

# Deduction

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**When we talk about premises and conclusions we called them *true* or *false*.**

**But when we talked about arguments we called them *good* or *bad* or *sound* or *unsound***

**This is important**

**Arguments can no more be *true* than  
tables can be *loud***

**Only *sentences* (and the beliefs they can  
express) can be true or false**

**Arguments are not sentences (or beliefs)**

**An argument must be constituted of at least *two* sentences, one to act as premise, the other as a conclusion.**

**The sentences of an argument also have to be related to each other in a certain way.**

**One of them must be being said to follow from the other(s).**

**If the conclusion follows from the premises the argument is good (and if the premises are also true the argument is sound).**

**If the conclusion doesn't follow from the premises the argument is bad (irrespective of the truth of the premises).**

**The argument itself is neither true nor false.**

**Distinguishing good arguments from bad is sometimes easier than distinguishing true sentences from false**

**Sometimes distinguishing good arguments from bad is the only way to distinguish true sentences from false ones.**

**“Therapeutic cloning is morally acceptable.”**

**If you want to convince others this sentence is true, you must find a (set of) premise(s) from which you can deduce, or inductively infer, it.**

**If you want to convince others the sentence is false you also need an argument, one from which its *falsehood* can be deduced or inductively inferred**

**We have seen that an argument is good if its conclusion follows from its premises.**

**But there are two sorts of 'following from'; deductive validity and inductive strength.**

**In this podcast we shall consider deductive validity.**

**In the next podcast we shall consider inductive strength**



**Here are two deductive arguments either of which would be a good starting point for an examination of our sentence:**

**It is wrong to kill an innocent one of us**

**An embryo is an innocent one of us**

**In therapeutic cloning an embryo is killed**

**Therefore therapeutic cloning is wrong.**

**The right action is the action that produces the greatest happiness of the greatest number.**

**Therapeutic cloning produces the greatest happiness of the greatest number.**

**Therefore therapeutic cloning is right.**

**A deductive argument is valid if and only if there is no possible situation in which its premises are true and its conclusion false**

**You will see that both our arguments are valid**

**Surely (you might think) if an argument is valid it must have a true conclusion?**

**But therapeutic cloning can't be both right and wrong.**

**If you think this you are probably  
confusing truth and validity.**

**This is a common error.**

**Lots of people think truth is good, validity  
is good, therefore truth and validity are  
the same thing.**

**This is a very bad piece of reasoning!**

**To understand the notion of validity is to understand that an argument can be valid whilst its conclusion is false.**

**This will happen whenever one of the premises of a valid argument is false**

**(Remember an argument is valid if and only if there is no possible situation in which its premises are true *and* its conclusion is false)**

**The fact that an argument is deductively valid gives us two pieces of information:**

- **if the premises of this argument are true, the conclusion *must* be true;**
- **if the conclusion of this argument is false, then at least one of the premises *must* be false**

# Could the argument be valid?

	True conclusion	False conclusion
True Premises		
False Premises		

# Could the argument be valid?

	True conclusion	False conclusion
True Premises	<p>If it is Tuesday 17<sup>th</sup> April</p> <p>If it is Tuesday April 17<sup>th</sup> Marianne will be making podcasts</p> <p>Therefore Marianne is making podcasts</p>	<p>It is Tuesday 17<sup>th</sup> April</p> <p>If it is Tuesday April 17<sup>th</sup> Marianne will be having her hair cut</p> <p>Therefore Marianne will be having her hair cut</p>
False Premises	<p>It is Monday</p> <p>Marianne always wears jeans on Monday</p> <p>Marianne is wearing jeans</p>	<p>It is Monday</p> <p>Marianne always wears a dress on Monday</p> <p>Marianne is wearing a dress</p>



**A valid argument can have a false conclusion.**

**We should never, therefore, believe a conclusion *simply* because it is the conclusion of a valid argument.**

**We need to be especially aware of this if we are inclined to accept the conclusion on its own terms.**

**In fact whenever we are antecedently prepared to accept the conclusion of an argument we should be *extra* vigilant both in checking that the argument really is a good one and that its premises are true.**

**There are occasions other than when its premises are false, however, that the validity of an argument should not persuade us of the truth of its conclusion**

**We should not be persuaded, for example, of the truth of the conclusion of any argument that is:**

- **circular**
- **begs the question**

# Here are examples of arguments of both kinds:

**Embryos have the right to life**

**Therefore embryos have the right to life.**

**It is always wrong to kill human babies.**

**Therapeutic cloning involves killing human babies**

**Therefore therapeutic cloning is wrong.**

**Here is another pair of arguments  
that are valid but which should not  
convince us of the truth of their  
conclusions**

**Both these arguments are valid:**

$$5+7=16$$

**Grass is green**

**Therefore grass is  
green**

**Therefore  $2+2=4$**

**This shows us that the validity of an argument is *necessary* for us rationally to accept the conclusion of the argument, but it isn't *sufficient*.**

To make sure you are not confusing validity, truth and/or soundness look at the definition of validity then answers the questions below:

**Def: Validity**

An argument is valid if and only if there is no possible situation in which the premises are true and the conclusion false.

Now answer the following questions:

1. Could all the premises of a valid argument be false?
2. Should we always reject the conclusion of an invalid argument?
3. Could the set of sentences consisting of the premises of a valid argument and the negation of its conclusion be consistent (such that they could all be true together)?
4. Could an invalid argument have a true conclusion?

Answers:

1. Yes (if this is the case the argument might be good but it isn't sound)
2. No, an invalid argument tells us nothing about the truth of its conclusion and the conclusion might reasonably be believed to be true on grounds other than the argument.
3. No. Because a valid argument with true premises *must* have a true conclusion, the set consisting of the true premises plus the *negation* of the conclusion (i.e. the conclusion with 'it is not the case that' tacked on the front) must be inconsistent (such that they can't all be true together).
4. Yes. It could also have a false conclusion. The invalidity of an argument tells us nothing about the truth of its conclusion.



**In the next podcast we shall look  
at inductive strength**

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