Arguments II

Critical Thinking

Good Arguments

- Remember how last week we defined a good argument as a sound argument, where:
- An argument is *sound* if it is both valid and well-founded:
  - Valid: The premises *support* the conclusion
    - Or: the conclusion *follows from* the premises
    - Or: *If* the premises are true, *then* the conclusion is true as well
  - Well-Founded: The premises are *true*

Circular Arguments

- Consider this argument:
  - Bananas are yellow. Therefore, bananas are yellow.
- This argument is sound, and therefore good according to the initial definition
- But in fact it's not a very good argument at all; one who questions whether or not bananas are yellow is not going to accept this argument.
- For this reason, some books add a third criterion to the original definition: the argument should not be circular or, more generally, the premises should be less controversial than the conclusion.
- However, there are further, and much bigger, problems with our initial definition than just this, as the following slide explains

Plausibility

- Consider this argument: “You failed the last 5 quizzes for this course so far. Therefore, you won’t score a 100 on the next quiz.”
- Now, this seems like a perfectly reasonable argument.
- However, notice that it is of course possible that this person will score a 100 on the next quiz. Hence, according to the traditional definition, this argument would not be considered valid, and hence not good a good argument.
- So we see that the traditional notion of ‘validity’ is too strong, too strict, to be useful for evaluating whether an argument is good or not.

Deduction and Induction

- For this reason, we distinguish between two notions of validity:
- A *deductively valid* argument is one where the truth of the conclusion is 100% guaranteed by the truth of the premises.
  - A deductive argument is one that is claimed to be deductively valid.
  - Deduction is the process of reasoning deductively.
  - Mathematics is deductive
- An *inductively valid* argument is one where the truth of the conclusion is likely given the truth of the premises.
  - An inductive argument is one that is claimed to be inductively valid.
  - Induction is the process of reasoning inductively
  - Science is inductive
- Most of real life arguments are inductive

Plausibility Again

- A similar remark applies to the second criterion: Consider some argument based on a premise that is quite plausible, even if we aren't absolutely certain of its truth (e.g. 'If you jump off this cliff, you'll die'). Now, if this premise turns out to be false, does that mean that we were making a bad argument?
- Likewise, what if we base an argument on a claim whose truth we are completely in the dark about (e.g. 'God exists')? Is the argument a good one just because the premise, completely unbeknownst to us, happens to be true? That doesn't seem right either.
- Can one only base a good argument on things of which one is absolutely certain? This doesn't seem very useful.

In Summary: Problems with the Initial Definition

- Some arguments that we judge not to be good would be good according to the initial definition
  - Circular arguments
  - Arguments based on premises that are just lucky guesses, but which, unbeknownst to us, happen to be true.
- Other arguments that we judge to be good would not be good according to the initial definition
  - Arguments where the truth of the premises make the conclusion plausible, but not necessarily true
  - Arguments that have premises that are plausible, but not necessarily true

Gradations in the Quality of Arguments

- Another obvious mismatch between our concept of good arguments and the notion of a sound argument is that we feel that the quality of arguments comes in degrees.
- Some arguments are great, others are ok, some are so-so, and some are just plain terrible.
- But with the initial definition, it is all or nothing. Either it is, or is not, a sound argument.
- We need a definition that can capture that fact that some arguments are better than others.

Loosening the Two Criteria

- A much better way to flesh out the definition is therefore to loosen the criteria:
- A good argument needs to satisfy 2 criteria:
  - 1. If the premises are true, then the conclusion is *likely to be* true
  - 2. The premises should be *plausible*
- Notice how the quality now comes in degrees:
  - An argument is said to be *stronger* or *weaker*, depending on how likely the conclusion is based on the truth of the premises
  - An argument is said to be more or less *well-founded,* depending on how likely the premises themselves are.
- An argument satisfying both criteria is called a *cogent* argument.
  - But again this will come in degrees, depending on how strong and how well-founded the argument is.

Circular Arguments Again

- Notice how the revised definition automatically takes care of circular arguments: if an argument is circular, then since (in any real life argument) the truth of the conclusion is in doubt, it follows that the truth of at least one of the premises is in doubt as well (even if it turns out to be true), and hence the argument will not be considered well-founded.
- In other words, what matters is not so much what is actually to be the case, but what we believe to be the case.
- In fact, well-foundedness really amounts to starting with beliefs most of us share: it should start on ‘common ground’.

Arguments and Lines of Reasoning

- Since no inductive argument by itself can force the conclusion to be true, we often end up given multiple reasons, or *lines of reasoning*, for why we believe that something is the case.
- Some books consider the total of all these lines of reasoning to be part of one argument. Others say that each line of reasoning is a separate argument.
- I am inclined to go with the latter analysis, as each line of reasoning can be evaluated with regard to the two criteria of (loosened) validity and well-foundedness.

Arguments, Debates, and Relevant Information

- Given most real life issues, not only can we give multiple reasons for a certain claim, but we can almost always state reasons against that claim as well.
- This is of course exactly what happens in a debate. So let's consider a debate to be a collection of lines of reasoning.
- Problem is: in a debate, most people will selectively pick and present only those reasons that seem to make a claim as plausible as possible, because they want to be right and 'win' the debate.
- For critical thinkers, however, the debate is a good debate if the goal is to find the truth (rather than to win or persuade)
- Therefore, a good debate (or good truth-seeking process) should consider all relevant and available reasons.

Third Criterion of Good Arguments (Debates? Truth Seeking?)

- So, with these more loose criteria of a good argument, we do need an additional criterion for truth-seeking:
  - All relevant and available information regarding the truth of the conclusion should be included in the truth-seeking process
- Notice that we didn't need any such criterion for an argument to be deductively valid: if the premises are true, and if the conclusion is forced to be true if the premises are true, then those two together already force the conclusion to be true. In fact, we only need one such proof (line of reasoning).

The Third and First Criterion

- We could see the third criterion as a special case of the first criterion: if certain information to the contrary is not included, then it should follow that the connection between the premises and the conclusion is not very strong.
  - However, that only works if we can conceive of all possible scenarios, which again is impractical: e.g. it is infeasible for scientists to foresee all the ways the world might turn out to be, and hence (in general) it is unreasonable to assume that we can gauge the actual likelihood of the conclusion given the truth of the premises!
  - What is much more practical, is to require that we work with all that we do have, i.e. that we consider everything that has bearing on a certain issue.

The Truth. The Whole Truth. And Nothing but the Truth.

- In courts, witnesses must swear to ‘tell the truth, the whole truth, and nothing but the truth’.
- While, I’m not exactly sure what is meant by this phrase, I do believe the three principles of good truth-seeking are embodied in here:
  - ‘the truth’ <-> well-founded. Based on truth.
  - ‘the whole truth’ <-> completeness. Consider everything that’s relevant.
  - ‘nothing but the truth’ <-> valid/relevance. No irrelevant things