Next class we will see an argument for God's existence laid out and then critiqued by David Hume. This is commonly known as the teleological proof for God's existence and you'll see that it uses both inductive and analogical reasoning to justify the conclusion that God exists. When reading this argument, keep in mind the ways in which these kinds of inferences may be assessed, and Hume's critique should then make sense.

Introduction to Philosophy

Discussion on Non-Deductive Arguments

Recall that a *deductive* argument is supposed to provide a 100% guarantee of its conclusion(s) being true, provided that its premises are also true. A deductively *valid* argument is one that actually does this.

However, this is an extremely strict standard to meet. Notice that many, if not most, scientific statements and everyday claims are not based on a deductively valid argument. For instance, the claim that "the sun will rise tomorrow" seems like this. That is to say, this claim may be false (it is possible that the sun could collapse into a black hole while we are asleep tonight), but we take its truth for granted because it is extremely unlikely to be wrong. This does not mean that non-deductive arguments are all bad, however. Instead, we need a slightly different framework in order to distinguish good non-deductive arguments from the bad ones.

Non-Deductive Argument: An argument that makes the claim that its premises *plausibly* (or with *some degree of probability*) support the conclusion.

So for a non-deductive argument, assuming that all the premises are true does not mean that the conclusion must be true with 100% certainty. A non-deductive argument is only asserting that the conclusion is *probably* or very likely to be true. We call a "successful" non-deductive argument a strong argument.

Non-Deductively *Strong* Argument: An argument where *if* all the premises are true, then the conclusion is *very likely* to be true as well.

Unlike validity, where a deductive argument either has it or does not have it, strength comes in degrees. Modern probability theory (not covered in this class) tries to make this notion of degrees of strength more precise. Regardless, the idea is that different non-deductive arguments may be stronger or weaker than each other. An unsuccessful non-deductive argument is called a "weak" argument.

Non-Deductively *Weak* Argument: An argument where the conclusion is still likely to be false even though the premises may all be true.

Soundness for non-deductive arguments is similar to that for deductive ones.

Non-Deductively *Sound* Argument: An argument that (1) is strong and (2) has premises that are all true.

An simple example of a non-deductive argument is as follows:

> The defendant is guilty. After all, he confessed to stealing the jewels and he was clearly present at the scene of the crime since his fingerprints are on the safe.

This argument has the following argument diagram:

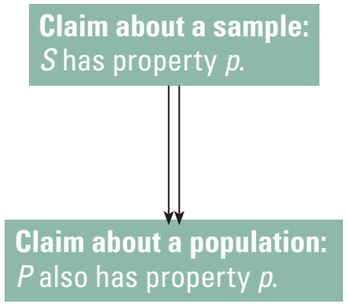
Why is this most likely a non-deductive argument?

Do you think this argument is strong or weak?

Assessing the soundness of a non-deductive argument depends on the particular form of the argument. Indeed, there are many different types of non-deductive arguments. One very common type is the inductive argument.

Inductive Argument: A non-deductive argument in which the description of some sample (i.e., a collection of things *S* drawn from a larger population *P* of these things) is extended to describe items *outside* of that sample.

Using argument maps, we can visualize the general structure of induction as follows:



Notice that we use double arrows to indicate that this is an inductive inference.

An example of induction would be the following:

> Pearl Research interviewed 100 people living in Qatar and asked them which Doha shopping mall they liked best. In response, 65 of these people said they preferred shopping at the Villagio. Therefore, 65% of people living in Qatar prefer to shop at the Villagio Mall.

What is the sample (*S*) in this argument? What is the population (*P*)?

What is the property *p* of the sample and how is it extended to describe the population?

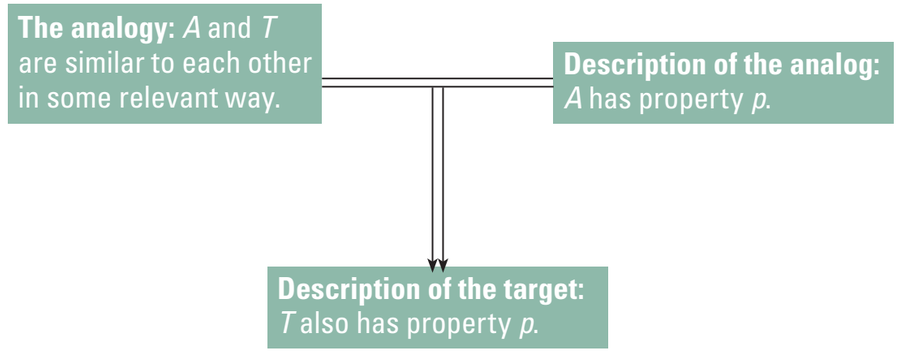
Putting this together, here is the argument map for this inductive argument:

Two important factors influence the strength of an inductive argument. The first is **sample size**. If I only talked to 10 people living in Qatar, my conclusion is hardly reliable. If I asked 1000 of them, my conclusion is clearly much more plausible. The second is the **representativeness** or **unbiasedness** of the sample. If I only asked people who were currently shopping at the Villagio, my conclusion is obviously skewed. However, if I contacted people selected at randomly from a comprehensive list of people living in Qatar, the conclusion is probably more representative. Taking a statistics course will more rigorously address these and other related issues.

A similar type of non-deductive argument is the argument by analogy.

Argument by Analogy: A non-deductive argument that (1) asserts that two things, the analog *A* and the target *T*, are similar to each other, (2) takes a description of *A*, and (3) extends that description to apply to *T*.

Using argument maps, we can visualize the general structure of an argument by analogy as follows:



Double bars and arrows are also used to distinguish this particular type of inference.

An example of an argument by analogy would be the following:

> Robots clearly have intelligence. After all, both humans and robots can both move about, solve mathematical equations, and win chess games, and humans obviously have intelligence. So robots must be intelligent as well.

What is the target (*T*) of this in this argument? What is the analog (*A*)?

Why are the target and analog thought to be similar to each other?

What is the property *p* of the analog and how is it extended to the target?

Putting this together, here is the argument map for this argument by analogy:

The strength of an argument by analogy depends crucially on the analogy. In particular, there are two things that make an argument by analogy stronger: (1) **many relevant similarities** between the target and the analog, and (2) **few relevant dissimilarities** between them. The above argument provides some relevant similarities between robots and humans, but I am sure you can also think of some ways in which they are dissimilar in relevant ways.