

Propositions, arguments and truth

Propositions

One of the fundamental concerns in philosophy is that with truth. But what kind of things are true?—what is truth a property of? The traditional answer is that it is propositions which are true or false, where propositions are to be distinguished from sentences. There are four main arguments for denying that it is sentences which are true or false and for introducing the apparatus of propositions to stand as the bearers of truth.

Firstly, "sentence" is a grammatical concept and not all grammatically well-formed sentences appear to express anything which is capable of being true or false: for example, "All green ideas sleep furiously". This sentence is grammatically well-formed, but clearly meaningless. Some sentences, we shall say, do not express any proposition at all.

Secondly, some sentences are ambiguous. We normally explain this by saying that one sentence (string of words) is capable of expressing more than one proposition: for example, "Flying aeroplanes can be dangerous", which can mean either that being a pilot can be a dangerous activity, or that aeroplanes can be dangerous when they are flying about in the sky.

Thirdly, different sentences can have the same meaning. We would normally think of translation from one language to another to be possible because sentences from different languages can express the same proposition: for example, "It is raining", "Il pleut" and "Es regnet".

Fourthly, we tend to think that there is some meaning in common between the indicative, interrogative and imperative sentences in the table below, and this is normally explained by differentiating their assertoric force from their propositional content.

		The sentences below are synonymous with the sentences to the left	
Indicative	The cat is on the mat.	It is the case that	the cat is on the mat

Interrogative	Is the cat on the mat?	Is it the case that	the cat is on the mat
Imperative	Put the cat on the mat!	Make it the case that	the cat is on the mat
		Assertoric force	Propositional content

It is only because we normally concentrate on indicative sentences that we often fail to recognise that there is a difference between sentences and propositions. But clearly interrogative and imperative sentences are in some way also about things in the world, about cats and mats in this case, just as much as indicative sentences are. Propositions are invoked in an attempt to explain this.

Intension and extension

The Ancient Greeks did not know that the evening star (which they called Hesperus) and the morning star (which they called Phosphorous) were in fact one and the same thing—namely, Venus. The propositions

- Hesperus is the second planet from the Sun
- Phosphorous is the second planet from the Sun

are both therefore made true by one and the same fact—Venus being the second planet from the Sun; they both refer to exactly the same things. Are they therefore one and the same proposition? Here it is useful to introduce the distinction between the **intension** (or **sense** or **connotation**) and the **extension** (or **reference** or **denotation**) of a proposition. *Extensionally*, we will say, the propositions are equivalent, for they are about exactly the same things in the world. But *intensionally* they are distinct. They are distinct intensionally because one could believe one without believing the other, if, like the ancient Greeks, one did not know that Hesperus and Phosphorous were one and the same thing. Two propositions may be extensionally equivalent but intensionally distinct, but if two propositions are intensionally equivalent then they are also extensionally equivalent. Propositions, then, are individuated by their intensions.

An important addendum to the distinction between intension and extension is the distinction between **intensional contexts** (or **referentially opaque contexts**, or **oblique contexts**) and **extensional contexts** (or **referentially transparent contexts**). Normally, an expression in a proposition can be swapped for an expression with the same extension without changing the truth value of the proposition. So for instance, swapping "Hesperus" for

"Phosphorus" in the sentence "Phosphorous is identical to Venus" could not change the truth value of the proposition from true to false. Similarly, normally one can infer the existence of the objects referred to by a true proposition: "Phosphorous is identical to Venus" entails the existence of Venus. These "normal" occurrences of propositions are known as *extensional contexts*.

In certain, special, circumstances however, these two features do not hold. These circumstances are known as *intensional contexts*. In such contexts one can no longer swap extensionally equivalent (co-referring) expressions in a proposition without potentially changing its truth value (the technical term for this is **intersubstitutivity salva veritate**); consider the following two propositions:

- Lois Lane believes that Clark Kent works at the Daily Planet
- Lois Lane believes that Superman works at the Daily Planet

The first is true and the second false, despite the fact that Clark Kent and Superman are one and the same.

Neither, in intensional contexts, can one infer the existence of the entities mentioned (the technical term for this is **existential generalisation**). It may be true that

- Children believe in Father Christmas

But it does not follow that Father Christmas exists.

Arguments

An argument is a set of propositions, one of which is the **conclusion** and the others **premises**, in which the premises taken together are intended as providing a reason for accepting the truth of the conclusion (where reason here is intended in the sense of rational justification). Not just any set of statements or sentences make for the presence of an argument. Normally arguments can be distinguished by the presence of *argument indicating expressions*: such expressions serve both to signal the presence of an argument, and to distinguish the premises from the conclusion. For example:

- [premises] **therefore** [conclusion]
- [premises] **so** [conclusion]
- [premises] **thus** [conclusion]
- [premises] **hence** [conclusion]

- [conclusion] **since** [premises]
- [conclusion] **follows from** [premises]
- [conclusion] **for** [premises]

A *good* argument has two features: the premises must be true, and they must provide adequate support for the conclusion. It is this latter feature which is the subject matter of logic. There are two standards by which the support given to the conclusion by the premises might be evaluated. Firstly, the premises, if true, might render the conclusion probable. These kinds of arguments are called **inductive** arguments. But secondly the argument might purport to show that if the premises are true then the conclusion *must* be true. These kinds of arguments are called **deductive** arguments, and they especially are the subject matter of logic.

The standard of deductive correctness in an argument is **validity**. An argument is valid if and only if it is impossible for the premises to be true and the conclusion false. An argument is **sound** if it is valid and its premises are true. It is important to remember to what the terminology applies: **propositions** are *true* or *false*; **sets of propositions** are *consistent* or *inconsistent*; **(deductive) arguments** are *valid* or *invalid*, *sound* or *unsound*. There is no such thing as a valid proposition, or a true argument.

Good deduction	Good induction
The form of the argument is what is important. The subject matter is irrelevant.	The subject matter is relevant to the evaluation of the argument.
The combination of true premises and false conclusion is inconsistent.	The combination of true premises and false conclusion is consistent.
The truth of the premises makes the probability of the truth of the conclusion 1.	The truth of the premises makes the probability of the truth of the conclusion less than or equal to 1.
Adding a premise can never turn a good (valid) deductive argument into a bad (invalid) one.	Adding a premise can turn a good inductive argument into a bad inductive argument.

Truth

So far a great deal has been said about what kinds of things are true, and how arguments which attempt to demonstrate the truth of a proposition might be evaluated. But nothing has been said about what truth itself is supposed to be. That is for good reason. The nature of truth is a vast and central issue in philosophy. It would be impossible to do the topic justice here, and so very little will be said. Instead, we will simply outline, in the barest detail, two of the most popular accounts of what is meant by truth.

Correspondence theories of truth take truth to consist in the relation of a proposition to the world—in particular to its correspondence to the facts. A proposition is true if the facts really are as it says they are. "The cat is on the mat" is true if and only if the cat really is on the mat. This sounds like such a blindingly obvious thing to say that it seems scarcely worth mentioning. However, the notion has proved more difficult to spell out in detail, and in particular the precise sense of "correspond" and "fact" intended have been difficult to specify.

Coherence theories of truth, on the other hand, take the truth of a proposition to consist in its relation to other propositions—in particular in its coherence with a set of propositions. The plausibility of this account of truth is directly related to how implausible one finds the idea of being able to compare propositions one by one to discrete bits of reality, and ascertaining whether some as yet unspecified relation of correspondence holds. Instead the coherentist about truth maintains that truth is an internal feature of systems of propositions. The only mark of truth is whether a proposition coheres with the other propositions in the system: if it does not one may reject the proposition as false, or adjust the system by rejecting some of the other propositions in the system as false. The problem with such an account is that it sounds much more like a strategy for forming beliefs than a characterisation of truth. The coherentist ought to be able to specify *which* propositions a proposition is meant to cohere with in order to be true. But this has proved difficult.



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