CHAPTER 10

Induction

The starred items are also contained in the Answer Key in the back of *The Power of Logic*.

Exercise 10.1

Part A: True or False?

*1. T
2. T
3. T
4. T
5. F
6. T
7. F
8. F (It could be valid and deductively unsound.)
9. F (A strong argument with true premises can have a false conclusion.)
10. F
11. F
12. F (It can be strong, though with a false premise.)
13. T
14. T
15. F (It might be weak.)
16. F
17. F
18. T
19. F
20. T

Part B: Identifying and Evaluating Statistical Syllogisms

*1. Not a statistical syllogism. (In a statistical syllogism, the percentage is greater than 50 and less than 100.)
2. A statistical syllogism.
3. A statistical syllogism. However, since John Montgomery is a member of a religious group most of whose members are pacifists and thus would oppose wars, there is a possible fallacy of incomplete evidence here.
4. A statistical syllogism. Since Johnark is a U.S. senator and many senators oppose campaign reform, there is a possible fallacy of incomplete evidence here.
5. Not a statistical syllogism.
6. A statistical syllogism.
7. A statistical syllogism. Since Goggans owns a coffeehouse, however, it seems likely that he drinks coffee; so there is a possible fallacy of incomplete evidence here.
8. Not a statistical syllogism. In a statistical syllogism, the percentage must be less than 100. (Assuming “one hundred percent of” means “all,” the argument is valid.)
10. A statistical syllogism.
11. Not a statistical syllogism. Better characterized (see next section) as an appeal to unreliable authority (or *ad verucundiam* fallacy).
12. A statistical syllogism. However, in view of the time and experience it takes to achieve the rank of captain in the Marines, it seems unlikely that Captain Lawrence is under 19. So there is the prospect of a fallacy of incomplete evidence here.
*13. Not a statistical syllogism. (Unless taken as enthymematic, with a tacit assumption of the unstated premise that “most 65-year-old men do not make a living as professional boxers.”)
15. A statistical syllogism.

Exercise 10.2: Identifying Inductive Arguments

1. Induction by enumeration. Strong.
2. Induction by enumeration. However, the sensitivity of the issue about which the interviewees are being asked (their own extramarital affairs) might prompt them to respond untruthfully. So though this sample is random and of appropriate size, with a sampling error of ±3 percent, the psychological factors involved make it a weak inductive inference.
3. An argument from authority, in this case an appropriate authority on matters of English usage. Strong.
4. Induction by enumeration. Strong.
5. Neither induction by enumeration nor an argument from authority.
6. Neither induction by enumeration nor an argument from authority. In an induction by enumeration, the population should be the same in both premise and conclusion. But in the premise the population is voters in San Francisco, while in the conclusion the population is American voters in general.
7. Argument from authority. Strong.
8. Induction by enumeration. Weak, because the sample is too small.
10. Neither induction by enumeration nor an argument from authority. (In fact, this argument commits the fallacy of inappropriate appeal to authority.)
12. Induction by enumeration. Weak, because of the use of a clearly unrepresentative and biased sample (male prison inmates, who because of their circumstances would be psychologically opposed to capital punishment) not reliably projectable to the entire population of men in Georgia.
14. Induction by enumeration. Weak, despite the sample being of an appropriate size, because the inference is based on a sample group (clergymen) whose religious beliefs and circumstances might make them unwilling to admit having had sexual fantasies involving same-sex partners.
15. Induction by enumeration. Strong.
16. Induction by enumeration. Weak; the sample is too small.
17. Induction by enumeration. Strong.
18. Induction by enumeration. Strong (?)..
19. Argument from authority. Weak, since the authorities (i.e., eyewitnesses) disagree about Black Coyote’s role.
20. Neither induction by enumeration nor an argument from authority. In an induction by enumeration, the population should be the same in both premise and conclusion. But in the premise the population is women in Mississippi, while in the conclusion the population is American women.

Exercise 10.4

Part A: Analyzing and Evaluating Analogies

1. A is Mars; B is the Earth; P is the property of being inhabited by living things. The reply indicates that being a heavenly body that orbits the Sun is no guarantee of being inhabited by living things. We might add that Mars and the Earth are dissimilar in relevant ways; for example, Mars is much colder than the Earth and its atmosphere contains relatively little oxygen.
2. A is having an abortion; B is using contraception; P is the property of being morally permissible. The reply does indicate a significant weakness in the analogy. For many hold that abortion involves the taking of life, and there is surely an important moral difference between taking life and preventing life from occurring. After all, one can prevent life from occurring simply by abstaining from sex, and virtually everyone would agree that it is morally permissible to abstain from sex on many occasions.
3. A is marijuana; B is lettuce; P is the property of being such that enjoying it is not wrong. The reply does not significantly weaken the analogy, since the manner of ingestion of the substance does not normally bear upon the rightness of enjoying it, if that manner is not harmful. A more significant criticism would be that marijuana is a mood-altering drug, with possible harmful physiological effects over the long term, while lettuce is a harmless foodstuff.

*4. A is logic; B is whiskey; P is the property of being such that very large quantities should be avoided. The stated reply does not indicate a weakness in the argument, for even if logic does not contain alcohol, logic may nevertheless lose its beneficial effects when taken in very large quantities. (The same can be said about aspirin or vitamins.) The vagueness of the phrase “very large quantities” makes it difficult to evaluate the argument. What is a very large quantity of whiskey? Enough to cause drunkenness? Enough to impair one’s judgment? Enough so that one is unable to walk? What is a very large quantity of logic? So much that one becomes mentally unbalanced, for example, unable to appreciate nonlogical aspects of life properly, such as the emotions? If so, then perhaps the argument is strong. But lovers of logic may rightly observe that very few people take logic in quantities of that magnitude, so the argument is seldom applicable.

5. A is having Christianity taught in the public schools; B is having Buddhism taught in the public schools; P is the property of not being morally acceptable. The criticism in terms of recency of prominence and political influence should not be relevant to the general principle of separation of church and state, which is presumably the basis for the judgment of the moral unacceptability of teaching a particular religion in the public schools.

6. A is nonhuman animals (higher mammals); B is human beings; P is the property of being able to feel pain. The reply does not significantly undermine the likelihood of the analogy, since the capacity to feel pain need not depend on the ability to speak.

7. A is taxation of earnings from one’s labor; B is forced labor; P is the property of being wrong. The reply attempts to undermine the analogy by pointing to a significant dissimilarity between taxation and programs of forced labor. This reply is weak as it stands, since the mere fact that all governments tax their citizens does not prove that taxation is morally permissible. A better reply would be that taxation policies are voluntarily adopted and adhered to by citizens (for the most part), while forced labor programs are (as the name implies) involuntarily submitted to.

8. A is using force; B is lying; P is being such that by doing X to others one forfeits one’s right not to have X done to oneself. The mere fact that lying typically involves the use of language (while the use of force need not involve the use of language) does not destroy the analogy, for both using force and telling lies can be ways of mistreating others. And if we may counter the wrong use of force with force, why may we not counter wrongful lies with lies?

9. A is a 6- to 8-week-old fetus; B is a brain-dead adult; P is the property of not being alive. The reply presents a significant criticism of the analogy, inasmuch as the fetus can be said to be alive and yet not have developed to the point of having brain waves, though in the process of doing so, while the brain-dead adult may lack the capacity for regaining or redeveloping brain function and so be legitimately characterized as dead (as a person, even if some biological processes are still occurring). Also, other creatures, particularly ones lacking central nervous systems, such as amoebas, trees, moss, mollusks, and so on, may lack brain waves and yet not be dead. Thus, there are many things that are relevantly similar to B and yet lack the property P.

10. A is belief in God; B is belief in electrons; P is the property of being reasonable (or possibly reasonable) even if the believer is unable to summarize the relevant evidence. The reply does not undermine the analogy to any significant degree, since one can reasonably believe in theoretical entities (e.g., abstract objects like numbers or sets) that are not physical. That is, inference to the existence of theoretical entities as explanations for observed phenomena is not restricted to physical entities alone.

Part B: More Analogies

*1. A is dogs; B is mentally deficient people. Dogs are not literally mentally deficient people, so “people” is here used metaphorically. P is a complicated moral property, viz.: being such that one should not be killed merely on the grounds that caring for one is inconvenient. The main point can be summed up as follows: If it is wrong to kill a human being who is mentally on the level of a dog (simply on the grounds that caring for the human is inconvenient), then it is wrong to kill a dog (simply on the grounds that caring for it is inconvenient).
The stated reply is certainly weak as a challenge to the argument. It seems doubtful that the wrongness of killing is grounded in the shape or looks of the thing killed. To illustrate, if something looked like a dog but had the feelings and mental capacities of a normal human adult, wouldn’t such a thing have rights similar to a normal human adult?

2. In terms of the schema for analogical arguments, we can describe the elements of this argument as: \( A \) is being a surrogate mother; \( B \) is being a slave owner; \( P \) is the property of being immoral. The reply given is a relevant criticism of the argument, since the babies carried by surrogate or host mothers usually are not produced from the surrogate mother’s eggs but are the product of artificial \textit{in vitro} insemination of the sperm and ova of the client parents.

3. \( A \) is the United States; \( B \) is a gentleman’s club; \( P \) is the property of being free to join or withdraw from an organization at one’s discretion. Since the member states of the United States are not literally gentlemen (male human beings), the premise is metaphorical. A relevant point of dissimilarity between \( A \) and \( B \) is that an individual member’s voluntary resignation from a club need not affect the economic or political stability of the club, but a member state’s secession from a confederation of states may have serious consequences for the latter’s political well-being. The reply given does not weaken the original argument, since the point of the original argument could be put in terms of non-gender-exclusive clubs or clubs in general.

*4. \( A \) is a computer; \( B \) is a human brain; \( P \) is the property of being aware of one’s own thoughts and feelings. The words “computer” and “brain” are used literally here.

The stated reply does not seem to point to an important defect in the analogy. Metal, plastic, and brain tissue are all physical in nature. And metal and plastic can be structured so as to simulate some functions of the brain. Of course, it remains an open question whether computers have self-awareness.

5. \( A \) is world hunger; \( B \) is a wicked tyrant; \( P \) is the property of being obligated to give up one’s discretionary income to save the lives of some innocent people. World hunger is not literally a wicked tyrant, so the similarity premise here is metaphorical.

The reply is largely irrelevant to the given argument, since that argument would still hold even if you were unable to identify the 10 innocent victims. What is morally relevant is your knowledge that a certain number of individuals will die if you do not act.

6. \( A \) is a woman pregnant through rape; \( B \) is a kidnapped kidney donor; \( P \) is the property of not being obligated to remain connected to the one who is dependent on your body.

The reply attempts to undermine the strength of the analogical argument by distinguishing between killing a person and letting him or her die. It is a matter of controversy among ethicists whether this reply has any force. Many people have the intuition that it would be worse for you to shoot the violinist (with intent to kill) than to disconnect him or her from your circulatory system. And if this intuition is correct, then the reply would seem to have at least some force \textit{given that} the methods of abortion involve killing the fetus.

7. \( B \) is me; \( A \) is another individual human being; \( P \) is the property of having an inner mental life. The analogy here could be strengthened by pointing out that I know that other people often behave in ways similar to the ways I do, which are expressions of my inner mental life.

The reply does not necessarily present a case of a creature that is similar to humans in the relevant respects but lacks the property in question. As it stands, it might simply be a basis for claiming that chimps, too, have some kind of inner mental life. However, the issue of how similar the central nervous system of chimps is to ours might be pursued, and it might be argued that the brains of chimps are parts of their central nervous system that are sufficiently different from humans (e.g., lacking linguistic capacity, etc.) that we would be justified in doubting that they have an inner mental life.

8. \( A \) is rich nations; \( B \) is tiny lifeboats surrounded by masses of drowning people; \( P \) is the property of not being able to help or save the lives of others around oneself. Rich nations aren’t literally lifeboats, so the premise is a metaphor. The point is that just as the lifeboats would quickly be swamped if they allowed every drowning person to come aboard, so too rich nations would be overwhelmed and exhaust their resources if they endeavored to assist all of the poorer nations.

The reply points to a relevant dissimilarity between a lifeboat and a nation (greater size of the latter). This suggests that the reply is denying that rich nations are \textit{tiny} lifeboats (and affirming instead that they are more like big lifeboats or even ocean liners); if so, the reply is challenging the inductive soundness of the argument by contesting its metaphorical premise.

The point of the original metaphor is that a rich nation can help \textit{relatively} few of the many millions of poor people just as a tiny lifeboat can help relatively few of those drowning. But the reply also suggests that a rich nation may be able to save a small percentage of the millions of poor—which would still be a large number.
9.  $B$ is a frozen embryo; $A$ is a zygote or fetus in the early stages of a pregnancy; $P$ is the property of being discardable as superfluous without the action being equatable with murder. The point of the comparison is that both the zygote and the frozen embryo are fertilized eggs, and so whatever acceptable treatment one receives, that of the other should have the same moral status.

The reply points to a factual difference between a frozen embryo and a zygote, but the difference is simply a circumstantial one. The frozen embryo, if unfrozen and implanted in a womb, could presumably also grow. So in principle there seems to be no difference between the frozen embryo and the zygote.

10.  $A$ is a clairvoyant person; $B$ is a normally sighted individual; $P$ is the property of being such that it is reasonable to believe that the experiences in question are a source of truth about the world.

The reply does not challenge the strength of the argument, since the rarity of an ability is not necessarily a measure of its adequacy as a source of truth. A more serious criticism might turn on how we could distinguish such clairvoyant visions from dreams or fantasies or subjective wish-fulfillments produced by the individual’s imagination.