaned out the car at some time in the past.

The instances of Sometimes you cleaned out the car with respect to the occurrence of sometimes are ⟨Then^{temp} you cleaned out the car, t⟩, where t is some time demonstrated by then^{temp}.

Instances carry past tense marking, so whenever t is not past the relevant instance is neither positive nor negative. This guarantees that the sentence is true just in case it has a true instance. Accordingly, sometimes does occur as a quantifier in this sentence.

1. Are tenses and modals quantifiers?

8. Should

Suppose You should clean out the car is true iff you clean out the car in every possibility that is deontically accessible.

The instances of You should clean out the car with respect to the occurrence of should are ⟨Then^{mod} you clean out the car, p⟩, where p is some possibility demonstrated by then^{mod}.

Whether p is deontically accessible makes no difference to the truth or falsity of an instance. But the truth or falsity of the sentence does depend on that. Accordingly, this occurrence of should is not a quantifier.

1. Are tenses and modals quantifiers?

9. The source of the difference

Should encodes a modal accessibility relation but sometimes does not encode a temporal precedence relation. The information that the reference time of Sometimes you cleaned out the car is in the past is carried by the verb, not the adverb in the sentence.

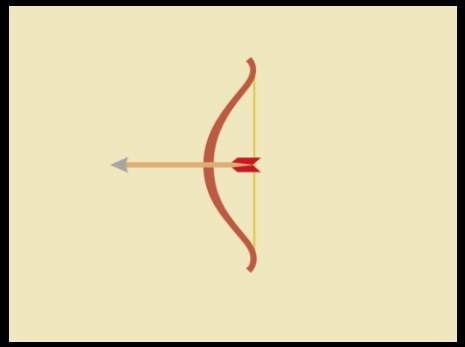
Moral: Given our characterization, neither tenses nor modals are quantifiers in English because they encode a non-quantitative relation – precedence and accessibility. On the other hand, temporal adverbs, like sometimes, rarely, often, or always, are quantifiers; tense expresses a restriction on their domain.

2. Times

1. Zeno's argument

1. When the arrow does not change place it is at rest.
2. The arrow does not change place at any moment.
   So, the arrow is at rest at any moment.

3. The arrow is at rest at any time composed of times when it is at rest.
4. Times are composed of moments.
   So, the arrow is at rest at all times.



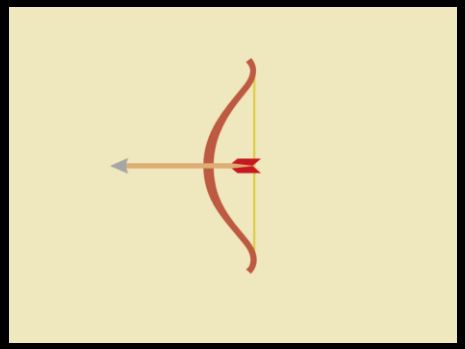
2. Times

1. Zeno's argument

1. When the arrow does not change place it is at rest.
2. The arrow does not change place at any moment.
   So, the arrow is at rest at any moment.

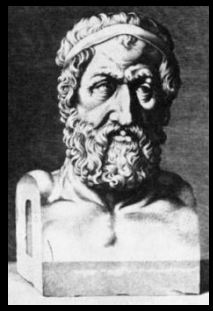
3. The arrow is at rest at a time composed of times when it is at rest.
4. Times are composed of moments.
   So, the arrow is at rest at all times.

One option is to deny 1. – the arrow moves at a moment when its speed is not zero.



2. Times

1. Zeno's argument

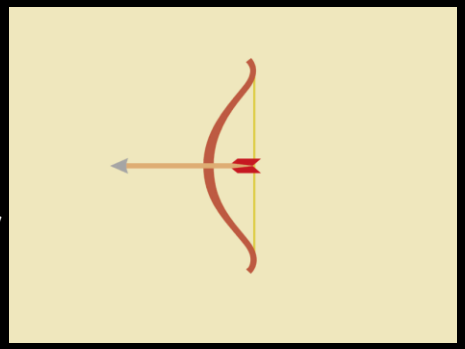


1. When the arrow does not change place it is at rest.
2. The arrow does not change place at any moment.
   So, the arrow is at rest at any moment.

3. The arrow is at rest at a time composed of times when it is at rest.
4. Times are composed of moments.
   So, the arrow is at rest at all times.

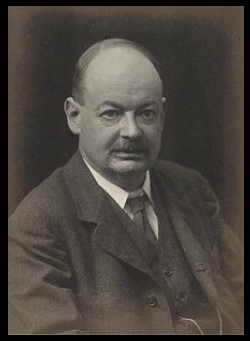
One option is to deny 1. – the arrow moves at a moment when its speed is not zero.

Another option is to deny 4. – moments are not times, only limits of times.



2. Times

2. McTaggart's argument

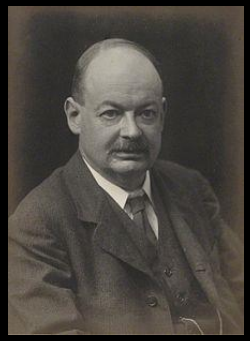


A-series: times ordered by the intrinsic properties past, present, and future
B-series: times ordered by the relations earlier, simultaneous, and later

1. There is no time without change.
2. There is no change without the A-series (since times in the B-series are fixed.)
3. Some time that is future will be past.
4. Some time has the properties of being future and being past.
5. Being future and being past are incompatible properties.
6. The A-series is inconsistent.
7. So, there is no time.

2. Times

2. McTaggart's argument



B-theorists tend to reject 2. – that there is no change without the A-series. (They accept that the A-series is contradictory.) They think the A-properties are relational:

t is present iff t is now
t is past iff t is earlier than now
t is future iff t is later than now

A-theorists tend to reject 4. – that if a time is future and will be past then it is intrinsically past and future. They treat tense as primitive.

2. Times

3. Presentism

According to presentists there is but one time – the present. The fact that natural language sentences are tensed makes the denial of presentism hard to express:

1. There is a dog that is not asleep.
1.′ There is now a dog that is not asleep now.

2. There is a time that is not present.
2.′ There is now a time that is not present now.

We need to understand 2. in a tenseless way – as we tend to understand 3.

3. There is a prime that is not odd.

3. Possibilities

1. Quine's argument

Necessarily, 8 > 5
The number of planets = 8
So, necessarily, the number of planets > 5

Quine thinks the argument is invalid because modals create referentially opaque contexts, much like quotation:

'8 > 5' contains three symbols
The number of planets = 8
So, 'The number of planets > 5' contains three symbols

3. Possibilities

1. Quine's argument

Necessarily, 8 > 5
The number of planets = 8
So, necessarily, the number of planets > 5

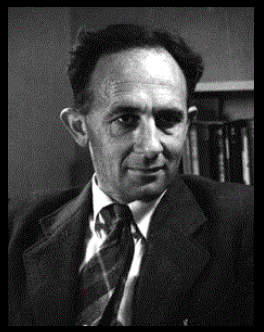
The argument rests on the contentious claim that

⟦The number of planets⟧ = ⟦8⟧.

Proponents of a quantificational theory of definite descriptions can reject this.

3. Possibilities

2. The Prior - Williamson's argument



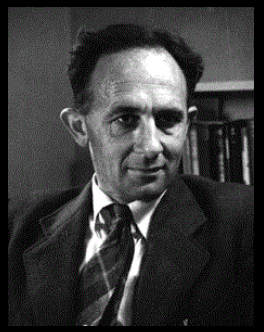
1. Necessarily, if I do not exist then the proposition that I do not exist is true
2. Necessarily, if the proposition that I do not exist is true then the proposition that I do not exist exists
3. Necessarily, if the proposition that I do not exist exists then I exist

So, necessarily, if I do not exist then I exist
So, necessarily, I exist

The argument is clearly valid. The only option to resist its conclusion is to deny one of its premises.

3. Possibilities

2. The Prior - Williamson's argument



1. Necessarily, if I do not exist then the proposition that I do not exist is true
2. Necessarily, if the proposition that I do not exist is true then the proposition that I do not exist exists
3. Necessarily, if the proposition that I do not exist exists then I exist

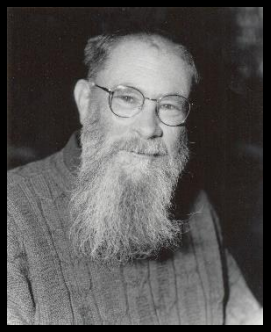
So, necessarily, if I do not exist then I exist
So, necessarily, I exist

One can deny 1. by denying the existence of propositions. One can deny 3. by accepting that I could be a non-existent object. Neither is very attractive.

The most popular thing is to reject 2. and advocate a distinction between being true in a world and being true at a world.

3. Possibilities

3. Worlds as individuals



i. Possible worlds exist
ii. Other worlds are things of the same sort as this one
iii. ‘Actual’ is an indexical expression

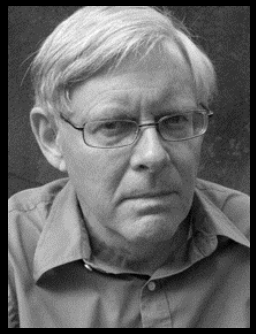
The combination of i. and ii. is a metaphysical position called modal realism. A natural way to round it out is to add that worlds are maximal spatio-temporally connected wholes.

iii. is a semantic thesis that ensures that had the world be in a different way, when people say I live in the actual world they would speak the truth but they would express a different proposition.

Another world could have been actual
Another time could have been present
Another person could have been me

3. Possibilities

4. Worlds as properties



i. Possible worlds exist
ii. Other worlds are things of the same sort as this one
iii. ‘Actual’ is an indexical expression

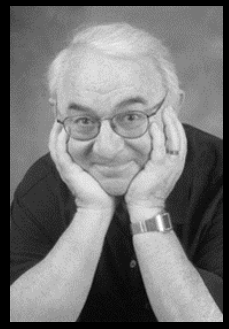
Stalnaker accepts i. and iii. but rejects ii. Possible worlds are ways the world could be.

The world is the way the world is.
?? The way the world is is the world.

Possible worlds are properties; all but one of them is uninstantiated. These properties all actually exist. The one that is instantiated is instantiated by the universe.

3. Possibilities

5. An objection



The argument: Let's suppose there are exactly K possible worlds, and hence at least 2^K propositions. Consider a particular person and a particular time. For each proposition it is possible that this person thinks nothing but one of these propositions at that time. So, there must be at least 2^K possible worlds, which contradicts our initial assumption.

The response: Lewis rejects the claim that all propositions are thinkable. Given functionalism about the mind and given the assumption that there aren't even continuum many functional states, it follows that most propositions are unthinkable.

4. Summary

- Whether tenses and modals are quantifiers remains a contentious issue. According to the characterization of quantifiers I suggested, neither tenses nor modals are quantifiers in English.
- The standard semantics of tense assumes that past and future times exist. Arguments from Zeno and McTaggart against such a view can be answered.
- The standard semantics of modality assumes that we can quantify into modal contexts and that some existence is contingent. Arguments from Quine and Prior/Williamson against such a view can be answered.
- Whether possible worlds are individuals or properties is an open question.

the end (for now)