

Answers to Exercise 5/6

PHIL 1010–Thinking

Note: The instructions did say, “Choose the correct answer(s).” As implied, some questions required you to select more than one answer. Second: after talking with some of the tutors, I am aware that it is possible (if unlikely) to have interpreted one or two of the problems in a way which would make another answer preferable. I have noted possible alternative answers here, with my suggestions for grading. Final grades may be adjusted by Ian.

Problem 1

A new drug cures arthritis in rats. Rats are similar to humans in many respects. Therefore, the drug will probably cure arthritis in humans.

This is an example of what kind of argument strategy?

1. Inference to Best Explanation
2. Valid but not sound
3. Denying the consequent
4. Analogy

*The argument is that humans and rats are similar in many respects, **therefore** we expect them to be similar in this respect as well. It is an argument by **analogy**: the wholes are similar, so we expect the parts must be similar. It's not a valid inference: the parts don't have to be similar. In fact, they don't even have to probably be similar. We didn't talk much about Inference to Best Explanation in class, but this isn't such a case: there is no sense of competing explanations. And there is no denying of premises going on at all, so the last option is wrong.*

Would this argument be weaker, stronger, or unaffected by the following? Explain why.

1. The drug does not cure the disease in cats
Weaker: on the presumption that cats are not outstandingly different from rats etc., the drug's failure on cats weakens our belief that it will work on humans, or outside the rat family.
2. The tissue in rats' joints is similar to that in humans' joints.
Stronger: we've strengthened the analogy by showing how some parts correspond.
3. The drug has to be injected into the rat's tail to be effective.
Weaker: a disanalogy – humans don't have tails, and tails seem to be relevant.
4. No drug of this general type has been used on humans before.
Weaker: while other drugs may carry over, if this one is from a completely different family, we should be less confident that it will carry over. After all, there are some obvious differences between humans and rats.
5. Some small proportion of the rats given the drug died from allergic reactions.
Unaffected: presumably this means we should expect some adverse side effects (like death) in humans as well, but that doesn't really affect the claim that the drug may cure the disease in most cases. Most drugs do have occasional adverse effects.

Problem 2

A sound argument must have:

1. Valid premises
2. True premises
3. Valid inference
4. True inference
5. True conclusion

I pretty much gave this away in class. While premises *can* be valid (“ $2=2$ ”), they do not need to be. Inferences are acts of reasoning, and cannot be true or false. They can be valid. A valid argument is an argument with valid inferences (like *modus ponens*, *modus tollens*, etc). Finally, if the premises are true and the inference is valid, then the conclusion must also be true. That’s what it means to be a sound argument: true premises + valid inference, hence true conclusion.

Problem 3

Milo’s first argument against Opus can be constructed as a *reductio ad absurdum*. Milo reconstructs Opus ‘argument’ (“*55 saves lives!*”) as follows:

1. Premise 1: The road toll is too high.
2. Premise 2: People drive much faster than 55 mph.
3. Premise 3: If people drove no faster than 55, the road toll would be lower.
4. Premise 4: People should do what it takes to save lives.

Then Milo adds or at least implies two more premises (if we want to draw out his argument formally):

- Premise M1: slowing down still more (say to 40 mph) would save still more lives.
- Premise M2: A speed limit of 40 is absurd.

Therefore, according to Milo, Opus’ original argument for a speed limit of 55 mph must go wrong somewhere, because it entails an absurd consequence. As you recall, Opus concedes the point: “Gee, 40 *is* kinda’ slow...”. Instead, Opus should have denied which premise? (Circle one of the six premises above.)

Premise 4 (or, exclusively, Premise M2) are the acceptable responses here. Premise 4 is too strong: people should take reasonable measures, but should not do whatever it takes. It would be hard to deny M1. And although he clearly thinks otherwise, Opus *could* have agreed that we should reduce the speed limit to 40mph or less, on the grounds of safety. Of course, it then appears that Opus must accept a speed limit of 0, which is why Premise 4 is the better answer. The most suspect premise in Milo’s “reconstruction” is premise 4: Opus clearly never meant to imply this – he meant something more like: the sacrifice we make by limiting our speed to 55mph is small in comparison to the savings of life. Either Premise4 or PremiseM2 (but not both) are acceptable responses.

Problem 4

- 1) There are only triangles and squares in the box.
 - 2) 25% of all triangles are red
 - 3) 75% of all squares are blue
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- ⇒ 50% of all shapes in the box are either red or blue

Which of the following would show a flaw in the reasoning?

1. Here is another box with only triangles and squares. All the triangles which are not red are blue. All the squares which are not blue are red.
2. Open the box and discover 12 triangles (6 red, 6 black) and 12 squares (6 blue, 6 black).
3. Open the box and discover 4 triangles and 8 squares.
4. Here is another box with only triangles and squares. 50% of the triangles are red, and 50% of the squares are blue.
5. None of the above. The argument is valid.

1 and 3 are both COUNTEREXAMPLES: showing that the REASONING must be flawed by imagining possible boxes. (1) Because it is quite possible that this box meets premises two and three, but here 100% of all shapes are red or blue. (3) because 25% of 4 = 1 and 75% of 8 = 6 and $(1+6=7)/12$ is not 50%. And not (4) of course because that box doesn’t meet premises two and three. Not (2) because it is not a counterexample.

You open the box and discover that the premises and the conclusion are all true. The argument is:

1. Sound.
2. Sound, but not valid.
3. Valid but not sound.
4. Unsound.
5. Invalid.
6. False.
7. True.

Unsound because invalid. Arguments cannot be true or false.

Problem 5

After working over an argument for an hour, you can find no counterexample. Therefore, the argument is:

1. Valid
2. Sound
3. Valid, but of unknown soundness
4. Sound, but of unknown validity
5. Of unknown soundness and validity
6. Probably true
7. Not known not to be true.

5. Not 6 because arguments cannot be true. However, the argument *is* somewhat more *likely* to be both valid and sound, in proportion to your competence & thoroughness in searching for counterexamples.

Problem 6

After some brief thought, you discover a counterexample to an argument presented in the newspaper. You now know that:

1. Either the argument's premises or conclusion are false.
2. Either the argument's premises or inference have gone wrong.
3. Either the argument's conclusion or inference are wrong.
4. The argument's conclusion is false.
5. The argument's premises are false.
6. The argument's inference is false.
7. The argument's inference is invalid.

2. You do not know which has gone wrong. Not 1 or 3 or 4 because the conclusion may still be true. Unless, of course, your counterexample was to the conclusion itself. In which case that is an acceptable answer.

Problem 7

Which of the following is *not* a fallacy?

1. Denying the consequent
2. Denying the antecedent
3. Affirming the antecedent
4. Affirming the consequent

Apparently there was some confusion over terminology. While there is nothing wrong with the simple act of denying any statement (antecedent, consequent, or what have you), the question is about which of the choices does not **name** a common fallacy. The two common logical fallacies are "Affirming the consequent" and "Denying the antecedent". The fallacy (not the act) of *affirming the consequent* is to conclude that because the consequent is true, the antecedent must also be true. Here is an example of the fallacy:

- All humans are mortal
- Fido is mortal
- _____
- \Rightarrow Fido is a human

In the Wason card task, ("If vowel on one side, then even number on the other."), if you think you have to test a card 4, then you have committed this fallacy.

The fallacy (not the act) of *denying the antecedent* is to conclude that because the antecedent is false, the consequent must also be false. Here is an example of the fallacy:

- All humans are mortal
- Fido is not human.
- _____
- \Rightarrow Fido is immortal.

In the Wason card task, ("If vowel on one side, then even number on the other."), if you think you have to test a card K, then you have committed this fallacy.

Both of the other options are *not* fallacies: they are important and necessary to valid inference. That is why, in the Wason card task, you must check **both** cards A and 1.

Problem 8

Identify the fallacy:

Either the U.S. must accept full responsibility for the midair collision, or it must give up hope of retrieving the spy plane.

1. Straw man
2. Slippery slope
3. False dichotomy
4. Denying the antecedent

Not only could a middle ground probably be found, but someone could go *steal* the plane back, etc.

Problem 9

The following argument was presented 2 months ago in Parliament. (Paraphrased)

[Opposition member:] Despite overwhelming public support for the bill to overhaul the taxing of trusts, the Liberal party has voted against it. Is it not true that several Liberal ministers have substantial trusts which would be adversely affected by the proposed bill?

[Liberal Minister:] That's exactly the sort of comment I would expect from a cur such as [opposition member].

The Opposition's statement:

1. Is a weak reductio which attempts to show that the arguments offered by the Liberal Party are absurd.
2. Is a fallacious ad hominem attack.
3. Raises a legitimate concern.
4. Is an appeal to authority.

2 and 3. The argument merely asserts that they have trusts. It does not show that this was relevant to their decision, so it is merely ad hominem. However, it at least raises the concern.

The Liberal Minister's response:

1. Is a fallacious ad hominem attack.
2. Is a rude but legitimate ad hominem attack.
3. Lends support to the weak argument by the Opposition.
4. Is an expression of indignation but not an argument.

(1 or 4) and 3. Really, the minister's response is not even an argument. However, it could be construed as a particularly egregious ad hominem. Either way, by AVOIDING the implied attack, it lends credence to the insinuation that he acted out of selfish interest.

Problem 10

Regarding the recent nomination to Governor General of Anglican Archbishop of Brisbane Peter Hollingworth:

Yesterday George Browning, the Anglican Bishop of Canberra and Goulburn, told ABC Radio of his concern that this decision may blur the distinction between church and state. In Browning's words: "It is certainly not appropriate for the church to be inappropriately connected with the seat of power." (*The Age*, 24 Apr 2001)

Accept for the sake of argument the premise of Browning's quote. What is the implied conclusion?

1. Hollingworth should be appointed Governor-General
 2. Hollingworth should not be appointed Governor-General
 3. We must preserve the separation of church and state.
 4. The church needs more appropriate connection to the seat of power
2. (Not 3: it only eschews unspecified *inappropriate* connection.)

How do you judge the argument, using only what has been stated or directly implied?

1. The argument is both valid and sound.
2. The argument is valid (but not necessarily sound).

3. The argument begs the question.
4. The argument is a straw-man argument.
5. The argument is equivocal.

The *intended* answer to the second question was 3. However, since all my examples in lecture of begging-the-question were obviously valid arguments, we did not mark off for either (1 and 3) or (2 and 3), *if* you chose any of (2), (3), or (4) in the previous question.

This example is not strictly valid, because Browning never asserts that Hollingworth's appointment is an *inappropriate* connection!

Problem 11

In an editorial in this week's British Medical Journal, Dr Savulescu said the report's call for equal access to medical care regardless of disability was unrealistic because resources were scarce and doctors did discriminate. It might be ethical to discriminate, he said, even though it was probably illegal.

"Some children with Down syndrome should be on the heart transplant list if they are functioning well, but very severely affected children - who don't recognise other people and aren't able to have a reasonable life - would be displacing other children," Dr Savulescu said yesterday. (*The Age*, 18 April 2001)

Which of the following is *not* a premise of Dr. Savulescu's argument?

1. Some children with Down syndrome have a poorer quality of life than healthy children.
2. Some children with Down syndrome should be denied access to heart transplants.
3. It is not possible to give heart transplants to everyone who needs them.
4. Waiting lists for transplants should be prioritized by the quality of life each patient will have after the transplant.

Number 2 is not a premise: it is a conclusion.

Presume that all of the premises of Dr. Savulescu's argument are true. Evaluate the argument.

1. A true argument.
 2. An invalid argument.
 3. A valid but unsound argument.
 4. A sound argument.
4. The premises are (3), (4), and (2) in the prev. question. Here, answer (3) **makes no sense!** And arguments cannot be true. It is valid because the conclusion follows from (3) (4) and (2).

Presume that you know or strongly believe Dr. Savulescu's argument to be wrong, but that you cannot see the flaw. Which of the following would help you to argue against it?

1. If it were discovered that Pablo Picasso had Down syndrome and that as a result he could not look after himself or interact with others until late in life.
 2. If it were true that 90% of Down syndrome patients held long-term jobs as adults.
 3. If a cure were found which reversed the effects of Down syndrome.
 4. If it were true that children with Down syndrome were far less likely to need heart transplants than other children.
1. This counterexample shows that someone meeting the doctor's criteria for "severely affected" could have tremendous quality of life, and contribute immeasurably to society. Half marks for 3. It *could* help, but need not. If the cure takes a long time to act, or can only be applied to patients with healthy hearts, then (3) is helpful. Otherwise, just cure the Down syndrome first, and then the children are otherwise healthy! Full marks for having both 1 and 3.

Evaluate the following hypothetical counterargument:

Dr. Savulescu sadly misses the point. While it is true that we are still unable to perform heart transplants or other major surgery to all who are in need, his solution for whom to exclude is wrong. Many children with Down syndrome are just as capable of living a full and loving life as any other children, and indeed are often more expressive of their feelings than "normal" children. In fact, now that outdated and barbaric psychiatric treatments are no longer employed, most people with Down syndrome lead quite productive and satisfying lives. A far greater percentage of "normal" children become criminals or delinquents than do children with Down syndrome. Dr. Savulescu has the wrong answer to the problem.

1. Good example of counterexample.
2. Good example of reductio.
3. Diagnoses which of Savulescu's premises was wrong.
4. Fallacy: equivocation
5.
6. Fallacy: ad hominem

5. Straw man fallacy. Dr. Savulescu never claimed that all Down syndrome children were severely affected, and confined his conclusion to those who were.

Problem 12

Accept for the sake of argument that it is clearly justifiable to interrogate prisoners of war in order to learn sensitive military secrets. Standard interrogation techniques include deception, psychological pressure, threat, and offers of leniency, privilege and other rewards. Some of these are actually more traumatizing than physical punishment, and almost all of them have longer-lasting effects. Given these considerations, there is no strong argument against just using something more straightforward like torture.

This is an example of:

1. An argument by analogy.
2. An appeal to authority.
3. A straw-man argument.
4.
5. An argument which is sound if the "for-the-sake-of" premise is granted, but unsound otherwise.

A slippery-slope argument: since there is no big or clear difference between interrogation and torture, there is nothing wrong with torture. One could *possibly* make the case for number 5, *if* you accept the premise that interrogation is more traumatizing, *and* if that kind of trauma is sufficient grounds for justifying torture. But those premises are there specifically to blur what is otherwise thought to be a real distinction, thus making it a slippery slope. The other options don't apply.

Problem 13

In this passage, the assertions have been numbered for you. Answer the statements **a** through **k** with T(true) or F(false).

The Ford policy on releasing price control on domestic oil and gas is simple a way to give big business bigger profits at the expense of the average citizen (1). Of course, the *alleged* reasons are to encourage further development of our own resources (2), and to decrease total consumption (3) and hence the need for imported oil with its attendant dependence on overseas politics (4). But there's no need for exploration and development to be funded out of profits; loans are available for that (5). And the profits are in fact not going into development (6)—Mobil just bought a hotel chain, for example (7)—because there are more profitable places for them (8). No, it's just another rip-off of the general public (9)—a tax of over \$1,000/year per family (1) to support Big Oil (11) and Ford's desire for power that can't be fettered by the sheikhs (12).

- a** Mostly emotion polemic, not a rational argument.
- b** Involves some emotional language, but a good deal of argument.
- c** It could perfectly well be entirely couched in emotion language and still be an entirely rational argument.
- d** The main conclusion is assertion 1.
- e** The main conclusion is assertion 2.
- f** The main conclusion is assertion 3.
- g** The main conclusion is assertion 4.
- h** There's a sub-argument here, which looks like this: Unstated conclusion: Price control on domestic oil should be abolished.
- i** This sub-argument is said to be sound.
- j** One of the premises of this sub-argument is said to be false.
- k** The overall structure consists in refuting the sub-argument and offering another explanation for decontrol of prices.

Note: "releasing price control" means "abolishing price control". You are releasing the control pressure. It does *not* mean "unleashing price control", the way one would "release the falcon!"

Problem 14

The following plan was run by the varsity debate team at my high school.

(1)The topic chosen for today’s debate is the future stability of Latin America. (2)As the affirmative team, we must present a plan for increasing the future stability of the region, and then argue that the problem needs to be resolved and that our solution is the best one available, given current constraints. (3)First, to underscore the seriousness of the problem, let me remind you that since the early Spanish colonization of Latin America, a highly feudal economic system has prevailed, from the colonial *Latifundios* to the 19th-century *encomienda* system to the most recent debt servitude administered by the world’s largest banks, and whose most infamous crisis was the utter demise of the Brazilian economy in the late ’70s. (4)The current drug wars, guerrilla incursions, and rapid changes of government at the hands of rival militias and military parties have been traced directly to the maintenance of the *encomienda* mentality. (5)Sadly, there does not seem to be a viable solution on the table, nor is the present administration interested in helping. (6)The massive loans programs which were supposed to lift Latin America into the first world were instead just another weight dragging it down into poverty and instability, and most economic advisors despair of finding a solution. (7)However, as the great Chairman Mao once said, “Nothing is more stable than a dead man.” (8)We propose to increase the stability of the region by making it the target of frequent worldwide above-ground nuclear tests. (9)Allow me to list the advantages of the plan and to show that *for the declared objective of the debate*, there is no alternative plan which is both viable and feasible.

The plan had several advantages when declared with conviction and panache, not the least of which was that the opponents were totally unprepared and found their meticulous notecards worthless. However, it is based upon a simple fallacy. Which kind?

1. Equivocation
2. Slippery slope
3. Denying the antecedent
4. False dichotomy

Equivocation on “stable”.

What sentence or pair of sentences demonstrate(s) the fallacy? $\rightarrow (1 \text{ XOR } 2) \text{ and } 7$

Either sentence 1 or 2 equivocates with sentence 7. Also full marks: just sentence 7, since that is where the meaning shifts. We’ve gone from “economic and political stability” to “unmoving”. One might as well flood the region with noble gases, to reduce the chemical instability!

Problem 15:

Here is another debate plan from the same team, reworked somewhat:

Today’s topic is the reduction of world hunger. We should start by admitting that we cannot in this session solve the problem globally. Even Jesus said, “the poor will be with you always.” The difficulties in actually implementing any famine relief package are staggering. We aim for something more modest. Surely you will all allow that if we can completely alleviate some small portion of global hunger, then we will have contributed to the solution of the whole problem. And it is quite clear that we do not need to provide a total solution to the global problem in order to succeed.

Therefore, since it is now somewhat past the lunch hour, and we have all been debating since early this morning without break, our plan is to order pizza.

Identify the fallacy or fallacies, if any.

1. Equivocation: poverty and hunger are not the same thing
2. Equivocation: the meaning of “hunger”
3. Slippery slope: even granting that not all hunger can be eliminated, and that therefore any solution must be a partial solution, it does not follow that any partial solution will count as a solution.
4. No fallacy. It’s silly, but the opposition will have to attack its frivolousness or inefficient use of resources (\$16 for one pizza for 3 people versus several kilos of rice, enough for a few families.).

2 and 3. Equivocation on “hunger” from “starvation” to “peckish”. Slippery slope fallacy because even if there were no equivocation, at some point it ceases to be true that a solution to some small part is a meaningful part of the whole solution.