Philosophy 1104: Critical Thinking

Answers to Second Practice Quiz #4

1. Say whether each of the following passages contains an *argument* or an *explanation*. If it contains an argument, then write the argument in standard form. (In this exercise *do not* add any unstated premises.) If the passage contains an explanation, then identify the *cause(s)*, and the *effect* being explained. [3 marks each]

(i) The Human Genome Project found that humans have multiple copies of the same gene, and some of these copies are damaged. Remarkably, the same damaged copies have been found in mice, even in the same places in the chromosome! This is not a coincidence, but is due to humans and mice having inherited the damaged copy from a common ancestor who had it.

Explanation   **Cause**: common ancestor has damaged copy

                              Effect: humans and mice both have damaged copy

(ii) Evolution is the best explanation of the biology we know. As Francis Collins has pointed out, some copies of a human gene are damaged and don't work any more. And sometimes we find the *exact same* damaged gene in mice. Surely this damaged gene was inherited from a common ancestor, as why would a creator put it in both places? To deceive us?

Argument   1. Evolution explains genetic similarities
                          2. Divine creator doesn't explain genetic similarities
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                          ∴ evolution is true

(iii) A before-and-after study of bike lanes in Copenhagen found that, overall, there were more bike accidents after the lanes were put in. The authors attributed this in part to a reduction in on-street parking for cars, leading to more vehicle right turns.

Explanation   **Cause**: Bike lanes take away on-street parking

                         Effect: More bike accidents

2. Put the following arguments into standard form. In this exercise *do* add any unstated premises or conclusion, in parentheses. (Watch out for sarcasm – write down what the person really means!) [3 marks each]

(i) The only valid reason for punishment is to deter future crimes. Can we really, in the 21st century, endorse barbaric lusts for revenge? Do we really want to choose punishments based on emotion, rather than what has been scientifically shown to be effective?

(In the 21st century we cannot endorse revenge)
(We want to base punishments on science, not emotion)

The only valid reason for punishment is to deter future crimes.

(ii) Wilson claims to be innocent. But, let us note, he refused to stand in a police line up, to be identified by the victim. Now why on earth should he be afraid to do that?

Wilson refused to stand in a police line up
(Wilson would have joined the line up if he were innocent)

(Wilson is guilty)

3. Paraphrase the following sentences into one of Aristotle's forms (A, E, I and O) from the square of opposition. [2 marks each]

(i) In some cases at least, a woman will be a good driver.

   Some women are good drivers

(ii) Not *all* dentists are sadists!

   Some dentists are not sadists

(iii) A person who beats his boss at golf is unwise.

   All persons who beat the boss at golf are unwise things

(iv) There is no such thing as a free lunch.

   No lunch is a free thing   (or "no free thing is a lunch")

4. For each of the following sentences, write down anything that is not strictly stated, but is suggested by conversational implication. [2 marks each]

(i) If the weather is good, then the wedding will be outside.

   If the weather is bad, the wedding will be inside.

(ii) We will take you to Disney World only if you get good grades.

   If you get good grades, we will take you to Disney World

(iii) My brother is, shall we say, tall, dark, and ... dark.

   My brother is not handsome. (Assumes familiarity with the phrase: "tall, dark and handsome")

(iv) Do I like my mother in law? Oh gosh, is that the time? I must be going!

   I don't like my mother in law.

5. For each of the following arguments, *say whether or not it is valid*. (I.e. don't worry about whether or not the premises are acceptable.) If it is valid then provide a proof, or draw a Venn diagram showing what the premises tell us. If it is invalid then describe a situation where the premises are all true but the conclusion is false. [3 marks each]

(i) Not all English people are polite. But every English person does drink tea. So some tea drinkers are not polite.

Valid. *Proof*:

From P1, some English people are not polite. Let Fred be such a non-polite English person. From P2, Fred drinks tea. Hence Fred is a tea drinker who is not polite, thus proving that such people exist.∎

(ii) All Dutch people are stingy, and some Scots are stingy as well. Of course no Scot is Dutch. Hence all stingy people are either Scots or Dutch.

Invalid.

There could be a stingy Belgian, for example. This is consistent with the premises, yet would render the conclusion false.

(iii) Any ghost would have to be non-physical, and nothing non-physical could have a shape. But all ghosts do have shapes, supposedly. Hence we see that ghosts do not exist.

Valid. *Proof*:

We will argue by *reductio ad absurdum*. Suppose, for sake of *reductio*, that a ghost does exist. Call it Fred, say. From P1 Fred must be non-physical. Then from P2 Fred has no shape. But from P3 Fred does have a shape, which is a contradiction. Hence the assumption is false, so that no ghost exists.∎

6. For each of the following arguments identify the *type* of inference (modus ponens, affirming the consequent, modus tollens, denying the antecedent) and say whether or not it is deductively *valid*. [Note that valid conclusions are *conclusively proved* by the premises, not just supported to some extent.] [2 marks each]

(i) If Monton is a creationist, then he will find some creationist arguments plausible. And Monton does find some creationist arguments plausible! So Monton is indeed a creationist.

Type: Affirming the consequent   Valid? NO

(ii) Pork chops get tough, if overcooked. But these pork chops are cooked just right. So they can't be tough.

Type: Denying the antecedent   Valid? NO

(iii) Philip will not be allowed to graduate unless he pays his library fines. But Philip will be allowed to graduate. Hence he will pay his library fines.

Type: Modus Tollens   Valid? YES

(iv) Assuming there is a God, life has meaning. But surely God does exist! Hence life does have meaning.

Type: Modus Ponens   Valid? YES

(v) You can join the club only if you're wealthy. But you are a millionaire! So you can certainly join.

Type: Denying antecedent/Affirming consequent   Valid? NO