

## Chapter 2

# The Traditional Account of Knowledge

**Abstract** This chapter introduces the traditional account of knowledge. First, three main kinds of knowledge are distinguished: acquaintance knowledge, knowledge-how, and propositional knowledge. The nature of each of these kinds of knowledge and their differences from one another are illuminated. It is also made clear that scientific knowledge is best understood as a particular variety of propositional knowledge. After clarifying the differences between these kinds of knowledge the chapter turns to a brief examination of the traditional account of propositional knowledge. This traditional account holds that in order for one to have knowledge of a particular proposition three conditions must be satisfied: the proposition must be true, one must believe the proposition, and one must have justification for believing the proposition. The discussion of the traditional account of knowledge in this chapter sets the stage for the more in-depth examination of the general features of knowledge that is the focus of the remaining chapters in this section of the book.

We know many things. For example, you know that you are reading this book. You know that the sun is more massive than Earth. You know that dogs are animals. You know that electrons have negative charge. You may know how to swim or how to ride a bicycle. You know your friends. You know many other things too. But, what exactly does it mean to say that you *know* these things? What is it that the various things you know have in common? As we saw in the previous chapter, discovering the answers to these questions is vital to truly understanding scientific knowledge. In this chapter we will begin our exploration of the nature of knowledge in general.

### 2.1 Kinds of Knowledge

Above we noted many things that you know. You have knowledge that various claims are true, but you also have knowledge of how to do things and knowledge of people. We asked what these things have in common, but this may have been a misleading question. Perhaps there are different kinds of knowledge. In fact, epistemologists (philosophers who specialize in the study of knowledge and related concepts) tend to think that there are at least three distinct basic kinds of knowledge

that are very different from one another. These distinct kinds of knowledge are *acquaintance knowledge*, *knowledge-how*, and *propositional knowledge*. We will briefly examine the first two kinds of knowledge before turning to our primary focus, propositional knowledge.

Acquaintance knowledge is the sort of knowledge you have of your friends and other things with which you are familiar. In order to appreciate the nature of this kind of knowledge, consider the following comparison: your knowledge of your best friend and your knowledge of President Obama. If you are best friends with the president of the United States, congratulations—instead of this example, compare your knowledge of him with your knowledge of some famous person who is not a personal friend of yours. Let us assume for the sake of illustration that your best friend and President Obama are not the same person. You may still know a lot about President Obama. For instance, you might know that his full name is Barack Hussein Obama II. You might know that he is the 44th president of the United States. You might know many other facts about him. Perhaps you have even read several books about him. However, despite your knowledge of all of these facts about President Obama we would not say that you *know him* in the sense that you know your friends. To express this thought we might say something like “you know all about President Obama, but you do not know him personally”. When it comes to your best friend you probably know a lot about her as well, but you also know *her*. The difference here is that while you only know various facts about President Obama, you know a number of facts about your best friend, and you also have acquaintance knowledge of her. So, knowledge of facts is different from acquaintance knowledge.

Knowledge-how is different from both acquaintance knowledge and knowledge of facts. It is the sort of knowledge that you have when you have a particular ability or skill. You may know how to ride a bicycle or know how to swim. This sort of knowledge seems very different than your knowledge of your best friend. Knowing how to do something is not the same as having acquaintance knowledge of something. Also, it seems that your knowledge of how to ride a bicycle is very different than your knowledge of facts such as those you know about President Obama. So, we seem to have three distinct kinds of knowledge. The sort of knowledge you have of people you are familiar with, the sort of knowledge that is your skills or abilities, and the sort of knowledge you have of facts.

Let us take a closer look at the third kind of knowledge, the sort of knowledge you have of facts. Consider again your knowledge of President Obama. This knowledge consists of knowing facts about the President. You know that Barack Obama is the current President of the United States. You know that he was a senator in Illinois. And so on. This is all propositional knowledge. That is, it is knowledge that you have of particular propositions.<sup>1</sup> Propositions are what our declarative sentences mean, but they are not identical to those declarative sentences. For instance, consider

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<sup>1</sup>The term “facts” as we have been using it so far is simply another word for “true propositions”. Also, at times we will speak of “claims” being true or false. As we will use the term, a “claim” is simply a proposition that is asserted or accepted as true by someone.

the English sentence “The ball is red”, the Spanish sentence “La pelota es de color rojo”, and the German sentence “Der Ball ist rot”. Obviously, these sentences are very different; they are composed of different words and different orderings of letters. They also sound very different than one another when read aloud. Despite their many differences, each of these sentences means the same thing. Namely, they each mean that *the ball is red*. How is it that these very different sentences can have the same meaning? It is because they each express the same proposition. It is propositions that are the objects of propositional knowledge. So, when you know that the sun is more massive than Earth you know a particular proposition to be true.<sup>2</sup> Specifically, you know that the proposition we express with the English sentence “The sun is more massive than Earth” is true.

Propositional knowledge seems very different than both acquaintance knowledge and knowledge-how. For example, someone who has never met your best friend may know a number of facts about her. This person may have read an extensive file about your friend and her entire life. However, if he has never met your friend, we would not say that he has acquaintance knowledge of her. He only has propositional knowledge of facts about your friend. Similarly, someone might have read several articles on how to ride a bicycle. He may have read so many articles that he can tell you all the finer points of riding a bicycle like a professional—perhaps he can even describe to you how to ride a bicycle better than a champion cyclist. Nevertheless, if he has never ridden a bicycle himself and lacks the ability to do so, we would say that although he has propositional knowledge of bicycle riding, he does not *know how* to ride a bicycle. He knows a lot about bicycle riding, but not how to actually ride one. So, propositional knowledge seems to be different from knowledge-how too.<sup>3</sup>

When it comes to scientific knowledge it is clear that the relevant kind of knowledge is propositional knowledge. After all, scientific claims are not the sort of thing with which you can have acquaintance knowledge. You might really like a particular scientific truth, but you are not acquainted with it in this sense. General Relativity is not one of your personal friends! Also, although knowledge-how clearly plays a significant role in scientific practice in that you might need to know how to run experiments or know how to proceed in a lab, our scientific knowledge

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<sup>2</sup>As we will see in chapter four there is some dispute about whether the primary bearers of truth are propositions or sentences. Although there is dispute about this point, it will not make a difference to our understanding of the nature of knowledge. In light of this, we will follow the majority in holding that propositions are the primary bearers of truth and that when you know something such as that the sun is bigger than Earth what you know is that a particular proposition is true.

<sup>3</sup>Though the dominant view is that knowledge-how is not propositional knowledge, this distinction has become a somewhat controversial philosophical issue in recent years. Stanley (2011) and Stanley and Williamson (2001) have argued that knowledge-how is really just a form of propositional knowledge. Adams (2009), Devitt (2011), Lewis (1990), Poston (2009), and Ryle (1949) have argued in support of the traditional distinction. Contemporary psychology seems to be on the side of the dominant philosophical view because psychologists, such as Schacter et al. (2000) and Squire (1987), distinguish between “procedural” knowledge (knowledge-how) and “semantic”/“declarative” knowledge (propositional knowledge).

is not knowledge-how. Your knowledge of atomic theory, for instance, is not your possessing a particular skill. Instead, it is knowledge that particular propositions are true. Your knowledge of atomic theory includes things like your knowledge that electrons have negative charge, protons have positive charge, etc. So, throughout our discussion of scientific knowledge (and knowledge in general) we will be focused on propositional knowledge. Lucky for us, this is the kind of knowledge that has received by far the most attention from epistemologists.

## 2.2 The Traditional Account of Propositional Knowledge

The traditional account of propositional knowledge is that knowledge *just is* justified true belief.<sup>4</sup> So, in order for you to know that some proposition,  $p$  (that the sun is more massive than Earth, say), you must believe that  $p$ .  $p$  also must be true—the sun must actually be more massive than Earth. And, your believing that  $p$  must be justified. Let us take a brief look at each of these conditions and why they are so intuitively plausible that they have formed the foundation of the traditional account of knowledge for over 2000 years (at least since the time of the ancient Greek philosopher Plato).

You cannot know a proposition which you fail to believe. For instance, if you do not believe that the sun is more massive than the Earth, we would not say that you know it is. Now, we have to be careful because sometimes people do talk in a way which makes it seem like knowing does not require believing. In some cases a person might say something like the following: “I do not believe that the sun is more massive than the Earth—I *know* it is!” At first, we might be tempted to take such expressions as evidence that you do not need to, perhaps even cannot, believe that  $p$  in order to know that  $p$ . This would be a mistake though. It is much more plausible that when someone says “I do not believe that  $p$ , I know it” what she is really doing is expressing that she does not *merely* believe that  $p$ . After all, this person will exhibit the same behaviors as someone who believes that  $p$ . She will be willing to assert that  $p$  is true, if she is asked about it. She will be willing to treat  $p$  as true in her reasoning. And so on. To further illustrate this point consider that someone might exclaim, “That is not a house, it is a mansion!”<sup>5</sup> Does the fact that someone might appropriately say this mean that mansions are not houses? Surely not. What is going on here is that the speaker is emphasizing that the house in question is not *merely* a house, it is a very particular kind of house—a mansion. Similarly, the most plausible explanation of assertions of “I do not believe that  $p$ , I know it” is that the speaker wants to emphasize that  $p$  is not something that she *merely* believes. Instead,  $p$  is

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<sup>4</sup>Since our focus will be on propositional knowledge, from this point on, unless otherwise noted “knowledge” will mean “propositional knowledge” and “the traditional account of knowledge” will mean “the traditional account of propositional knowledge”.

<sup>5</sup>This illustration is from Lehrer (1974).

something that she has a better connection to than mere belief—she believes that  $p$  for very good reasons. This is why it is widely accepted among philosophers that knowledge requires belief.<sup>6</sup>

It is even more widely accepted (perhaps almost universally so) that you can only know propositions that are true. Again, we have to be careful because sometimes people say things which might lead us to doubt this obvious truth. For example, people sometimes say things like “In the past people knew that the earth was flat” or when a sports team loses “I just knew that the team was going to win”. As we know, the earth was not flat in the past, and it is not flat now. So, if people at one time really did *know* that the earth was flat, knowledge does not require the known proposition to be true. But, is this the best way to understand what is being expressed by these sorts of claims? Intuitively, the answer is “no”. A much better explanation is that when someone says, “In the past people knew that the earth was flat” what she really means is that in the past many people *believed* that the earth was flat or, perhaps even more accurately, in the past many people *thought* they knew that the earth was flat. Similarly, when someone says, “I just knew the team was going to win” what she really means is that she was very confident that the team would win or she *thought* she knew they would win. In neither case should we claim that a false proposition was known to be true! One final consideration to help illuminate this fact: imagine someone claims to know that the sun has less mass than Earth. Would we say that he knows something that is false or would we simply say that he is mistaken? We would correctly say the latter—he does not know that the sun has less mass than Earth because this claim is simply not true.

As we have seen, it is widely accepted by philosophers, and intuitively clear, that in order to know some proposition, it must be true and you must believe it. However, knowledge requires more than simply having a true belief. To see this, consider the following case:

Jim makes a wild guess that the winning numbers in tonight’s lottery drawing will be 7, 29, 40, 18, 3, 13, and 8. On the basis of this guess Jim believes that these will be the winning numbers.

Assume for the sake of illustration that as luck would have it Jim’s guess happens to be true—these really are the winning lottery numbers. Does Jim *know* that these are the winning numbers before the drawing is held? Surely not. After all, Jim has absolutely no reason to believe that these specific numbers will be drawn. He is simply guessing, and he is aware of the fact that he is guessing. Not only does Jim fail to know that these are the winning numbers, it is unreasonable for him to believe that they are. Given Jim’s lack of information about which numbers will be drawn,

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<sup>6</sup>Of course, like most things in philosophy, this is not universally accepted. A few philosophers are tempted to claim that there may be rare cases where one can know that  $p$  without believing that  $p$ . See, for example, Lewis (1996) and Radford (1990). For strong opposition to this view see, in particular, Armstrong (1969), Lehrer (1974), and Rose and Schaffer (2013). Even if such rare cases of knowledge without belief do occur, which is highly doubtful, we can safely set aside the issue for our purposes because scientific knowledge does not arise in these rare cases.

the rational thing for him to do is to refrain from believing that any particular set of numbers are the winning ones—in other words, Jim should suspend judgment concerning the winning numbers. Jim does have a true belief in this case, but it is clear that he fails to have knowledge. In light of this, we can clearly see that something more than true belief must be needed for knowledge.

In the *Meno*, Plato claims that the something beyond true belief that is required for knowledge is something which tethers one's belief to the truth of the proposition believed. Today we refer to this "tether" as "justification". So, in order to know that  $p$  you must have justification which supports your believing that  $p$  is true.<sup>7</sup> As we will see in chapter five, there is much dispute over exactly what justification is and what is required for you to have justification for believing that  $p$ . At this point, it will suffice to say that your having justification for  $p$  means you have good reason to believe that  $p$  is true, and you must have justification in order to know that  $p$ .

Putting these pieces together we get the traditional account of knowledge:

Someone,  $S$ , knows that  $p$  if and only if<sup>8</sup>:

1.  $S$  believes that  $p$
2.  $p$  is true
3.  $S$  is justified in believing that  $p$

Of course, there are several things that need to be spelled out in this account of knowledge, and there are various complications that we have yet to consider. We will spell out these details and consider some of the complications in the chapters that follow.

## 2.3 Conclusion

In this chapter we have taken our first steps toward building a philosophical foundation for understanding NOS. We have begun our examination of the nature of knowledge. We distinguished between three kinds of knowledge and recognized that the relevant kind of knowledge for our purposes is propositional knowledge. We have also seen some of the basics of the traditional account of knowledge. In the next three chapters we will devote our time to examining the three key components of the traditional account of knowledge. In the chapter that immediately follows, chapter three, we will discuss what it means for someone to *believe* a proposition. In chapter four we will consider what it takes for a proposition to be *true*. In chapter five we

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<sup>7</sup>Although some philosophers wish to draw technical distinctions between them, we will use the terms "rational", "reasonable", and "justified" interchangeably. So, to say that a belief is justified is the same as saying that it is rational or reasonable. Similarly, to say that  $S$  is justified in believing that  $p$  is the same as saying that it is rational or reasonable for  $S$  to believe that  $p$ .

<sup>8</sup>Since the traditional account of knowledge is in terms of "if and only if", it follows that according to this account, anyone who has knowledge satisfies (1)–(3); and, anyone who satisfies (1)–(3) has knowledge.

will explore the nature of *justification*. Afterward, we will turn toward some of the various complications for this account in the remaining chapters of this section of the book. Our goal throughout will be to increase our understanding of knowledge in general. By doing this we will have gone a long way toward understanding scientific knowledge in particular. Additionally, we will have provided ourselves with a solid foundation from which to continue our exploration of NOS and other debated issues in science education.

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