Chapter 2

Truth

...I sat by moonlight amid the necropolis of Memphis.

There I was caught up by wings of flame,

And a voice from heaven said to me:

"Injustice, Untruth destroyed them. Go forth!

Preach Justice! Preach Truth!"

And I hastened back to Spoon River

To say farewell to my mother before beginning my work.

They all saw a strange light in my eye,

And by and by, when I talked, they discovered

What had come in my mind.

Then Jonathan Swift Somers challenged me to debate

The subject, (I taking the negative):

"Pontius Pilate, the Greatest Philosopher of the World."

And he won the debate by saying at last,

"Before you reform the world, Mr. Tutt,

Please answer the question of Pontius Pilate:

'What is Truth?'"

Edgar Lee Masters

Spoon River Anthology

This chapter and the next focus on two related topics, truth on the one hand, and facts on the other. These topics are somewhat unusual for a book on the history and philosophy of science, but I think they are worth considering early on, largely to dispel some common misconceptions and over-simplifications.

It seems to be a fairly widespread belief that the accumulation of facts is a relatively straightforward process, and that science is, in large part at least, geared toward generating true theories that account for such facts. Both of these are largely misconceptions about facts, truth, and their relations to science. One of the goals of the next two chapters is to show that these issues are much more complex than often appreciated. In addition, as we will begin to see in this chapter and the next, and as will become increasingly clear as the book progresses, the relationship between facts, truth, and science is much more complex and controversial than the simple view suggested above–that is, of science as a process of generating true theories to account for straightforward facts.

Preliminary Issues

We think the belief, part of our worldview, that the Earth moves around the sun is true, and the belief common in the Aristotelian worldview, that the Earth is stationary with the sun moving about it, is false. Within our system of beliefs, it seems to us obviously true that the Earth moves about the sun, and it seems to us there are innumerable facts that prove this belief is true. But within the Aristotelian worldview, it seemed equally obvious that the Earth was

stationary, and within that system of beliefs there seemed to be equally many facts that proved the Earth did not move. What is the difference between our beliefs and their beliefs? If our belief about the Earth really is true, and their belief really is false, what makes the one belief true and the other false? More generally, what is truth?

A common reaction to this question is to say that facts are what make a belief true. For example, one commonly hears that there are facts that prove the Earth moves about the sun, and these facts are what make the belief true. Interestingly, facts and truth are often defined in terms of one another. People often answer the question "what is truth" by saying true beliefs are those supported by facts. And the question "what is a fact" is often answered by saying that facts are those things that are true. In fact (no pun intended), my dictionary defines truth as "a verified or indisputable fact," and then turns around and defines a fact as "that which is known to be true."

But this sort of circularity–defining truth in terms of facts and facts in terms of truth–sheds no light on our questions. What is truth? What is a fact? What is the difference between true/factual beliefs and false/non-factual beliefs? What makes some beliefs true/factual and others false/non-factual?

Before tackling these questions directly, take a moment to reflect on how much for granted we take the subject of truth. We all have a large stock of beliefs, and we think our beliefs are true. After all, why else would we believe them? Chances are, you would not have bought this book if you did not believe that most of what is going to be said in the book is true. If you are reading this book as part of a college course, chances are you are devoting a huge share of resources, both time and money, to attend that college, and you certainly would not do so if you did not think that you would learn a sizable share of true things during your college tenure. And think about history, or for that matter, think about current events, both of which are filled with various incidents (wars, assassinations, religious persecutions, and so on) motivated in large part

by the conviction that certain sets of beliefs are true and others are false. So even if you have not thought about it explicitly, the issue of truth is likely to be of substantial interest to you. Truth is something we take for granted every minute of every day, and often with consequences that are far from trivial.

But rarely do we reflect on the subject of truth. As mentioned, one of the main goals of this chapter is to shed some light on the subject of truth, and in doing so show that the subject is quite complex. We are not going to answer our questions about truth definitively–such questions have been debated at least since the beginning of philosophy and science. Since no consensus has emerged over the past 2,000 years, it is unlikely that a consensus will emerge by the end of this chapter. But some standard views of truth have emerged over the years, and we can at least get an outline of these standard views of truth, and in doing so, come to appreciate the complexity of the issues involved.

Clarifying the Question

In inquiries such as this, it is usually a good idea to be clear on, and to keep in mind, the question that is being addressed. It is also worth distinguishing the question being addressed from other, perhaps related, questions.

When I ask the question "what is truth?," the central question I have in mind is this: What makes true statements or true beliefs true? And what is it that makes false statements/beliefs false? In other words, what do true statements (or beliefs) have in common that make them true, and what do false statements (or beliefs) have in common that make them false?

This central question about truth is often confused with an *epistemological* question about truth. Generally speaking, epistemology is the study of knowledge, and epistemology is an

important branch of philosophy. A key epistemological question about truth–how do we come to know which statements and beliefs are true?–is an important question, but again, not the key question with which we are here concerned.

Consider an analogy. Suppose we have a tract of forest, and we are interested in knowing which of the trees in this tract are oak trees. In this case, our main question would be an epistemological one–how might we come to know which trees are oaks? Employing the services of a forestry expert would be an excellent way to answer this question–we can come to know which of the trees are oaks by paying attention to what the forestry expert tells us. But notice that the fact that the forestry expert identifies a tree as an oak is not what makes that tree an oak. In other words, the question "how do we come to know which trees are oaks?" is a different question from the question "what makes a tree an oak?"

And just as there is presumably something that oak trees have in common that make them oak trees, so too presumably there is something that true statements (or true beliefs) have in common that makes them true. And that is the key question in which we are interested–what do true statements (or beliefs) have in common that make them true?

Over the years, there have been a large number of theories of truth that have been offered as possible answers to our central question. Most such theories fall into one of two categories. We will call theories that fall into the first of these categories *correspondence theories of truth*, while theories that fall into the second category we will call *coherence theories of truth*. These are not the only types of theories of truth that have been proposed, but these two categories cover much of the territory, and will serve to illustrate many of the complexities surrounding truth. Also worth noting is that, at this point, we will not be concerned with all of the specific versions of correspondence and coherence theories. Where appropriate, we will mention some of the more notable varieties. Let us begin with correspondence theories of truth.

Correspondence Theories of Truth

In a nutshell, according to correspondence theories of truth, what makes a true belief true is that the belief corresponds to reality. What makes a false belief false is that the belief fails to correspond to reality.

For example, if “the Earth moves about the sun” is true (as most of us think it is), what makes it true is that, in reality, the Earth really does move about the sun. That is, what makes this belief true is that the belief corresponds to the way things really are. Likewise, if “the Earth is stationary with the sun moving around it” is false, it is false because it fails to correspond to reality. What makes beliefs true or false is whether they correspond to reality.

“Reality” is a term used in a variety of ways, so to understand correspondence theories of truth, it is crucial to appreciate how this term is being used. In this context, "reality" most definitely does *not* refer to what you or I *believe* reality to be like. Generally speaking, what you and I believe reality to be like has no effect on what reality really is like. Likewise, what our best scientists believe reality to be, or what the majority of the population believes reality to be, or what a yoga master in an enlightened state of mind believes reality to be, has little effect on what reality really is. As used in the correspondence theory of truth, “reality” is not "your reality", "my reality", "Timothy Leary's reality", the reality of an acquaintance under the influence of strong hallucinogens, or any such thing. Instead, "reality" refers to “real” reality: a reality that is completely objective, generally independent of us, and that generally speaking in no way depends on what people believe that reality to be like.

There are, of course, some uninteresting ways in which some of our beliefs might affect certain aspects of reality. For example, I might believe it is too warm in my living room, and so turn down the thermostat. In this way, certain of my beliefs might lead to a change in a certain

aspect of reality, such as the air temperature in my living room. But a proponent of a correspondence theory would maintain that, in general, our beliefs do not affect reality.

So to summarize: according to correspondence theories of truth, what makes a belief true is that it corresponds to an independent, objective reality. What makes a false belief false is that it fails to correspond to that reality.

Coherence Theories of Truth

According to coherence theories of truth, what makes a belief true is that the belief coheres with, or ties in with, other beliefs. For example, my belief that the Earth moves about the sun coheres with, or fits in with, lots of other beliefs. I tend to believe what I read in authoritative astronomy books, and these books assure me that the Earth moves about the sun. I tend to believe what experts in this area say, and such experts likewise say the Earth moves about the sun. As such, my belief that the Earth moves about the sun coheres with these other beliefs, and according to coherence theories of truth, this coherence is what makes a true belief true.

Think back on the jigsaw puzzle analogy used in the discussion of worldviews from the first chapter. Recall that worldviews are systems of beliefs that interlock in something like the way the pieces of a jigsaw puzzle interlock. The same analogy can be used to illustrate coherence theories of truth. A true belief is like a piece of a jigsaw puzzle. That is, in something like the way that a particular piece of a jigsaw puzzle fits into the overall puzzle, so likewise a particular belief is true if it fits into the overall jigsaw puzzle of beliefs. A false belief would be like a puzzle piece that does not fit.

In summary, according to coherence theories of truth, what makes a belief true is that it

coheres with the overall collection of beliefs. And what makes a belief false is that it fails to cohere with the overall collection of beliefs.

Different Versions of Coherence Theories

Thus far, we have spoken of coherence theories in only a very generic fashion. We need to take a moment to understand how many different types of coherence theories are possible. In something like the way that a Ford is a *type* of automobile, with there being a wide variety of particular versions of Fords, so likewise coherence theories are a type of theory, with a wide variety of particular versions.

The different versions of coherence theories differ primarily with respect to whose beliefs are being counted within the jigsaw puzzle of beliefs. Are we concerned only with an individual's beliefs, so that, to be true for a particular individual, "The Earth moves about the sun" must merely cohere with that individual's other beliefs? Or are we talking about the beliefs of a group, so that to be true, "The Earth moves about the sun" must cohere with the collective beliefs of that group? And if we are speaking of the beliefs of a group, then who counts as a member of that group? Is it all those who live in a certain geographic region? Is it those who share a particular worldview? Is it the community of scientists or other experts?

Depending on how such questions are answered, one arrives at various more specific versions of coherence theories. For example, if the beliefs are the beliefs of the individual in question, then we have what might be called an *individualistic* coherence theory. On such a theory, a belief is true for Sara if it fits in with Sara's other beliefs; a belief is true for Fred if it fits in with Fred's other beliefs; and so on. It should be clear that, on an individualistic coherence theory, truth is relative to the individual in question. That is, what is true for Sara may not be

true for Fred.

If we opt instead to make the collection of beliefs those of a particular group, we arrive at quite different versions of coherence theories. These might be called *group* versions of coherence theories. Just for the sake of illustration, suppose we hold that, say, a belief having to do with science is true if it fits in with the collective beliefs of the group of western scientists. For convenience, let us call such a view a *science-based* version of a coherence theory.

Note that, although the individualistic version and the science-based version are both types of coherence theories of truth, they are quite different theories. To see that these are different theories, consider an acquaintance of mine, whose name is Steve. Steve quite sincerely and with deep conviction believes that the moon is further from the Earth than is the sun, that the moon is inhabited, and that the moon is a place of frequent parties and other sorts of revelry. (Steve's beliefs stem largely from a strict literal interpretation of certain religious scriptures. Whether his beliefs are any more or less reasonable than those that stem from a literal interpretation of other religious scriptures is a topic beyond the scope of this chapter. But it is worth mentioning that literal interpretations of religious scriptures often lead to unusual collections of beliefs, such as those of the Flat Earth Society or those of the Geocentric Society, whose members believe the Earth is the center of the universe. Like Steve's beliefs, the beliefs of the Flat Earth Society and the Geocentric Society stem from literal readings of religious scriptures, albeit different scriptures than those on which Steve bases his beliefs.)

Steve's jigsaw puzzle of beliefs, although quite different from my jigsaw puzzle and probably quite different from yours, forms a system of beliefs that tie together perfectly well. In particular, Steve's belief that the moon is inhabited by sentient beings coheres with the rest of his beliefs. Thus, on the individualistic version of the coherence theory, Steve's beliefs about the moon are true. Importantly, Steve's beliefs are just as true for him as your beliefs about the moon

are for you and mine are for me.

On the other hand, according to a science-based version of the coherence theory, Steve's beliefs about the moon are false, since those beliefs do not cohere with the overall set of beliefs of western scientists. In short, the individualistic version and the science-based version are two different theories of truth, although both of them are types of coherence theories.

The individualistic and science-based versions were presented mainly to illustrate that there are different versions of coherence theories possible. Since different versions of coherence theories differ mainly on whose set of beliefs "count," and since there are a wide variety of different ways of specifying whose beliefs count, it should be clear that there are a large variety of very different coherence theories possible.

Problems/Puzzles About Correspondence Theories of Truth

At first glance, some sort of correspondence theory seems like the right idea. After all, what could be more natural than saying that true beliefs are those that reflect the ways things really are? Some thought on the matter, though, suggests that there are some puzzles about correspondence theories of truth.

By far, the major puzzle concerns the appeal to reality. In describing this puzzle, let's digress for a moment in order to describe what is generally referred to as the *representational theory of perception*. To call it a "theory of perception" is perhaps a bit grandiose, given that it is what most people take as the commonsense view of how perception works. Nonetheless, the "representational theory of perception" is what it has come to be called, and so it is the way we will refer to it.

To understand this theory of perception, an illustration might help. Let's consider an

acquaintance, whom we will call Sara, and let's suppose we can peek into Sara's consciousness. Borrowing the technique cartoonists commonly use to let us look into the minds of their characters, this would look as follows.

<Insert Figure 2.1 here.>

The representational theory of perception is a general theory about perception involving all our senses, including sight, sound, taste, and so on. However, it is most easily illustrated by focusing on vision, so in what follows, most of our examples concern visual perception. It should be kept in mind, however, that similar considerations hold for the other senses.

Roughly speaking, when Sara looks at the tree, she receives a visual image of the tree, the sun, the apple, and so on. These visual images are representations of the tree–in the case of vision, the representations are something like pictures. Likewise, if you or I were looking at the tree, we would have similar visual representations of the tree, the sun, and so on.

At bottom, this is all there is to a representational theory of perception: our senses provide representations (in the case of vision, representations that are in some very rough sense like pictures) of things in the external world. Again, this is a view that most everyone takes for granted. But it is also a view that has interesting implications, and some of these implications directly affect correspondence theories of truth.

The most important of the implications of such a view of perception is that it entails that we are all, in a sense, isolated from the world. In particular, there is no way for us to know if the representations provided us by our senses are accurate. This claim–that we cannot know whether our representations are accurate–is a strong claim, and so I will take some time to defend it. (Incidentally, I should note that although there is widespread agreement about this claim, not

everyone accepts it.)

In particular, I will present two different explanations for why, if the representational theory of perception is correct, we can not know if the representations provided by our senses are accurate. The first explanation focuses on how we go about assessing the accuracy of representations, and the second explanation revolves around what I will call the "Total Recall" scenario.

Assessing the Accuracy of Representations

Consider how we go about assessing the accuracy of an ordinary representation, such as a photograph, or a street map, and so on. Suppose we have before us some ordinary representation, say, a photograph of Devil's Tower. (Devil's Tower is an interesting geological feature–sort of a very large cylinder rising out of the ground–located in northeastern Wyoming). The obvious way to assess the accuracy of this photograph is to go to Wyoming and compare the photograph of Devil's Tower with Devil's Tower itself. Likewise, to assess the accuracy of a street map of New York City, you would compare the map with what it is a map of. To assess the accuracy of a topographic map, you would compare the topographic features on the map with the actual terrain that the map is supposed to be representing.

The bottom line is this: to assess the accuracy of a representation, we need to compare (i) the representation, for example, the photograph of Devil's Tower, with (ii) the thing represented, for example, Devil's Tower itself. In short, the way to assess the accuracy of a representation is to compare the representation with the thing represented.

If our senses provide us with representations of the external world, then a reasonable question to ask is whether those representations are accurate. And as we have just seen, to assess

the accuracy of the representations provided by our senses, we would need to compare those representations with the things being represented.

But look again at the diagram of Sara above. Suppose Sara wants to assess the accuracy of her visual representation of the apple. To do this, she would need to compare her visual representation of the apple with the apple itself. *But there is no way for Sara to do this*. The reason Sara cannot compare her visual representation of the apple with the apple itself is because she cannot step outside of her own consciousness. From Sara's point of view, all she has available is what is in her consciousness. To illustrate, consider this diagram illustrating Sara's point of view.

<Insert Figure 2.2 here>

That is all Sara has. She cannot step outside of her own conscious experience in order to compare what is in that experience with what is presumably causing that experience. In short, it seems that Sara has no way of comparing her visual representation of the apple with the apple itself, and hence has no way of assessing whether her visual representation of the apple is accurate.

Could Sara compare her visual image of the apple with, say, the sense of touch she receives when she feels the apple, or with the smell of the apple, and thereby conclude that her visual representation of the apple is accurate?

Sara could certainly compare her visual image with her tactile sensations, as well as with the olfactory sensations she receives when she smells the apple. But notice that her sense of touch itself is a representation, and her sense of smell likewise is a representation. So when Sara compares the visual image of the apple with her sense of touch when she touches the apple, or

with her sense of smell when she smells the apple, she is comparing representations with other representations. Recall that to assess the accuracy of her visual representation, she needs to compare the representation with the thing represented, not with other representations.

This situation is very much like trying to assess the accuracy of a photograph of Devil's Tower by comparing the photograph with, say, a topographic map of Devil's Tower, or with a street map of the roads around Devil's Tower. In such a case, what is being compared is one representation with another representation. The needed comparison–of the representation with the thing represented–is not being done.

The implication is that there is no way for us to assess the accuracy of the representations our senses provide us. Or to say the same thing in different words, there is no way for us to know for sure what reality is really like.

The Total Recall Scenario

As a second way to explain why, if the representational theory of perception is correct, there is no way for us to know whether our representations of the world are accurate, consider the "Total Recall" scenario. *Total Recall* is a science fiction movie. The movie is set in the future–say, the late 24th century–and in this time period, if one wishes to take a vacation but can not afford that vacation, there is the less expensive option of having the experiences of the vacation implanted into one's mind. That is, there are companies who specialize in such virtual vacations. One pays the fee, and the company hooks you up to a device that implants totally realistic experiences of the vacation of your choice directly into your mind. The experiences are of a virtual reality so realistic that it is impossible to tell them from the real thing. (It is not crucial for our discussion, but the plot of the movie involves the main character's inability to tell

whether his conscious experience is the result of reality or the result of realistic but unreal images being implanted into his mind. Another popular movie with a similar theme is *The Matrix*. Also, this sort of scenario was not by any means invented by Hollywood–as we will discuss shortly, Descartes considered this sort of scenario in some detail back in the 1600s.)

With this in mind, refer again to Figure 2.1, and consider Sara's conscious experience. Sara believes her visual image of the apple, the feel of the apple, the taste and smell of the apple, and so on, are caused by there really being a tree, an apple, and so on. But if Sara were in a Total Recall scenario, with these sensations being implanted into her mind, her conscious experience would be exactly the same. Pictorially, the situation would look like this.

<Insert Figure 2.3 here.>

Notice that Sara's conscious experience, in both the "normal" situation depicted in Figure 2.1 as well as the Total Recall scenario depicted in Figure 2.3, is exactly the same. Sara has no way of knowing for sure that she is not in a Total Recall scenario. That is, Sara has no way of knowing for sure whether her conscious experience is caused by an external world like that in Figure 2.1, or by an external world like that in Figure 2.3. In short, Sara has no way of knowing for sure what reality is really like.

Of course, the same situation applies for you as for Sara. Suppose you are living in the 24th century, and you are a historian specializing in the early 21st century. Suppose you have decided to experience, via a Total Recall scenario, what life in the early 21st century was like. Part of that Total Recall scenario might involve reading (or having the experiences as if you were reading) a book on the history and philosophy of science from that time period. Your current experience–these words, this page, this book, your current surroundings–might be part of

a Total Recall scenario.

The bottom line is that, although we all believe our experiences are caused by a "normal" reality, we have no way of knowing for sure that they are not caused by the sort of reality envisioned in the Total Recall scenario. In short, we have no way of knowing, for sure, what reality is really like.

A Word of Caution

Be careful not to misunderstand the point of the discussion above concerning how we assess the accuracy of representations and concerning the Total Recall scenario. The proper conclusion to draw is not that reality is completely unlike what we believe it to be. Rather, the proper conclusion is that we cannot know for sure what reality is like. And if we cannot know for sure what reality is like, it follows that, if the correspondence theory of truth is correct, we can never know for sure whether any belief–or at least, any belief about the external world–is true.

This does not show that correspondence theories are wrong, or unacceptable, or incoherent. Recall that the correspondence theory of truth is a theory about what makes a belief true or false, whereas the accuracy discussion and Total Recall discussion make an epistemological point about what we can know. And as we discussed earlier, the question of what makes beliefs true or false is a different question than such epistemological questions about knowledge. But the accuracy discussion and the Total Recall scenario do illustrate a rather interesting aspect of correspondence theories. This aspect of correspondence theories is one of the reasons many people find correspondence theories unappealing.

Problems/Puzzles for Coherence Theories of Truth

Let us begin by focusing on an individualistic version of a coherence theory. Recall that on this theory, a belief is true for an individual if it fits into the overall collection of beliefs for that individual, and false if it does not fit into that overall collection of beliefs. So what is true for my acquaintance Steve (mentioned above), and what is true for me, are two very different things. For example, it is true for Steve that the moon is inhabited, whereas it is true for me that the moon is not inhabited. It is true for Steve that the moon is further from the Earth than is the sun, whereas the opposite is true for me. In short, there are no independent truths; rather, truth is relative to individuals.

Importantly, there is no distinguishing, on an individualistic version, between "better" and "worse" truths. Steve's beliefs that the moon is inhabited is just as true (for him) as my belief that the moon is uninhabited is true (for me). All beliefs are equally true for the individual holding those beliefs. There is no way to say, on the individualistic version of the coherence theory, that my beliefs are any more true than are Steve's beliefs.

In short, the individualistic version turns out to be an extreme "anything goes" sort of relativism. While this does not prove conclusively that the individualistic version is incorrect, it is worth noting that most people find a view that is this relativistic to be unacceptable.

Consider now group versions of coherence theories. Recall that on these versions of coherence theories, a belief is true if it fits in with the overall collection of some group (which group counts depends on the particular theory). The main problems for such theories are (i) they do not allow for the possibility that a group might hold a mistaken belief; (ii) there is no way to specify who exactly counts as a member of the group in question, and (iii) with any group, there is no shared set of beliefs that are consistent. Let's look at each of these problems more

carefully.

With respect to (i): suppose Sara has been successfully framed for a crime she did not commit. When I say that Sara was successfully framed, I mean that the members of the group in question (American society, say) have come to be convinced that Sara is indeed guilty. Presumably, then, "Sara is guilty" fits in with the rest of the group's beliefs, and so, according to the group version of the coherence theory, "Sara is guilty" is true. But Sara was framed, and we want to be able to say that the group is simply mistaken in their belief about Sara's guilt. But note that, on the group version of the coherence theory, the group is not mistaken–"Sara is guilty" is true. In fact, it is *Sara* who holds the false belief. On this version of truth, when Sara thinks "I am not guilty," her belief, because it does not fit in with the overall collection of beliefs of the group, is false. In other words, this version of truth seems to get this case exactly backwards. And in general, on a group version of the coherence theory, it is difficult to see how a group could be mistaken in the beliefs they hold. This is a very odd consequence of this version of truth.

With respect to (ii): groups are not well defined collections. For example, consider a group version of the coherence theory in which the group in question is the group of western scientists. According to this theory, what makes a belief true is whether or not it fits in with the overall collection of beliefs of the group of western scientists. But who counts as a western scientist? Consider Jim, another acquaintance of mine with unusual beliefs. Jim believes, quite sincerely, that the Earth is the center of the universe. (Incidentally, I and most of my acquaintances hold fairly mainstream beliefs, but I find it helpful to keep in contact with a number of individuals outside the mainstream.) Notably, Jim is also a practicing physicist, with a doctorate in physics from a respected institution and with publications in mainstream physics journals. Yet he holds quite unusual beliefs about the structure of the universe. So should we

consider him as a member of the group of western scientists? Similar questions arise for any number of other individuals, and in general, it simply is not clear whether large numbers of individuals should or should not be counted as members of the group in question. Groups have very fuzzy edges, and it is difficult if not impossible to precisely specify the members of any group.

Recall that, according to a group version of the coherence theory, a belief is true if it fits in with the overall beliefs of the group. But if the group itself is not well defined, then the theory of truth will not be well defined. In short, it is not clear that a group version of the coherence theory is itself a coherent theory.

Finally, with respect to (iii), even if we could overcome the problem of specifying who counts as a member of the group in question, note that groups simply do not have consistent collections of beliefs. One member of the group may believe thus and such, and another member believe the opposite. This will be common in any collection, any group, of people. But if there is no consistent set of beliefs among the members of the group in question, then there is no consistent "jigsaw puzzle" of beliefs for the group. And if there is no consistent jigsaw puzzle of beliefs, then the group version of the coherence theory, which assumes there is a consistent jigsaw puzzle of beliefs, is again not well defined.

In summary, individualistic versions of coherence theories seem to degenerate into an unacceptable sort of relativism. Group versions of coherence theories, on the other hand, seem to avoid the relativism problem, but in doing so they introduce new and substantial problems. So neither coherence theories of truth, nor correspondence theories of truth, provide a fully satisfying answer to our central question about truth.

Philosophical Reflections: Descartes and the *Cogito*

Before closing this chapter, it might be worth taking a moment to consider a more general philosophical question, and one raised by some of the issues we have discussed in this chapter. Earlier in this chapter, we saw that if the usual view of perception is correct–that is, the representational theory of perception that most people take as a commonsensical account of how perception works–then there is an important sense in which we cannot be certain of what reality is like. This is an extraordinarily broad-reaching claim, and given this conclusion, one might reasonably wonder whether there is *anything* of which we can be certain.

Probably the best-known exploration of this question is that of Rene Descartes (1596 - 1650). Descartes considered this issue in a number of contexts, the most widely known being his discussion in his *Meditations on First Philosophy* (usually abbreviated as just the *Meditations*). In the *Meditations*, one of Descartes' early goals is to find an absolutely certain foundation on which to build knowledge. That is, he wants to find one or more beliefs of which he can be absolutely certain, and then carefully and logically build remaining knowledge on this certain foundation.

In what we might think of as sort of a litmus test for certainty, Descartes employs a scenario closely analogous to the Total Recall scenario discussed above. As in the Total Recall scenario, Descartes considers the possibility that reality is nothing like it appears to be in his conscious experience. Descartes uses the idea of a powerful "evil deceiver" that is able to plant ideas and perceptions directly into his mind. As mentioned, Descartes' evil deceiver provides a sort of litmus test for certainty–if he can find a belief of which he can be certain even if there were such an evil deceiver, such a belief would be the sort of certain belief Descartes wants as a foundation from which to build. (Descartes' evil deceiver plays a role closely analogous to the machine in Figure 2.3 that is planting ideas and perceptions in Sara's mind, and likewise plays a role analogous to the devices responsible for creating the virtual realities in movies such as *Total*

Recall and *The Matrix* discussed earlier.)

So Descartes is looking for a belief that can pass the evil deceiver test, that is, a belief he could be certain of even if there were an evil deceiver. Clearly, most of our beliefs will not pass such a test. For example, the belief that there is a desk in front of me would not pass such a test–if there were such an evil deceiver, it could easily fool me into thinking I am seeing a desk when there really is none. Even my belief that I have a body would not pass such a test, since the deceiver could be planting images into my disembodied brain or mind. (The same story goes for the machine planting images into Sara's mind in Figure 2.3. The scenario could be modified so that the images are being planted into Sara's disembodied brain, such that she would be mistaken even in her belief that her body exists.)

Is there any belief that can pass such a test, that is, any belief of which we can be absolutely certain? Descartes thought he found at least one, and this belief is captured in his well-known *cogito, ergo sum*, that is, "I think, therefore I am." This belief, Descartes claims, is one in which he can be absolutely certain.

Incidentally, strictly speaking the phrase "I think, therefore I am" does not appear in the *Meditations* (though it does appear in some of Descartes' other writings). What he does say in the *Meditations* is that "I am, I exist" is necessarily true every time he thinks it. That is, that he exists, at least as a thinking thing, is a belief of which he can be absolutely certain. Note that he is not saying that his body necessarily exists (again, the machine in the Total Recall scenario, or Descartes' evil deceiver, could fool us into mistakenly thinking we had a body). Rather, what Descartes can be certain of is that every time he thinks "I am, I exist," he must exist at least as a thinking thing. Presumably, when thinking "I am, I exist," he must be thinking in order to have such a thought, and this is why he must exist at least as a thinking thing. By the way, St. Augustine (354 - 430) had expressed similar views, but these views are now more commonly

associated with Descartes.

There is a reasonable case to be made that Descartes' "I am, I exist" is indeed a belief of which we can be absolutely certain. After all, when I (and similarly, when you) consider the thought "I exist," such a thought does seem to presuppose the existence of a thinker to think it. So perhaps we can at least be sure of our own existence. So perhaps, contrary to the way it was beginning to appear, there is at least something of which we can be absolutely certain.

Let's return now to Descartes' foundational strategy. Recall that the idea was to find some certain beliefs from which to carefully deduce other beliefs, and thus build a structure of knowledge based on an absolutely certain foundation. At this point, you can probably guess the general problem Descartes is going to face: the foundation is just too small. A good case can be made that we can be certain of our own existence (at least of our existence as a thinking thing), and perhaps a case can be made that we can be certain of a relatively small handful of other beliefs (for example, perhaps we can be certain of highly qualified beliefs, such that there *seems* to be, say, a desk in front of me). But it is safe to say that Descartes found a quite small number (and perhaps only one) of beliefs of which he could be absolutely certain, and as it will turn out, this foundation is just to small to build on.

Descartes' foundational project was certainly one worth trying. And although the overall project did not succeed, it is worth noting that Descartes did find at least one belief of which we can be certain.

Concluding Thoughts

Although we took a brief digression above to discuss the question of whether there are any beliefs of which we can be certain, the main topic of this chapter is the issue of truth. As we

have seen, truth is a puzzling notion. As mentioned in the beginning of this chapter, theories of truth have been discussed for the past two thousand years, with no consensus emerging. Our goal in this chapter was to sketch some of the main theories of truth, while providing an illustration of why those views, as well as issues surrounding truth in general, are puzzling and problematic.

Also as mentioned earlier, truth is something we take for granted every day. We daily argue with others for the truth of our beliefs, and attempt to convince others of the error of their beliefs. We use the notion of truth constantly. Yet when it comes time to try to say what truth is, in particular, to try to say what makes true beliefs true and false beliefs false, the question is remarkably difficult.

Also as noted at the beginning of the chapter, it seems to be a reasonably common view that science is geared toward generating true theories to account for reasonably straightforward facts. It should be clear at this point that one cannot view science itself, nor the history and philosophy of science, as a simple story about science generating an ever larger collection of true beliefs and true theories. As we have seen in this chapter, and as we will continue to see in Part Two when we begin to look in more detail at cases from the history of science, the issues are much more complex. In the next chapter, we explore another related, and again complex, topic, involving issues surrounding the notion of facts.

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<Below are the captions for the figures used in this chapter.>

Figure 2.1: A Peek into Sara's Consciousness