

Questions for Exam 3

Philosophy 270

Spring 2010

Exam 3 will consist of a selection of these questions.

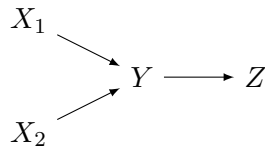
1. Explain the difference between an experiment token and an experiment type; illustrate your answer with an example.
2. What is determinism? If determinism is true, does it follow that all pps are 0 or 1? Explain why, or why not.
3. State SP and its corollary.
4. Let X = tossing a fair coin, O = the coin lands heads. (a) Prove that $pp_X(O)$ doesn't exist, if nothing further is assumed about X . (b) Describe what could be added to X to make it true that $pp_X(O) = 1/2$.
5. If X = placing a die on a table in whatever way one wants and O = the die is placed with six facing up, does $pp_X(O)$ exist? Explain why, or why not.
6. State the definition of favoring and the law of likelihood.
7. For each of the following, say which (if either) of H_1 and H_2 is favored by E . Justify your answers using either the definition of favoring or the law of likelihood.
 - (a) $p(H_1|E) = 0.7$, $p(H_2|E) = 0.2$, $p(H_1) = 0.5$, $p(H_2) = 0.1$.
 - (b) $p(E|H_1) = 0.7$, $p(E|H_2) = 0.2$, $p(H_1) = 0.5$, $p(H_2) = 0.1$.
 - (c) A ball is drawn from an urn. $H_1 = 10\%$ of the balls in the urn are black, $H_2 = 20\%$ of them are black, $E =$ the ball drawn is black.
 - (d) A die is tossed. $H_1 =$ it came up 4 or 6, $H_2 =$ it came up 2, $E =$ it came up even.
8. Let T = Ptolemy's claim that the sun and planets orbit the earth on epicycles, C = Copernicus's claim that the earth and other planets orbit the sun. Which of these is favored by the following pieces of evidence? Justify your answer using the law of likelihood; draw diagrams as appropriate.

E_1 : Mercury and Venus always appear close to the sun.

E_2 : The superior planets are closest to the earth when in opposition to the sun.
9. One of Darwin's arguments that species have been produced by natural selection is based on the experience of breeders. State the argument.
10. The distinction between species and varieties is unclear. Does this fact favor natural selection over independent creation as the origin of species? Justify your answer using the law of likelihood.

11. For each of the following facts, say whether it favors natural selection over independent creation as the origin of species and justify your answer using the law of likelihood.
 - (a) Species on different continents are different, even when the physical conditions are similar.
 - (b) Species on the same continent are similar, even when the physical conditions are different.
 - (c) Oceanic islands have relatively few native species.
 - (d) A large proportion of the native species on oceanic islands are endemic.
 - (e) Oceanic islands don't have native terrestrial mammals but they do have unique native species of bats (aerial mammals).
 - (f) The native species on oceanic islands are related to, but not identical to, those on the nearest continent.
12. Do the observed homologies between different species favor natural selection over independent creation as the origin of species? Justify your answer using the law of likelihood.
13. Does the similarity of embryos of different species favor natural selection over independent creation as the origin of species? Justify your answer using the law of likelihood.
14. Does the existence of rudimentary organs favor natural selection over independent creation as the origin of species? Justify your answer using the law of likelihood.
15. Hume's investigation of the concept of causation involves looking for where we could get an impression of necessary connection. (a) Why is necessary connection relevant to causation? (b) Why does Hume think we must have an impression of it? (c) What does he hope to achieve by finding that impression?
16. What is the impression that gives rise to the idea of necessary connection, according to Hume?
17. Did Hume think it is true that if C causes E then there is a necessary connection between C and E ? Explain.
18. According to Mill, what is the meaning of "law" and "law of nature"? Give an example that illustrates the difference.
19. According to Mill, what does it mean for A to be the cause of B ? Does it follow from Mill's definition that night is the cause of day? Explain.
20. Does our everyday use of the terms "cause" and "effect" agree with Mill's definitions? Explain and give an example.
21. What is the nature of the necessary connection between causes and effects, according to Mill? How does Mill's account of this differ from Hume's?
22. Does the term "law of nature" mean a general fact? Justify your answer.
23. What is a counterfactual conditional?
24. Give an example of (a) a counterfactual that is correct because a fact is a law, and (b) a counterfactual that is incorrect because a fact isn't a law.

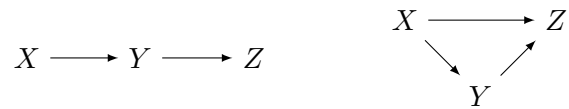
25. “Only true laws support counterfactuals, while accidental regularities do not.” Is this correct? Justify your answer.
26. Explain what a subjunctive conditional is and give an example. How are counterfactual conditionals related to subjunctive conditionals?
27. What does Lange mean by the notation “ $p > q$ ”?
28. (a) What does it mean to say that something is physically necessary? (b) Are all laws physically necessary? Justify your answer. (c) Are all physically necessary facts laws? Justify your answer.
29. For each of the following, say whether it is true and justify your answer.
- P1. p is a law iff $q > p$ is correct for all q consistent with the laws.
- P2. p is physically necessary iff $q > p$ is correct for all q consistent with the laws.
30. State Lange’s proposal about the relation between laws and counterfactuals.
31. What does it mean for a theory of causation to be reductive? Give an example of a reductive theory of causation.
32. Is Woodward’s manipulability theory of causation reductive? Explain.
33. Give an example of your own of (a) a token-causal claim, and (b) a type-causal claim.
34. Let S be the variable with values {smokes, does not smoke} and let D be the variable with values {develops lung cancer, does not develop lung cancer}. If S causes D , in Woodward’s sense, does it follow that smoking raises the probability of developing lung cancer? Explain.
35. Draw the graph of the causal structure when $Y = X_1X_2 + X_3$.
36. Write equations that give the following causal structure:



37. Explain what Woodward means by:
- (a) I is an intervention on X with respect to Y .
- (b) X is a total cause of Y .
- (c) X is a direct cause of Y with respect to variable set \mathbf{V} .
38. A flagpole of height H is standing on level ground, the sun is at an angle A above the horizon, and the flagpole’s shadow has length L . For each of the following, say whether it is true and justify your answer using Woodward’s definitions.
- (a) H is a total cause of L .
- (b) L is a total cause of H .

(c) A is a total cause of L .

39. Suppose it is known that X , Y , and Z are related in one of the following two ways:



Describe how to determine experimentally which is correct.

40. State Woodward's definition (AC) of actual causation.
41. A man eats a particular dish and dies in consequence, that is, would not have died if he had not eaten it. Did eating the dish cause the man's death, according to (AC)? Explain.
42. A sergeant and a major give orders to a corporal. The major's orders always trump the sergeant's, in the sense that the corporal always does what the major orders, regardless of the sergeant's orders. But when the major gives no orders, the corporal always follows the sergeant's orders. Suppose that the major and the sergeant order "Advance" and the corporal advances. According to (AC), does the major's order cause the corporal to advance? Does the sergeant's? Explain.
43. Each of two campers throws a lighted cigarette into the forest, where each cigarette on its own would have produced a forest fire, and a fire follows. Was the action of either camper a cause of the fire, according to (AC)? Justify your answer.