

The Little Logic Book
Hardy, Ratzsch, Konyndyk De Young and Mellema
The Calvin College Press, 2013

Exercises for The Little Logic Book may be downloaded by the instructor as Word documents and then modified for distribution to students; or students may be instructed to download the exercises and then told which ones to answer. This is an exercise bank; it is not assumed that students will do all the exercises for any one chapter. Comments, questions or suggestions for Chapter One of The Little Logic Book can be sent to logic@calvin.edu

Exercise Bank for Chapter Eleven:
Explanation
(Posted April, 2014)

1.0 Basic Concepts

Define or identify the following:

- 1.1 *Explanans*
- 1.2 *Explanandum*
- 1.3 Causal narrative
- 1.4 Agent narrative
- 1.5 Inference to the Best Explanation
- 1.6 Empirical adequacy

2.0 Explanation Basics

Indicate whether the following statements are true or false. Briefly explain your answer.

- 2.1 Explanations are answers to “why?” questions.
- 2.2 The basic structure for explanations of the behavior of natural objects and for explanations of the behavior of human beings is the same.
- 2.3 Explanation is a kind of argument.
- 2.4 Inference to the Best Explanation is a kind of argument.
- 2.5 The best explanation we have of some phenomenon is also the correct explanation of that phenomenon.
- 2.6 An explanation that is consistent with what we already know is better than an explanation that is inconsistent with what we already know.
- 2.7 A simpler explanation is more likely to be true.
- 2.8 If the only reason we have to believe in the existence of some thing is the role it plays in an explanation, and that explanation is replaced by a better explanation that makes no reference to that thing, then it would be irrational for us to believe in the existence of that thing.

3.0 Explanations

Briefly answer the following questions.

- 3.1 Explanations generally belong to one of two categories, depending upon the sense of the “why” question involved. What are those two senses?
- 3.2 What does a good explanation provide?
- 3.3 What does it mean to *understand* something?
- 3.4 What does it mean to explain something away?
- 3.5 What is the “covering law” conception of explanation?
- 3.6 Some philosophers have said that explanation involves the “reduction to the familiar.” What might they mean by that?
- 3.7 Arguments and explanations typically involve what two types of necessity respectively?
- 3.8 State the five criteria for evaluating explanations.
- 3.9 List several (at least three) ways in which explanations can be defective.
- 3.10 “Even if everyone accepts an explanation, that does not show that it is in fact the correct explanation.” Give several reasons in support of this claim.
- 3.11 State three important factors involved in something being explained away.
- 3.12 What conditions must be met in order for the rationality of a proposed explanation to be undercut?

4.0 Evaluating Explanations

4.1 Your dog runs to the front door, barking wildly. You want to know why. Think of one really crazy explanation of your dog’s behavior. Then think of one that’s more likely to be true. Then compare the two explanations using the criteria for the evaluation of explanations (C1-C5) laid out in the chapter on explanation. In connection with C5, empirical accuracy, indicate how you might go about testing the two theories you came up with. That is, what would you expect to see if the crazy explanation were true; what would you expect to see if the more plausible explanation were true? How would you go about checking them out with respect to their empirical accuracy?

4.2 It’s morning. Your class at the college starts in 30 minutes. You’re living off campus. You jump into your car, stick the key in the ignition and turn it. Nothing happens. The engine won’t turn over. What’s wrong? What’s the cause of your problem? You’d like to know. If it can be handily fixed, you could still make it to class on time; if not, you’ll have to email your professor and call for a tow truck. What are the possible explanations? Of them, which is the best explanation? You think it over. It could be that the battery is dead. It could be that a wire fell loose somewhere between the battery and the starter motor. It could be that your ignition assembly is broken. Or the manifold absolute pressure sensor is defective. Or space aliens may have shot your car with one of their handy heat ray guns and all the moving parts of your engine are now fused together. Which explanations are the least likely? You throw out the space alien explanation—you don’t even believe there are such beings. Manifold absolute pressure sensors rarely give out on cars with mileage under 100,000 (and your car has less than 100,000 miles on

it). You're narrowing things down on the basis of your background knowledge. A dead battery seems like a probable explanation. But how do you test it to see if it's the correct explanation? Consider two test scenarios. First scenario: you turn on the headlight switch, the headlights come on. You conclude that the battery is not dead. How did you get to that conclusion? Second scenario: you turn on the headlight switch and the headlights do not come on. You conclude that the battery is dead. How did you get to that conclusion? Are these conclusions foolproof? Can you think of any possible situations where the conclusions drawn from these tests would not be correct?

4.3 Many people believe in God. There are several possible explanations of that fact. Some might say that people believe in God because there is a God, and they have good evidence for their belief in such a being. The Austrian psychoanalyst Sigmund Freud was an atheist, so that explanation didn't strike him as correct. In *Civilization and its Discontents*, he proposed another explanation: in childhood, people depend on their parents for care and protection. They realize that without their parents, they'd be in very bad shape. When they grow up and eventually leave home, they are often overcome by this childhood anxiety: who will take care of me now? Who will watch over and protect me? So they invent in their imaginations the existence of a heavenly parent, God the Father, who steps in and fulfills the role of their earthly parents. He watches over his children. Freud thus sees religion as a return to childhood on the part of adults, as a refusal to grow up and take responsibility for our own lives in a world that has no special interest in our welfare. That's why people believe in God and refer to him as a "heavenly father."

This is a possible explanation of religious belief. But is it correct? Is it, at least, the best explanation we have? One way to assess this proposed explanation is to think about its empirical accuracy. What would be the case if it were true? What would we expect to observe in the religious beliefs of children and adults if Freud was right? Equipped with answers to these questions, we could go out and see, with some empirical research, if those expectations are met. In this exercise, discuss what you think those expectations would be.

5.0 Explaining Away

5.1 For Discussion: Explaining away?

It is frequently claimed that traditional explanations for religious belief – that God speaks to our hearts, for instance – has been supplanted by evolutionary explanations. Religious belief does not represent a response to divine activity, on this view, but is a perfectly *natural* result of various cognitive, emotional and/or social factors generated in the process of evolution that have nothing to do with any divinity. Thus, rationality of religious belief has been scientifically explained away.

That claim is, of course, controversial. How should it be evaluated? *Is* the evolutionary explanation better (F1)? *Is* the evolutionary explanation better supported by our evidence (F2)? What kind of case would you try to make on those two points? And *is* it true that divine activity can have no explanatory role in evolutionary explanations (F3)? As noted earlier, *why* questions and *how* questions are not always in conflict. In fact, some religious believers argue that evolutionary explanations are not really independent of religious explanations—that evolutionary processes are a means deliberately used by God to generate religious awareness and belief in us. Some even argue that evolutionary explanations cannot be independent of religious explanations—that the conditions required for life and for evolutionary processes to work are so

stringent that they themselves require a religious explanation, they must have been the result of conscious intention.

How would you think about this disputed case?

5.2 For Discussion: Explaining Away Rationality?

Recall the anti-religious argument briefly outlined above in 5.1:

People believe in God in order to explain the existence of the cosmos, the apparent order in the cosmos, various patterns in historical events, our own existence, religious experiences, and so on. But now, the argument continues, we have *scientific* explanations that are vastly superior to the appeal to God as an explanatory hypothesis. Thus, God is explained away (F1- F3 are all met, it is claimed). And since the *only* reason there ever was for believing in God was an attempt to explain those things, continued belief in God is now groundless and irrational.

How should we think about this case? As in Exercise 5.1 we have to ask: are proposed scientific explanations inherently superior? Are they better supported than alternative religious explanations? Are they fundamentally independent of religious explanations? But even after answering those questions (if we can) we face a second, extremely important question before we can conclude that the rationality of religious belief has been explained away: is the *only* rational reason for religious belief, for believing in God, to *explain* things? Is religion really *nothing but* a primitive explanatory theory now superseded by science? Many believers, many theologians, and many philosophers would say “No” to that question. There are many other kinds of reasons one might have for religious belief: philosophical arguments, historical arguments, direct personal experience of God, reports of religious experience, and other reasons as well.

How would you work your way through these issues?