

Philosophy 110: Logic & Critical Thinking

Inductive Argument Practice

Before getting down to the exercises, let me first present to you a summary of the final, total version of our Argument Evaluation System.

Step #1 – Circle indicators & articulate the premise(s) and conclusion. Be sure to keep an eye on which are premise indicators and which are conclusion indicators. Also be careful about words that are sometimes indicators, but sometimes do other work (especially “then”, which is sometimes a conclusion indicator, but sometimes marking off a consequent in a conditional statement – and is sometimes just saying in what order things happened.)

Step #2 – Evaluate SoR for the inference. You need to rate the inference as *valid*, *inductively strong*, or *fallacious*. (It’s not enough now to say *invalid*, because both inductively strong and fallacious arguments are invalid – but inductively strong arguments can be good arguments on the whole, but fallacious arguments never are!) The basic idea is that you are asking yourself: if I assume the premises are true, how likely is it that the conclusion would turn out true as well? If the answer is 100%, then the argument is valid; if it is less than 100% but more than 50%, then it is inductively strong (and the closer to 100%, the better); if it is exactly 50% or less than 50%, it is fallacious.

But you’re not just issuing a judgment on the inference – *you need to justify your evaluation*. Depending on what your evaluation was, and depending on the particulars of the inference, different justifications may be relevant:

For valid inferences

When an inference is a valid categorical syllogism, you should justify your evaluation with a completed Venn Diagram Test. An inference that is an instance of a valid argument form should have its evaluation justified by a specification of which form it is an instance of, and for which propositions substituted in for P and Q. Otherwise, your evaluation of an inference as valid should be justified by your explanation of how the inference cannot possibly have any counterexamples.

For inductively strong inferences

Justifying an evaluation of an inference as inductively strong is somewhat messier than for valid inferences.

For inductively strong statistical syllogisms, you should justify your evaluation by pointing out that it is a statistical syllogism, and that the relevant category membership is greater than 50%. For inductively strong statistical generalizations, you should justify your evaluation by pointing out that it is a statistical generalization (or an enumerative induction – remember, they are the same thing), and explain how you think the sample was both large enough and does not display any selection bias.

Inductively strong inferences to the best explanation are hardest to write out justifications for, because they can involve so many different factors. But you should take a couple of

sentences to explain why you evaluated it as you did, with reference to the framework for thinking about IBE. Different considerations may be relevant for different inferences: was the hypothesis tested well? Were a sufficient range of competing hypotheses also considered and evaluated, and all legitimate confounds ruled out? There is always a bit of a judgment call in evaluating an IBE, and what we'll want to see is that you are saying something sensible that responds appropriately to both (i) the particulars of the inference you are evaluating, and (ii) the general principles and concepts for thinking about what is needed for a successful IBE.

For a fallacious inference

If it is an instance of an invalid argument form, you should justify your evaluation by pointing out which form it is an instance of, and for which propositions substituted in for P and Q.

If it is an unsuccessful categorical syllogism, you should justify your evaluation of it as fallacious by showing how it fails the Venn Diagram Test.

If it is an instance of one of the named fallacies we have studied, then you should justify your evaluation by pointing out by name which fallacy it is an instance of, with a sentence or two explaining why you think it is an instance of that fallacy.

If it is an unsuccessful statistical syllogism or statistical generalization, then you should justify your evaluation by pointing out what kind of inference it is trying to be, and explaining in a sentence or two why it is unsuccessful. E.g., if it is statistical syllogism, is the proportion of the target category too low? Or maybe the premise only said that "Many X are Y" and not "Most X are Y"? For a statistical generalization that is a poll, can you spot a problem with how they recruited their sample? Or maybe a problem with the wording of the poll itself? Or perhaps the sample was too small for the degree of precision that they are claiming?

If it is an unsuccessful IBE, then you should offer basically the same kind of justification as you would for a successful IBE: was the hypothesis insufficiently tested? Were there some important competing hypotheses that were overlooked, or some legitimate confounds that were ignored. Again, while there is always a bit of a judgment call in evaluating an IBE, what we'll be looking for is that you are saying something sensible that responds appropriately to both (i) the particulars of the inference you are evaluating, and (ii) the general principles and concepts for thinking about what is needed for a successful IBE – but in case of an evaluation of fallacious, you'd be explaining why the inference is *unsuccessful*.

Step #3 – *Evaluate ToP*. This is unchanged from our earlier version of this procedure.

Step #4 – *Overall evaluation*. As always, this step involves drawing on your evaluations of the SoR and the ToP. Just as there are three flavors of SoR (valid, inductively strong, fallacious), so too are there three flavors of overall evaluation (sound, cogent, and bad). The overall evaluation is determined by (i) whether all of the premises are acceptable and (ii) what the SoR of the inference is, as follows:

If *all* the premises are acceptable, *and* the inference is valid, then the argument is *sound*.

If *all* of the premises are acceptable, *and* the inference is inductively strong, then the argument is *cogent*.

If *any* of the basic premises are unacceptable, *or* if the inference is fallacious, then the argument is *bad*.

It is always good to state your final evaluation in a way that makes clear to us how you are applying these rules. E.g., “Even though the inference is valid, this argument has at least one unacceptable premise, so it is bad.” This increases your chance of getting partial credit, if your evaluation in step #6 doesn’t actually line up with your evaluations in steps #4 and #5.

Note: You need to understand this whole system for the last test, and there may be multiple choice questions about any aspect of it.

Exercises for this Friday

Apply our *now fully operational argument evaluation system* to the following arguments.

A. We stationed undergraduate research assistants at various points along University Avenue, right next to campus, to ask people walking along the street what they think of the trolley system. We got over 600 responses, and over 90% of them said that they think the trolley is great. We can infer that a clear majority of members of the campus community think that the trolley is great.

B. As people ride the trolley, that causes them to like it more. For ridership of the trolley has increased steadily every month in the half year from May through to November.

C. The administration should support the trolley system vigorously, if the trolley system brings significant benefits to the student body. So the administration should support the trolley system vigorously, since the trolley system does bring significant benefits to the student body.

D. We know that all history of philosophy courses are intriguing, and that all philosophical logic courses are intriguing. So, being a course in the philosophy department causes a class to be intriguing – since there are boring, non-intriguing logic courses in the math department, and there are boring, non-intriguing general history courses in the history department.

E. All intriguing courses have challenging tests, and some philosophical logic courses have challenging tests. Thus, some philosophical logic courses are intriguing courses.

Hint: there is at least one valid or invalid argument form; at least one Venn diagram; at least one statistical generalization; and at least one inference to the best explanation.