Chapter 3
Belief

Abstract This chapter explores the nature of belief. An often-overlooked distinction between *believing in* something and *believing that* something is true is explored. It is made clear that the first notion of belief is really an expression used to signify trust or faith in something rather than the sort of belief that is a component of knowledge. Once the importance of believing that is made clear the various major accounts of the nature of belief are briefly examined. The chapter concludes by making it clear that the dispositional and representationalist accounts of belief are the best options. In light of this it follows that the best way to understand the belief component of knowledge is either in terms of having certain dispositions or in terms of having certain mental representations of information. Further, it is made clear that we do not need to decide which of these accounts is superior for the purpose of understanding scientific knowledge.

The first component of the traditional account of knowledge is *belief*. As we noted in the previous chapter, in order to know that *p* you must believe that *p*. At first glance this seems rather simple. We are all familiar with the role that beliefs and desires play in explaining behavior. We might explain why John is eating the last cookie by citing the facts that he had a *desire* for something sweet and that he *believes* that the cookie is the only easily available sweet thing to eat. In saying that John believes that the cookie is the only easily available sweet thing to eat we are saying something about how he views the world. John takes it that the proposition <the cookie is the only easily available sweet thing to eat> accurately describes the world.[1] More abstractly, S's believing that *p* is her taking *p* to correctly describe the world—her taking *p* to be true.[2] For instance, your believing that the sun is more massive than Earth means that you think the world is such that the sun has more mass than Earth. In simplest terms this is what it means to believe that the sun is more massive than Earth. However, there are many important distinctions and subtleties about belief that are worth exploring. Our goal in this chapter is to draw these distinctions and

[1] Here, and throughout the remaining chapters, we will follow the common convention of using "<*p*>" to signify the content of a proposition.

[2] Unless otherwise noted we will use the term "world", as it is commonly used among philosophers, to refer to the entire universe (or multiverse, depending on the correct physics).

K. McCain, *The Nature of Scientific Knowledge*, Springer Undergraduate Texts in Philosophy, DOI 10.1007/978-3-319-33405-9_3

explore these subtleties in order to better understand belief as well as the knowledge of which it is a component.

3.1 Belief in Versus Belief That

An important distinction to make clear immediately is the distinction between *believing in* something and *believing that* something is true.[3] We believe that many things are true. For example, you probably believe that you are reading this page, that dogs are animals, that $1 + 1 = 2$, that water is H_2O, that the sun is more massive than Earth, that eye-glasses help some people see better, and a whole host of other things. You might also believe in various things. You might believe in God or you might believe in democracy or you might believe in the Loch Ness Monster or other things.

In many cases saying you believe in something is really just a way of expressing that you *believe that* various things are true. When we say that Sam believes in the Loch Ness monster we typically just mean that Sam believes that the Loch Ness monster exists. However, in some instances saying you believe in something means more than just that you believe that various things are true. It often also means that you have faith in certain things. For example, Sally's believing in democracy, of course, means that she believes that various things are true. Sally believes that many issues are best settled in a democratic fashion, she believes that people should be allowed to voice their opinions and have a say in their own governance, and so on. But, believing in democracy also seems to mean something more than just believing that various things are true. It also seems to mean that Sally has faith in democratic processes, so that she will exhibit certain kinds of behaviors: she will encourage others to vote, she will advocate for democratic governments in countries in addition to her own, and so on.[4] Sally not only has beliefs about democracy, she values and esteems democracy. So, it seems that believing in something may often include things beyond beliefs that particular propositions are true.

Knowledge requires belief that, but not belief in. The totalitarian dictator who adamantly opposes democracy can still know various things about democracy. The reason for this is that while the dictator may not *believe in* democracy, he can still *believe that* various things concerning democracy are true. The dictator may believe that democracy is a form of government where each citizen of a certain age gets to participate in the governance of the State, for instance. He may

[3] See Price (1965).

[4] Plantinga (2000) similarly distinguishes between *believing that* God exists from *believing in* God. According to Plantinga, the former state simply consists in believing that a particular sort of being exists. However, he maintains that believing in God includes much more: loving God, trusting God, and seeing God as beautiful and glorious.

also have various false beliefs concerning democracy such as the belief that his people are better off under his brutal rule than they would be if they could have a hand in their own governance. The dictator can have all of these beliefs without believing in democracy. Further, it is plausible that in some cases the dictator's beliefs concerning democracy amount to knowledge (according to the traditional account) because they are true, and he is justified in holding them. So, the relevant notion of belief for our discussion is *belief that*, not the perhaps richer notion of *belief in*.[5]

3.2 What Is a Belief?

We have seen that believing in something seems to, at least in some cases, be a more complex attitude (or set of attitudes) than believing that something is true. This is a useful distinction, but it does not tell us a lot about what a belief is. It does not really illuminate what it means for S to believe that *p*, which is what we need to know in order to more fully understand the traditional account of knowledge. As we mentioned above, when you believe a proposition you take that proposition to accurately describe the world. Your belief that the sun is more massive than Earth is your taking the proposition <the sun is more massive than Earth> to be true—you have a particular attitude toward that proposition. This holds for other beliefs as well; they are attitudes that one has toward a proposition. This is the first step to getting clear about the nature of belief itself. Beliefs are propositional attitudes. That is to say, beliefs are mental states that consist of having some attitude toward a proposition or the state of affairs described by the proposition.

Of course, noting that beliefs are propositional attitudes is far from sufficient for accurately characterizing the nature of belief. Not just any attitude toward a proposition is a belief because there are many propositional attitudes in addition to beliefs. Hopes, fears, and desires are all propositional attitudes, and there are other propositional attitudes besides these. These mental states are all alike in that they consist of one's having a particular attitude toward a proposition. When you hope that you make it home before it starts raining you have a particular attitude toward the proposition <I make it home before it starts raining>. Namely, when you have this sort of hope you *want* it to be the case that the proposition is true. When you fear that there is life on Mars you have a particular attitude toward the proposition <there is life on Mars>. You are *apprehensive* about the truth of that proposition. Similarly, when you believe that the sun is more massive than Earth you have a particular attitude toward the proposition <the sun is more massive than Earth>.

[5] As we noted in the first chapter, this distinction may be relevant to issues in science education such as the issue of the proper goals for science education. It also seems to be particularly relevant to the issue of how we should understand data concerning the acceptance rates of various scientific theories (Kampourakis and McCain 2016).

In the case of belief the attitude you have toward the proposition in question is one of taking that proposition to accurately describe the world, i.e. *you take the proposition to be true*.[6]

As mentioned above, belief is a propositional attitude wherein you take a particular proposition to be true. This is a particular mental state that you have. It is important to note that this is a mental *state*, not simply a mental *event*. Obviously, there is the event of your coming to believe that *p*. There may be the event of your no longer believing that *p* such as when you forget that *p*, or when you change your mind and come to think that *p* is not true, or even when you come to doubt *p* to the point that you are no longer sure whether *p* or not *p* is true. But, the belief that *p* itself is a state of your mind that endures the whole time that you have that belief. To see this, consider the following sort of situation:

> Sara is presented with a large and diverse sampling of data in support of the claim that the sun is more massive than Earth in her science class. In light of all of the data that she has, Sara comes to believe that the sun is more massive than the Earth. As the instructor moves on to other basic facts about our solar system, Sara stores this belief in her memory in the way that properly functioning humans usually do. The next day Sara correctly answers a test question concerning which is more massive the sun or Earth. Many years after this exam Sara continues to believe that the sun is more massive than Earth.

Quite plausibly, the event of Sara's coming to believe that the sun is more massive than Earth occurs when she is presented with the data in support of this proposition during her class. However, it seems that when Sara correctly answers the test question the next day she is relying on this same belief. Further, it seems that so long as there is no point at which she has forgotten that the sun is more massive than Earth she has the same belief throughout this example. Sara's belief does not just occur when she consciously thinks that the sun is more massive than Earth; it is present even when she is not thinking about the proposition. This is why it seems true to say that between the time when Sara first comes to believe and her recalling that the sun is more massive than Earth during the test she believes the same proposition. It seems that her instructor would speak truly if she were to say to another instructor before the exam, "Sara believes that the sun is more massive than Earth". Thus, it makes sense to think that Sara's belief that the sun is more massive than Earth is a continuing mental state that she has—one that consists of her having a particular attitude toward this proposition.[7]

[6]For now we will simply stick with an intuitive understanding of what it means to say that a proposition is *true*. In the next chapter we will dive into the deep waters of the nature of truth.

[7]See Armstrong (1973), Lycan (1988), and Moser (1989) for further explication and arguments in support of thinking that beliefs are mental states rather than events.

3.3 Philosophical Theories of Belief

At this point we have seen that beliefs are a particular kind of mental state. They are propositional attitudes consisting of taking a particular proposition to be true. It will be worth briefly exploring some of the major philosophical theories of the nature of this particular kind of mental state to deepen our understanding of belief.

3.3.1 Representationalism

Representationalism is the most prominent theory of belief.[8] According to this theory, a belief is a mental state that involves having a particular representation present (either consciously or stored) in one's mind. As we have noted, a belief is a propositional attitude. Accordingly, representationalism holds that the relevant representation is a mental representation of a proposition. So, Sasha's believing that all dogs are animals consists of her having a representation of the content <all dogs are animals> stored in her mind.

Representationalists disagree about the exact nature of these representations though. Some representationalists hold that the mental representations which constitute beliefs are sentences in a "language of thought". The idea here is that much like a computer has its own code language our minds have their own language of thought. This language of thought is similar to our ordinary spoken languages so that contents in the language of thought are related to one another in ways analogous to how the propositional contents of sentences in our ordinary language are related to one another.[9] Other representationalists hold that beliefs are like maps rather than sentences in a language of thought. The idea here is that we represent the contents of the multiple propositions that we believe in the way that a map represents multiple facts about a particular geographical region.[10] Yet other representationalists maintain that the way to understand the representations is as part of a representational system that has the function of tracking various properties in the world around us. The thought here is that our mental representations form a system that co-varies with our environment in certain ways.[11] Fortunately, we do not need to settle the exact nature of these representations for our purposes.

Although we do not need to take a stance on the intricacies of mental representations to understand the representationalist theory of belief, we do need to clear up one further point. However one comes down on the nature of the representations that constitute beliefs for representationalists, merely representing propositional

[8] See, for example, Cummins (1996), Dretske (1988), Fodor (1975), and Millikan (1993).

[9] The most prominent supporter of this version of representationalism is Fodor (1975).

[10] Armstrong (1973) and Ramsey (1931) both accept this version of representationalism.

[11] This version of representationalism is put forward by Dretske (1988) and Millikan (1993).

content in one's mind is not sufficient for belief. After all, Sasha's desiring that all dogs are animals involves her having a representation of the content <all dogs are animals> in her mind—the very same propositional content that she would represent by believing that all dogs are animals. So, it is not sufficient to simply have a representation of the content <all dogs are animals> in her mind, Sasha must have this content in a *particular way* in order to believe that all dogs are animals. D.M. Armstrong (1973, p. 3) claims that the representational content must be present in one's mind in such a way that "it is something *by which we steer*." So, Sasha must have the content <all dogs are animals> in such a way that it plays the appropriate role in her mental life and her behaviors. For instance, part of what it means for her to believe that all dogs are animals is for her to have the content <all dogs are animals> represented in her mind in such a way that when she comes to know that Fido is a dog she is apt to infer that Fido is an animal. Similarly, if Sasha learns that Astro is not an animal, then she will be apt to infer that Astro is not a dog either. So, representationalism says that in order for one to have the belief that *p* she must a) have a representation of the content *p* in her mind and b) have the content *p* in her mind in such a way that it plays the appropriate causal role in her cognitive life.

3.3.2 Dispositionalism

Although representationalism is the dominant view of the nature of belief in contemporary philosophy of mind, it will be worth saying a bit about some of its major competitors. The primary rival of representationalism is dispositionalism. Dispositionalism about the nature of belief denies that having a particular representation of a belief's propositional content in one's mind is required for having that belief. According to this theory, to have a belief that *p* just is to have various dispositions toward *p*. Traditional dispositionalists take the requisite dispositions to be dispositions to exhibit observable behaviors.[12] According to traditional dispositionalists, Sasha's believing that all dogs are animals consists of her having various *behavioral dispositions*.[13] For instance, Sasha is *disposed to assent* to the claim that all dogs are animals in the right kinds of circumstances, she is *disposed to act surprised* when someone else denies that all dogs are animals, she is *disposed to leave* Fido the dog at home when she goes somewhere that forbids non-human animals from entering, and so on. In general, the thought is that when one believes that *p* she will be *disposed to act* as if *p* is true.

Unfortunately, there are at least two fairly decisive objections to traditional dispositionalism. The first objection is that the traditional dispositionalist's apparent goal of reducing belief entirely to facts about observable behavior seems to be

[12]The discussion here follows Schwitzgebel (2014) in referring to the three primary strands of dispositionalism as "traditional dispositionalism", "liberal dispositionalism", and "interpretationism".
[13]Braithwaite (1932–1933) and Marcus (1990) defend traditional dispositionalism.

impossible.[14] The reason for this is that such a reduction would have to reduce a belief such as Sasha's belief that all dogs are animals to observable behaviors without referring to other beliefs or any other mental states for that matter. It seems that such a reduction cannot be done because how someone who believes that *p* will behave in various circumstances will depend on the other beliefs, desires, and so on that she has. So, in addition to the empirical fact that traditional dispositionalists have not provided a single complete reduction of a belief (or any other mental state) there are good conceptual reasons to think that such a reduction simply cannot be completed.

The second objection to traditional dispositionalism is that there are cases where belief does not seem to be closely connected with observable behavior. For instance, there are cases where one might not want to display any of the outward behaviors that may normally be associated with a particular belief. A person living under a totalitarian regime may hold beliefs that lead her to disagree with the regime's policies. In such a case she may fail to display any behavior that would suggest she has such beliefs out of concern for her own safety. Additionally, there are cases where a belief may have very little connection to any practical concerns, and so, is unlikely to manifest in outward behaviors. Simon may believe that the number of stars in the Milky Way galaxy is either even or odd. It does not seem that this belief will result in his behaving in one way rather than another in many (if any) situations. If there are beliefs that are not connected to observable behaviors in the way that traditional dispositionalism maintains, then there is a serious problem for the view.

These objections have led some to abandon traditional dispositionalism in favor of one of two alternatives. The first alternative is liberal dispositionalism.[15] This version of dispositionalism abandons the traditional dispositionalist's project of reducing beliefs to observable behavioral dispositions. Liberal dispositionalists can thereby avail themselves to other mental states when specifying the dispositions that constitute a particular belief. This allows liberal dispositionalists to avoid, or at least mitigate to some degree, both of the objections to traditional dispositionalism. Loosening up the restriction of not referring to other mental states at least makes it more likely that the liberal dispositionalist can account for a particular belief in terms of behavioral dispositions. Also, this loosening seems to mitigate the worry that some beliefs are not closely linked to observable behavior. For instance, liberal dispositionalism allows that the relevant dispositions for believing that the totalitarian regime's policies are unjust may only manifest themselves in ways that are internal to the believer—she might feel certain ways when considering the policies or she may think various things about the regime to herself. Such inward, non-observable behaviors are sufficient for belief according to liberal dispositionalism.

[14] See Chisholm (1957).

[15] Audi (1972), Price (1969), and Schwitzgebel (2002) all hold views of this sort.

The second alternative to emerge from the failure of traditional dispositionalism is interpretationism.[16] Interpretationism is similar to traditional dispositionalism in that it focuses on observable behavior. However, whereas traditional dispositionalism holds that beliefs are constituted by various behavioral dispositions of the believer, interpretationism holds that beliefs are constituted by our belief attributing practices. Consequently, whether Sasha counts as believing that all dogs are animals depends upon whether we (as a community) would interpret her behavior in such a way that we would ascribe the belief that all dogs are animals to her.

One obvious problem with interpretationism, which seems to be embraced by its advocates as a strength of the view, is that given this theory whether S believes that p is often indeterminate. It may be the case that under some interpretations Sasha believes that all dogs are animals, but under others she does not because some people would attribute this belief to Sasha while others would not. According to interpretationism, there may not be any fact of the matter concerning whether Sasha really believes that all dogs are animals—belief is always relative to an interpretive schema. Embracing such a relativistic stance seems to be warranted only if a strong case can be made in support of interpretationism over the other theories of belief. It does not seem that such a case has been made, nor does it seem likely that it will be.[17]

3.3.3 Eliminativism

A final theory of belief that is worth briefly mentioning is eliminativism.[18] As the name suggests, eliminativism is a theory that eliminates beliefs—according to eliminativism beliefs do not exist. Eliminativists maintain that our talk of beliefs is simply a hold over from our "folk psychology". They claim that when neuroscience and psychology progress to a sufficient level of sophistication this folk psychology

[16]The primary supporters of this sort of view are Davidson (1984) and Dennett (1978).

[17]It is worth noting that representationalism, traditional dispositionalism, liberal dispositionalism, and interpretationism all seem to be compatible with a broader view about mental states known as "functionalism". According to functionalism, the actual and potential causal relations to behavior, other mental states, and sensory stimuli are what make something the particular type of mental state that it is. Very roughly, a mental state counts as the type of mental state that it is because of how it functions in one's cognitive system (mind), not because of how it is realized in particular creatures. For example, the mental state of experiencing pain can be realized by the activity of different kinds of neurons in different species or even by something other than neurons in creatures like Martians. Nonetheless, so long as the activity of whatever Martians have in their heads, say, leads to the same sorts of causal relations in the Martian's cognitive system as the activity of the neurons in a human's does in her cognitive system each is experiencing pain. See Armstrong (1968), Block (1991), Fodor (1968), Lewis (1972), and Putnam (1975) for important discussions of functionalism.

[18]Churchland (1981) and Stich (1983) endorse this sort of view, though Stich seems to have taken a more moderate position in his later work.

will be done away with, and the same will occur with the beliefs that are part of it. In essence, eliminativists think that the word "belief" is similar to scientific terms that we have discarded as our knowledge of the world has increased. Hence, "belief" is on a par with "aether" or "phlogiston"—it is an empty term, which refers to nothing in reality. Eliminativists hold that once we see that there is nothing that is referred to by "belief" we will stop using the term except perhaps to illustrate how failed theories are sometimes apt to make use of empty terms.

The primary case for eliminativism seems to rest on the idea that our scientifically sophisticated neuroscience and psychology will one day abandon terms like "belief" and prove that there is no good use for it. However, this prediction has not been born out in the many years since eliminativists began seriously pushing this view, nor does it seem likely to be born out any time in the near future (if it ever will). A cursory glance at the literature in neuroscience and psychology reveals that the term "belief" is quite ubiquitous. "Belief" is not just used to describe some bit of folk psychology; it appears in this literature as a label for a particular mental state that we have aspirations to understand more fully. In light of this (and our own introspective experience), it does not seem that there are good reasons for thinking that beliefs do not exist.

Of course, a brief exploration of theories of belief such as the one we have conducted in this section is not sufficient for establishing definitively which theory is correct. Fortunately, for our purposes we do not need to decide among the major contenders (other than perhaps denying eliminativism, which seems reasonable to do). Instead, we have accomplished our present goal by gaining a grasp of the most prominent theories of the nature of belief.

3.4 Kinds of Beliefs

Now that we have a handle on some of the main theories of the nature of belief it is time to draw some very important distinctions between various kinds of beliefs. In many cases it will be helpful to assume a particular theory of the nature of belief in drawing these various distinctions. In light of this we will take representationalism to be the correct theory of the nature of belief and explicate the distinctions that follow from within a representationalist framework. There are two good reasons for proceeding this way. The first reason is simply that by assuming a particular theory of the nature of belief the discussion that follows can be made less cumbersome and, after all, representationalism is a good choice for the theory to assume because it is the dominant theory of the nature of belief. Also, representationalism provides a straightforward theory for us to work with throughout our subsequent discussions. The second reason is that nothing of significance will hang on our choice of representationalism as our working theory of the nature of belief. If it turns out that one of the other theories, or perhaps some as yet unspecified theory, is correct, the discussion of these important distinctions can be simply re-conceptualized in terms of the correct theory.

3.4.1 Explicit Belief Versus Implicit Belief

Recall from above that according to representationalism having a belief requires having a mental representation of the propositional content of that belief. In order for Sasha to believe that all dogs are animals she has to have a mental representation of the content <all dogs are animals>. When Sasha has such a mental representation of this propositional content in her mind (either consciously or stored in memory) she *explicitly* believes that <all dogs are animals>. So, our earlier discussion of representationalism (and the other theories as well) was in terms of explicit belief—beliefs whose content one has explicit representations of in her mind at the present time.

In contrast to explicit beliefs there are also *implicit*, or tacit, beliefs. Unlike explicit beliefs, when one has an implicit belief she does not have a mental representation of the propositional content of that belief currently in her mind. Plausibly, there are three primary ways of having an implicit belief (Harman 1986). One way is for those beliefs to be easily inferable from things you explicitly believe because they are logically entailed by your explicit beliefs. For example, Molly explicitly believes that there are exactly eight songs on a particular album—so, she has a mental representation of the content <there are exactly eight songs on the album> in her mind in the appropriate way. She can easily infer from this belief that there are less than 20 songs on the album. She can also easily infer that there are less than 21 songs on the album; there are less than 22 songs on the album, and so on. Although Molly can easily infer the truth of these additional propositions because they are implied by her explicit belief that there are exactly 8 songs on the album, she does not at present have mental representations of the content of these propositions in her mind. In this case it seems that Molly believes these propositions about the number of songs on the album, but she only does so implicitly.

A second way of having implicit beliefs is for those beliefs to be easily inferred from your explicit beliefs even though they are not entailed by those explicit beliefs. For example, it is plausible that you implicitly believe that tigers do not wear top hats in the jungle.[19] Notice, this is different than Molly's belief about the number of songs on the album being less than 20. In Molly's case her implicit belief is directly implied by her explicit beliefs. However, in this case it is likely that your explicit beliefs do not directly entail this proposition about tigers. Yet, your explicit beliefs do make it so that you could easily infer tigers do not wear top hats in the jungle. Thus, it seems that one might have implicit beliefs by virtue of their being easily inferred from one's explicit beliefs even when they are not logically implied by those explicit beliefs.

A third way of having implicit beliefs is that they may be implicit in some of your explicit beliefs. The idea here is that when Molly explicitly believes that

[19] See Dennett (1978) for similar examples.

there are exactly eight songs on the album she may implicitly believe that she is justified/rational in believing that there are exactly eight songs on the album (Harman 1986). The idea is that by explicitly believing that there are exactly eight songs on the album Molly may commit herself to believing that she is justified/rational in having that belief. Since Molly commits herself in this way, it is plausible that she implicitly believes that she is justified/rational in believing that there are exactly eight songs on the album.

It seems that there are a variety of ways in which one might implicitly believe that *p*. Importantly, in each of these ways when one has an implicit belief she does not have a mental representation of the content of that belief in her mind whereas such a mental representation is required for explicit belief. Also, a plausible restriction on whether one has an implicit belief is that she must have the potential to make that belief explicit. That is to say, it seems that Molly does not even implicitly believe that she is justified/rational in believing that there are exactly eight songs on the album if she cannot represent the content <my belief that there are exactly eight songs on the album is justified/rational>.

3.4.2 Occurrent Belief Versus Dispositional Belief Versus Disposition to Believe

The next set of distinct kinds of belief concerns one's consciousness of the belief in a significant way. We must be careful to recognize that the distinctions drawn in this section are different from the explicit belief/implicit belief distinction of the previous section. The first kind of belief to discuss in this section is *occurrent belief*. Occurrent beliefs are those that one is currently thinking of or those that are "in some other way currently operative in guiding what one is thinking or doing" (Harman 1986, p. 14). For example, when Sasha is currently thinking to herself that all dogs are animals her belief that all dogs are animals is occurrent. Similarly, when Jack is jogging up a hill and jumps over a hole in the ground it is plausible that his belief that there is a hole in the ground is occurrent. Since occurrent beliefs are either currently thought of, or stored in one's mind and currently guiding her thought/behavior, they must be explicit beliefs. Therefore, all occurrent beliefs are explicit; however, not all explicit beliefs are occurrent.

Some explicit beliefs may be *dispositional*. An explicit dispositional belief is an explicit belief that is currently stored in one's mind, which is not presently occurrent but is potentially so. This is worth unpacking a little. Consider a situation where Sasha has formed the explicit belief that all dogs are animals, and she stores this belief in her memory in the normal way. So, she has a mental representation of the content <all dogs are animals>, and when prompted in the appropriate way she will recall this belief in the way we typically do when we remember things that we believe. When Sasha is not currently thinking that all dogs are animals, but her belief is stored in her memory waiting to be recalled, her belief that all dogs are

animals is dispositional. It is dispositional because it is a belief that she has, which is not currently conscious but which she can potentially bring to consciousness. Her belief in this situation is also an explicit belief because she has the appropriate mental representation of the content of this belief stored in her mind. Although some dispositional beliefs are explicit, not all are. In fact, any implicit belief will be dispositional.

At this point a brief summary is in order. All occurrent beliefs are explicit beliefs, but not all explicit beliefs are occurrent beliefs. An explicit belief can fail to be occurrent when the sort of mental representation required for explicit belief is merely stored in one's memory. However, when one has an occurrent belief she has a mental representation of the content of the belief before her mind—in other words, her belief is explicit. All implicit beliefs are dispositional because they are beliefs that have not yet been brought to consciousness, and so, are only potentially conscious. Not all dispositional beliefs are implicit though. Some dispositional beliefs are ones that were previously occurrent and are now mental representations stored in memory. So, there are both explicit dispositional beliefs and implicit dispositional beliefs.

One final distinction needs to be drawn in this section—the distinction between *dispositional beliefs* and *dispositions to believe*. The former are beliefs that one actually has, whether explicit or implicit. The latter are not beliefs that one actually has, but dispositions that one has to form certain beliefs. Here is a simple way to understand the difference between the two. When Theresa is sleeping on a train she has the disposition to believe that the man who just sat down across from her is wearing a hat. She has such a disposition because if she were to wake up and look across the aisle, she would believe that the man across from her is wearing a hat.[20] Yet, currently Theresa does not even have this belief dispositionally—she simply has not formed this belief either explicitly or implicitly at this time. So, in this case Theresa has the disposition to believe that the man across from her is wearing a hat, but she does not have the dispositional (nor occurrent) belief that the man across from her is wearing a hat.

With the distinctions from this section in hand we now have a clearer understanding of the sort of belief that is relevant for understanding scientific knowledge. Typically, when we are discussing the sorts of things that we know from the sciences the relevant sense of belief is explicit and quite often occurrent. We will see more about this in later chapters, but for now it is worth noting that we currently have a grasp of some of the most important distinctions concerning belief. This will help us to deepen our understanding of the nature of knowledge.[21]

[20]This is similar to Audi's (1994) discussion of dispositions to believe.

[21]Of course, there are other important distinctions between kinds of beliefs such as the *de re*/*de dicto* distinction (see Moser (1989) and Quine (1956) for more on this). However, these distinctions are not as central to our purposes so we will not spend time discussing them.

3.5 The Tripartite View Versus Degrees of Belief

It is obvious that we believe some things more strongly than other things. You likely believe that George Washington was the first president of the United States. This belief is something that you probably hold quite firmly—you are quite certain that it is true. Although you believe this strongly, you probably even more strongly believe that you are reading a book. It is plausible that your belief that you exist is held even more strongly than your belief that you are reading a book. After all, you could be mistaken about reading the book—perhaps you are hallucinating or perhaps you are the victim of some massive deception.[22] However, even if you are hallucinating or deceived in various ways, you must still exist. This is something that Descartes pointed out quite well in his *Meditations*. So, it seems that you have stronger grounds for believing that you exist than you do for believing that you are reading a book or for believing that George Washington was the first president of the United States. Given that you have stronger grounds for believing that you exist than you do for these other beliefs, it is plausible that you believe that you exist more strongly than you do these other beliefs.

Recognition of the fact that we believe some things more strongly than others has led some to suggest that we should understand belief not as an all or nothing state, but as a matter of degree. Often the idea is that for every proposition we have considered (sometimes this is understood to apply to every proposition, whether we have considered the proposition or not) we have a degree of belief in the truth of that proposition that falls somewhere between 1 and 0. Under this "standard" way of understanding degrees of belief when you have a degree of belief 1 that p you are absolutely certain that p is true, when you have a degree of belief 0 that p you are absolutely certain that p is false, and for anything in between 1 and 0 you believe p to a greater or lesser degree. Typically, degree of belief .5 is taken to be the point at which you are completely unsure about p's truth—you believe it is true to the same degree that you believe that it is false; you simply are not swayed one way or the other concerning p.

An obvious question that arises when considering degrees of belief is: how are we to understand what these degrees of belief mean? How, for example, should we understand the claim that Alex believes that p to degree .65? A common way to analyze degrees of belief is in terms of betting behavior. So, to say that Alex believes that p to degree .65 is to say that he would (or should) be willing to bet \$0.65 on a wager where he gets nothing if p is false and he gets \$1 if p is true. Of course, there are obvious problems with understanding degrees of belief in terms of betting behavior—some people may simply be more averse to betting than others, there may be situations in which it is improper to bet on the truth of a particular proposition, and so on.[23]

[22] Such skeptical possibilities will be discussed much more fully in chapter eleven.

[23] See Jeffrey (1983) and Skyrms (2000) for more on the degreed approach to belief.

An additional problem for the degree of belief view is that it is simply not clear how it tracks our commonsense tripartite view of belief. According to this commonsense view, when it comes to a particular proposition we can take three attitudes when it comes to belief. We can believe the proposition, we can disbelieve the proposition (believe it is false), or we can suspend judgment concerning the truth of the proposition. In some cases it seems clear that a certain degree of believing amounts to belief on the tripartite view. For instance, degree of belief 1 is clearly believing on the tripartite view, and degree of belief 0 is clearly disbelieving on this view. What about degrees of belief that fall between 1 and 0 though? Does S's having degree of belief .57 in *p* really count as S believing that *p* is true? It is not clear what the correct answers to such questions are.

Fortunately, we do not need to answer such vexing questions here. For our purposes we can work with the tripartite view instead of worrying about a degreed approach. Focusing on the tripartite view has two advantages over focusing on the degree of belief approach. First of all, the traditional account of knowledge is in terms of the tripartite view, so our use of the tripartite view of belief directly links up to the traditional account of knowledge, which is what we are seeking to better understand. Second, the tripartite view is a simpler view to work with—both in terms of actually employing the theory and in terms of bypassing the difficult questions that we just saw arise for the degree of belief approach. This is not to say that our subsequent discussion cannot be translated into the degree of belief approach. With some work, it can be. However, such a translation would, for our purposes, be a considerable amount of work without a corresponding payoff.

3.6 Belief Versus Acceptance

A final distinction that is worth discussing in this chapter is the distinction between *belief* and *acceptance*. Throughout this chapter we have discussed belief in some detail, however, there is a related notion that is of particular importance to our future discussions: acceptance. Gilbert Harman (1986) helpfully distinguishes between full acceptance and acceptance as a working hypothesis. Full acceptance *just is* belief. So, when S fully accepts that *p* she believes that *p*.

Acceptance as a working hypothesis is much more tentative. When S accepts *p* as a working hypothesis she is taking *p* as true to see where it goes. As Harman (1986, p. 46) says, she is "trying it out" in an effort to see what further discoveries or implications acceptance of *p* will lead to. This sort of acceptance as a working hypothesis is a fairly common practice in science (van Fraassen 1980). A researcher may accept *p* as a working hypothesis and then go about constructing experiments and conducting research on various things some of which may yield more conclusive evidence concerning the truth or falsity of *p*.

It is important to recognize the attitude of acceptance as a working hypothesis as distinct from full acceptance/belief. In many cases the reason why scientific knowledge is tentative is that part of the hypotheses that constitute our current

scientific theories are simply accepted as working hypotheses—they are not fully accepted/believed to be true.[24] Additionally, it is plausible that a misunderstanding of when a theory is accepted as a working hypothesis and when it is fully accepted/believed as well as when the evidence supports one or the other of these attitudes may help contribute to misunderstandings of scientific theories. For example, one common and sorely misguided objection to evolutionary theory is that it is "just a theory". It may be that some who press this objection are confused about the difference between a theory that is fully accepted (and supported by sufficient evidence to make its acceptance beyond a reasonable doubt) and a theory that is merely accepted as a working hypothesis. In light of this, clarity on the distinction between full acceptance and acceptance as a working hypothesis, as well as the mountains of evidence for evolutionary theory, may be quite helpful in clearing up this particular misguided objection to evolutionary theory.[25]

3.7 Conclusion

In this chapter we have explored the nature of belief as well as several very important distinctions between various kinds of beliefs. This information provides a strong philosophical foundation for understanding the first component of the traditional account of knowledge. As we noted, S's believing that *p* consists of her having a mental representation of *p* and her being guided by that representation—for her to take *p* as true. At this point it is natural to seek further clarity on what exactly we are thinking when we take *p* as true. In particular, it is time to examine what it means for *p* to be true. This second component of the traditional account of knowledge and fundamental philosophical issue will be the focus of the chapter that follows.

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[24]Of course, this is not the only source of the tentativeness of scientific knowledge as we will see later.

[25]For further discussion of the "just a theory" objection to evolutionary theory and detailed explanation of why it is such a misguided objection see McCain and Weslake (2013) and Kampourakis (2014).

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